



Facultad de Psicología  
Departamento de Psicología Biológica y de la Salud

Programa de Doctorado:  
Psicología Clínica y de la Salud

**Resilience: its determinants and effects in parents of critically ill  
children and in pediatric intensive care staff.**

**Resiliencia: sus determinantes y efectos en padres de niños  
críticamente enfermos y en personal de cuidados intensivos  
pediátricos.**

**TESIS DOCTORAL**

**Rocío Rodríguez Rey**

**Director:**

Jesús Alonso Tapia

Madrid, 2016.

La realización de esta Tesis Doctoral ha sido posible gracias a una ayuda de Formación de Personal Docente e Investigador financiada por la Universidad Autónoma de Madrid (FPI-UAM).

This thesis has been possible thanks to the financial support provided by Universidad Autónoma de Madrid through a FPI-UAM fellowship.

*En la vida nada es triste  
si al vivir te doy cobijo  
y tú me das el abrazo  
que me dice que estoy vivo.  
Que la pena compartida  
ya no es pena sin sentido.*

*Que todo empieza de nuevo  
al escuchar tu latido  
y sentir que yo te quiero,  
que tú me quieres, amigo.  
Que en la vida nada es triste  
**Si caminas tú conmigo.***

**Jesús Alonso Tapia**

---

## **AGRADECIMIENTOS/ ACKNOWLEDGEMENTS**

---

A todos los que habéis caminado conmigo durante estos años, haciendo que ahora, al mirar atrás, cada uno de los pasos dados, fuesen o no en la dirección correcta, me parezca lleno de sentido.

Gracias a mi director, Jesús Alonso Tapia, por haberme enseñado y guiado desde la sabiduría y la experiencia vital. Por el tiempo y el esfuerzo incontables dedicados a dirigir esta tesis que también es tuya. Gracias por haberme alentado a pensar, por haberme permitido dudar, por confiar en mi capacidad y por no olvidar nunca (ni dejar de recordarme) que la tesis es una tarea de aprendizaje. Gracias también por haber sabido transmitirme ánimos y calma cuando más los necesitaba. Ha sido un privilegio trabajar contigo todos estos años.

A todo el personal de la Unidad de Cuidados Intensivos Pediátricos y Reanimación del Hospital 12 de Octubre. Gracias por haberme hecho sentir parte de vuestro espacio y sobre todo gracias por seguir esforzándoos cada día por salvar vidas y mejorar calidades de vida. A Lidia, porque gracias a ti tomé contacto con los cuidados intensivos pediátricos. No tengo palabras para agradecerte la confianza puesta en mí desde el primer día. Alba, gracias por tu implicación y compromiso. La tercera parte de esta tesis no habría podido ser sin ti. A Vicky, Sylvia, Ana, Marta y Olga, gracias por contar conmigo y por tener siempre una palabra de ánimo. Gracias a Eva, Raquel y todo el personal de enfermería de la UCIP, por haberme dado una lección de ternura en el cuidado de cada niño.

A cada uno de los padres y madres que han colaborado en los estudios de esta tesis. Gracias por vuestra participación generosa en un momento en el que lo lógico hubiese sido recibir ayuda y no darla. Gracias a vuestros hijos, pequeños campeones, por sorprenderme, por emocionarme, por luchar por la vida con unas ganas contagiosas. Os merecéis sin lugar a dudas muchas más líneas en esta tesis de las que tenéis. Gracias también a los pediatras, personal de

enfermería y auxiliares que han participado en los estudios de esta tesis, y a todos los colaboradores que nos han ayudado a recoger datos en los distintos hospitales.

I want to thank to all the pediatric psychology team of St George's Hospital (London) for letting me learn from your experience when I was just starting my PhD journey. Very especially thanks to Gillian Colville for helping me with the design of my research project, and for your thorough review. I have learnt a lot from you, and I will always be grateful.

Thanks to all the team of the Resilience Research Centre, in Dalhousie University, and especially to Michael Ungar and Linda Liebenberg. I learned from you in every meeting, conference and workshop. Thanks to Catherine and Amber, for helping me in every single thing you could. You all made my days in the snowy Halifax a bit less cold.

Thanks to all the team of the Center for Injury Research and Prevention at The Children's Hospital of Philadelphia for making me feel at home. Nancy Kassam-Adams, thanks for your kindness, your confidence and for valuable feedback. I would also thank to Meghan Marsac for counting on me during my stay, and for your having reviewed this thesis. Finally, thanks to Anne Kazak and her team in the Nemours Hospital for inviting me to the SCCIP training, and for your review.

I would also like to thank Bruce Smith from New Mexico University, for your accessibility in reviewing this dissertation.

Gracias a Margarita del Olmo, por las muchas e interesantísimas puertas que me abriste en el verano que trabajé contigo el CSIC.

Me gustaría también agradecer a Miguel Ruiz su imprescindible ayuda metodológica, y a Carmen Nieto su colaboración en la recogida de datos y revisión de los estudios de la primera parte. Gracias también a Ignacio Montorio por haber facilitado siempre cada gestión.

Gracias a cada una de las maravillosas personas de las que tuve la suerte de aprender en el Hospital La Paz. Javier Barbero, gracias por haber sido mi maestro. Tu manera de ver la vida

y de transmitirlo, me ha hecho sin duda mejor profesional y persona. Helena, gracias por enseñarme desde la igualdad y la confianza. Tu experiencia y tu actitud me ayudan a seguir ilusionándome con mi trabajo. Gracias a todo el equipo de Nefrología del Hospital La Paz por vuestra maravillosa acogida durante mis prácticas de Máster. Finalmente gracias a mis compañeros de batalla; Tamara, Laura, Gemma, María, Lourdes, Mirian, Erika, Marina, Jesús, Ali A, y Ali G., por cada ¿Qué tal? fuese o no viernes. Fuisteis un apoyo fundamental en esos años en La Paz de los que me llevo tantísima vitalidad, y tantísima vida.

A toda la gente bonita de la Fundación Blas Méndez Ponce de ayuda al niño oncológico y de difícil curación gracias a la que tuve contacto por primera vez con la realidad de los niños hospitalizados. Tengo una deuda impagable con vosotros. Gracias a Lola, Bea, Mila, Chechu, Uge, Gema, y a todo el equipo que de un modo u otro forma parte de la funda por pintar de color esperanza la cara de tantos niños. Para mi sois héroes.

A todos mis compañeros y amigos del aula PDIF. Helena, gracias por el enorme trabajo que has invertido en esta tesis. ¡Ojalá podamos embarcarnos pronto en nuevos proyectos! Mirtha, gracias por tu genuinidad y tu capacidad de acoger y cuidar. María, gracias por tu salero y tus detallazos. Lore, gracias por desbordar sabiduría y por tu generosidad al compartirla. En el orden lógico, completando el “triángulo del mal” gracias Jara, por tu ayuda en el momento preciso y, cómo no, por los bailes. Manolo, gracias por estar siempre dispuesto a echar una mano. Silvia, gracias por tu amistad, tu apoyo constante y cercano, y tus innumerables y acertados consejos. ¡Qué ganas de nuestra aventura japonesa! Carlos de Aldama, gracias por tener siempre una palabra para contrarrestar mis agobios. Dani, gracias por tu confianza. Gracias a César, Irene, Edgar, Cami, Ernesto, Isa, Liria, Esther, Mariana, David y a todos los compañeros que me precedieron y acompañaron en este camino por permitirme aprender de vuestra experiencia. Gracias también a las incorporaciones más recientes al aula, Miriam, Mari Luz, Tamara, Dani, Ichi, Carlos y Joana, por haber mantenido este espacio vivo y lleno de risas.

A mis bellas flores, con quienes compartí los años de carrera, y con quienes sigo compartiendo momentos mágicos. Evi, casi eterna compi de fatigas, gracias por haber estado conmigo desde el principio de los tiempos. Sari, gracias por tu transparencia y por el cariño que pones en cada palabra y gesto. Ruthy, gracias por tu sentido del humor y tu autenticidad. Lau, gracias por tu enorme sensibilidad. Bei, ¡cómo olvidar nuestros cafés, buscándonos entre clases! Gracias por ser tan excelente persona, y por haber dado un abejorrito a nuestro grupo.

Thanks to all the beautiful people that I've met in my stays abroad. A mi Galli, por el camino paralelo recorrido juntas en el que ambas hemos aprendido tanto. A Sandra y Joel, por vuestro apoyo en Halifax y por vuestra lección de compasión y amor a todas las criaturas. Thanks to Katherine, for the amazing time in Halifax, Toronto and Barcelona, and for having reviewed my English so many times. To Thao, for breaking your diet just to cheer me up, and for our great trip to Quebec and Montreal. To Ilenia, for the great time we had in Philadelphia. I'll always remember our "Dress for less". You were the best flatmate!

A mis amigos, los de las 6 en Lucero, los de siempre. Vane, gracias por haberme acompañado casi desde que recuerdo, y por ser la protagonista de historias que a día de hoy siguen haciéndome llorar de risa. A Raquel, porque con una mirada nos lo decimos todo, gracias por el placer enorme de tu compañía. A Sandra, gracias por tu capacidad de escucha. A David e Iván, gracias porque sé hasta qué punto puedo contar con vosotros.

A mi Reina, por haber sido el ser vivo no humano que más he querido en mi vida. Por haberme enseñado que no siempre hacen falta palabras para comunicarse.

A mis padres. Mamá, papá, gracias por haberme dado la vida. Todo lo que soy os lo debo a vosotros, y por eso os quiero muchísimo. Gracias por educarme en la responsabilidad y por enseñarme que la vida no es una carrera de velocidad, sino de resistencia. Os llevo conmigo allá donde voy, como una voz dentro de mi cabeza que me guía.

A mi hermana, mi primera y mejor amiga. Gracias por tu irremplazable y constante apoyo en cada uno de los pasos que he dado a lo largo de mi vida. Gracias también a José, por tu cercanía y aliento. A los dos, gracias por haberme ido a ver casi a cada estancia, aunque supusiera cruzar el charco. De un modo muy muy especial, gracias a mi recién llegado sobrino Rubén por haber ampliado los límites de mi capacidad de amar.

A mi tía Celina, ejemplo de fuerza y superación personal, gracias por tu constante apoyo. A mi abuela Humbe, una de las mujeres más inteligentes que conozco, gracias por tu amor incondicional. A mi abuelo Andrés. Aunque no hayas llegado a ver terminada esta tesis, sé lo mucho que te importaba. Gracias por haber confiado en mí tanto como yo confiaba en ti.

A mi familia materna. Gracias abuela Menchu por las lecciones de vida que he aprendido a través de tus historias (¡y por tus croquetas!). A mi abuelo Elías, por tu alegría, tu vitalidad y tu amor a tu familia. Eres mi referente, y te llevo siempre conmigo. Gracias a mis tíos, Chiqui, Raúl, Nieves, David, Mar, Raquel y Simón, porque sé que estaréis ahí cada vez que os necesite. Amparo, gracias por haberte volcado con nosotras siempre. Gracias a mis primos Eva, Rober, Sofía, Alberto, María, Raúl y Adrián, por lo muchísimo que disfruto de cada momento juntos.

A mi familia y amigos catalanes, y sobre todo a Antonia, Jordi (padre), David, Adela, Carlos, Maite, Víctor y Cinta. Gracias por preguntarme siempre cómo va la tesis. María Llistosella, gracias por hacerme participe de tu gran trabajo. Gracias también a Anna y Giulia, por cada una de vuestras sonrisas.

Por último, a Jordi. Esta tesis está dedicada a ti. Gracias porque tu mirada me devuelve el reflejo de la persona que quiero ser. Por creer en mí, transmitirme seguridad, cuidarme cada día, hacerme feliz y llenar mis días de mi palabra favorita: **il·lusió**. Has puesto toda tu paciencia y cariño en apoyarme durante la escritura de esta tesis. Por todo esto y mucho más...saps que estic boja per tu. Aunque no sepa qué vendrá después, tengo la confianza de que merecerá la pena ser vivido por hacerlo a tu lado.



---

# INDEX

---

<b>AGRADECIMIENTOS/ ACKNOWLEDGMENTS.....</b>	<b>iii</b>
<b>INDEX .....</b>	<b>iv</b>
<b>INDEX OF TABLES AND FIGURES .....</b>	<b>xvii</b>
<b>RESUMEN .....</b>	<b>1</b>
<b>ABSTRACT.....</b>	<b>5</b>
<b>1. GENERAL INTRODUCTION.....</b>	<b>9</b>
1.1. Why this Thesis? General purpose .....	11
1.2. Resilience: definition, measurement, determinants and effects.....	13
1.2.1. Definition of resilience.....	13
1.2.2. Resilience and related terms.....	15
1.2.3. Problems in the measurement of resilience.....	16
1.2.4. Determinants of resilience.....	19
1.2.4.1. Contextual determinants of resilience.....	19
1.2.4.2. Personal determinants of resilience.....	21
1.2.5. The effects of subjective resilience.....	27
1.2.5.1. Negative post-trauma outcomes: psychopathology.....	27
1.2.5.2. The possibility of positive post-trauma outcomes: posttraumatic growth.....	28
1.2.6. Variables which could mediate the relation between subjective resilience and positive adaptation .....	31
1.2.6.1. Perceived stress.....	32
1.2.6.2. Positive and negative emotions .....	32
1.3. Resilience towards health-related problems.....	34
1.3.1. Resilience in families of children suffering from illnesses .....	34
1.3.2. A high-risk context: The pediatric intensive care unit .....	37
1.3.2.1. Why researching on resilience in pediatric intensive care? .....	39

1.3.2.2.	The impact of the pediatric intensive care unit in children/families. The potential contribution of studying resilience in parents of critically ill children.....	40
1.3.2.2.	The impact of working in pediatric intensive care. The potential contribution of studying resilience in PICU workers...	42
1.4.	Organization of this doctoral dissertation .....	45
1.4.1.	Conceptual map of the studies conforming this dissertation.....	45
1.4.2.	Description of the sections and the studies conforming this dissertation	45
<b>2.</b>	<b>PART I: ASSESSMENT AND DETERMINANTS OF RESILIENCE.....</b>	<b>51</b>
<b>2.1.</b>	<b>Reliability and Validity of the Brief Resilience Scale (BRS) Spanish Version.....</b>	<b>53</b>
2.1.1.	Abstract .....	54
2.1.2.	Introduction .....	55
2.1.3.	Methods.....	57
2.1.4.	Results .....	66
2.1.5.	Discussion.....	72
<b>2.2.</b>	<b>Coping assessment from the perspective of Person-situation interaction. Development and validation of the Situated Coping Questionnaire for Adults (SCQA).....</b>	<b>77</b>
2.2.1.	Abstract .....	78
2.2.2.	Introduction.....	79
2.2.3.	Methods.....	83
2.2.4.	Results.....	87
2.2.5.	Discussion.....	90
<b>2.3.</b>	<b>Personality factors underlying resilience: Development and validation of the Resiliency Questionnaire for Adults (RQA).....</b>	<b>95</b>
2.3.1.	Abstract.....	96
2.3.2.	Introduction.....	97
2.3.3.	Methods.....	103
2.3.4.	Results.....	106
2.3.5.	Discussion.....	111

<b>2.4. Development and validation of the Situated Subjective Resilience</b>	
<b>Questionnaire for Adults (SSRQA).....</b>	<b>115</b>
2.4.1. Abstract .....	116
2.4.2. Introduction.....	117
2.4.3. Methods .....	119
2.4.4. Results .....	122
2.4.5. Discussion.....	125
<b>2.5. Prediction of subjective resilience from coping strategies and protective</b>	
<b>personality factors.....</b>	<b>135</b>
2.5.1. Abstract .....	136
2.5.2. Introduction.....	137
2.5.3. Methods .....	141
2.5.4. Results .....	145
2.5.5. Discussion.....	150
<b>3. PART II: THE ROLE OF RESILIENCE IN PREDICTING ADAPTATION</b>	
<b>IN PARENTS OF CRITICALLY ILL CHILDREN .....</b>	<b>155</b>
<b>3.1. Development of a Screening Measure of Stress for Parents of Children</b>	
<b>Hospitalized in a Pediatric Intensive Care Unit.....</b>	<b>157</b>
3.1.1. Abstract .....	158
3.1.2. Introduction .....	159
3.1.3. Methods .....	162
3.1.4. Results .....	166
3.1.5. Discussion .....	171
<b>3.2. The Factor Structure of the Posttraumatic Growth Inventory in Parents of</b>	
<b>Critically Ill Children.....</b>	<b>175</b>
3.2.1. Abstract .....	176
3.2.2. Introduction .....	177
3.2.3. Methods .....	184
3.2.4. Results .....	185
3.2.5. Discussion .....	191

<b>3.3. The role of resilience in the prediction of parental distress after a child's hospitalization in intensive care: a longitudinal study .....</b>	<b>195</b>
3.3.1. Abstract .....	196
3.3.2. Introduction .....	197
3.3.3. Methods .....	199
3.3.4. Results .....	203
3.3.5. Discussion .....	213
<b>3.4. Resilience and Posttraumatic growth in mothers and fathers of critically ill children: a longitudinal study.....</b>	<b>219</b>
3.4.1. Abstract .....	220
3.4.2. Introduction .....	221
3.4.3. Methods .....	224
3.4.4. Results .....	226
3.4.5. Discussion .....	229
<b>3.5. Relation between parental psychopathology and posttraumatic growth after a child's admission to intensive care: Two faces of the same coin? .....</b>	<b>233</b>
3.5.1. Abstract .....	224
3.5.2. Introduction .....	235
3.5.3. Methods .....	236
3.5.4. Results .....	239
3.5.5. Discussion .....	243
<b>4. PART III: THE PROTECTIVE ROLE OF RESILIENCE AND COPING FOR PERSONNEL WORKING IN INTENSIVE CARE.....</b>	<b>247</b>
<b>4.1. Burnout and Posttraumatic stress in PICU staff. Its relation with Resilience and Coping strategies.....</b>	<b>249</b>
4.1.1. Abstract .....	250
4.1.2. Introduction .....	251
4.1.3. Methods .....	254
4.1.4. Results .....	257
4.1.5. Discussion .....	266

<b>4.2. Posttraumatic growth in pediatric intensive care personnel and its dependence on resilience and coping strategies.....</b>	<b>271</b>
4.2.1. Abstract .....	272
4.2.2. Introduction .....	273
4.2.3. Methods .....	276
4.2.4. Results .....	278
4.2.5. Discussion.....	286
<b>4.3. Are pediatric critical personnel satisfied with their lives? Prediction of satisfaction with life from burnout, posttraumatic stress and posttraumatic growth.....</b>	<b>289</b>
4.3.1. Abstract .....	290
4.3.2. Introduction .....	291
4.3.3. Methods.....	293
4.3.4. Results.....	295
4.3.5. Discussion .....	302
<b>5. DISCUSIÓN GENERAL.....</b>	<b>305</b>
5.1. Resultados principales .....	307
5.2. Conclusiones generales.....	310
5.2.1. Los determinantes de la resiliencia.....	310
5.2.2. Afrontamiento y resiliencia. ¿Estables o dependientes del contexto?.....	314
5.2.3. La UCIP como un entorno de alto riesgo susceptible de generar psicopatología.....	315
5.2.4. Crecimiento postraumático como un fenómeno frecuente tras experimentar situaciones potencialmente traumáticas.....	316
5.2.5. El efecto de la resiliencia subjetiva sobre la salud mental en padres de niños críticamente enfermos y trabajadores de cuidados intensivos pediátricos.....	316
5.2.6. El efecto de la resiliencia subjetiva en el crecimiento postraumático de padres de niños críticamente enfermos y trabajadores de cuidados intensivos pediátricos.....	318

5.2.7. La relación entre las consecuencias psicológicas positivas y negativas de enfrentarse a un acontecimiento traumático.....	320
5.2.8. Resumen de las relaciones entre las variables incluidas en esta tesis.....	322
5.3. Limitaciones de los estudios de esta tesis.....	324
5.3.1. Diseño de los estudios .....	324
5.3.2. Representatividad de las muestras.....	324
5.3.3. Variables de los estudios.....	326
5.3.4. Instrumentos de evaluación.....	326
5.4. Futuras líneas de investigación.....	327
5.5. Implicaciones para la práctica: evaluación e intervención.....	330
5.5.1. Implicaciones para la evaluación .....	330
5.5.2. Implicaciones para la intervención .....	331
5.5.1.1.Orientaciones generales para promover la resiliencia.....	331
5.5.1.2.Implicaciones para el desarrollo de futuros programas de intervención con padres de niños críticamente enfermos.....	332
5.5.1.3.Implicaciones para el desarrollo de futuros programas de intervención con personal de cuidados intensivos pediátricos. ....	338
<b>5. GENERAL DISCUSSION (BIS) .....</b>	<b>345</b>
5.1. Main findings .....	346
5.2. General conclusions .....	349
5.2.1. The determinants of resilience .....	349
5.2.2. Coping and resilience. Stable or context-dependent characteristics? .....	352
5.2.3. The PICU as a high-risk context susceptible to cause psychopathology...	353
5.2.4. Posttraumatic growth as a common phenomenon after facing potentially traumatic situations.....	354
5.2.5. The effect of subjective resilience in predicting psychopathology in parents of critically ill children and in intensive care workers.....	354
5.2.6. The effect of subjective resilience in predicting posttraumatic growth in parents of critically ill children and intensive care workers.....	356
5.2.7. The relation between positive and negative post-trauma outcomes.....	357

5.2.8. Summary of the relations between the main variables included on this dissertation .....	359
5.3. Limitations of the studies conforming this thesis.....	361
5.3.1. Research design .....	361
5.3.2. Representativeness of the samples used.....	361
5.3.3. Study variables.....	362
5.3.4. Measurement instruments.....	363
5.4. Future lines of research.....	364
5.5. Implications for practice: assessment and intervention.....	366
5.5.1. Implications for assessment .....	366
5.5.2. Implications for intervention .....	367
5.5.2.1. General guidelines to foster resilience .....	367
5.5.2.2. Implications for the development of future intervention programs with parents of critically ill children .....	367
5.5.2.3. Implications for the development of future intervention programs with pediatric intensive care staff .....	372
<b>6. REFERENCES .....</b>	<b>379</b>
<b>7. ANNEXES.....</b>	<b>421</b>
A) Questionnaires used in the different studies (in English and Spanish).....	421
- Brief Resilience Scale .....	421
- Resiliency Questionnaire for Adults .....	422
- Situated Coping Questionnaire for Adults.....	425
- Situated Subjective Resilience Questionnaire for Adults .....	429
- Connor-Davidson Resilience Scale 10 items version.....	431
- Perceived Stress Scale for Pediatric Intensive Care Unit .....	432
- Perceived Stress Scale.....	433
- Modified Differential Emotions Scale.....	435
- Pediatric Index of Mortality II.....	437
- Davidson Trauma Scale.....	438
- Hospital Anxiety and Depression Scale.....	439
- Posttraumatic Growth Inventory (original and short form) .....	442

- Maslach Burnout Inventory .....	444
- Trauma Screening Questionnaire.....	445
- Coping Questionnaire for Health Care Providers.....	447
- Satisfaction With Life Scale.....	448
B) Description of the protocol used for data collection in part II .....	450
C) Information provided to the participants in the different studies .....	452



---

## INDEX OF TABLES AND FIGURES

---

### TABLES

<b>Table 1.1.</b>	Main instruments for assessing resilience. ....	17
<b>Table 2.1.1.</b>	Confirmatory Factor Analysis of the Brief resilience Scale. Regression Weights. ....	67
<b>Table 2.1.2.</b>	Brief Resilience Scale Cross Validation of the Model Using Multi- group Analyses. ....	68
<b>Table 2.1.3.</b>	Convergent and Concurrent Evidence of Validity of the Brief Resilience Scale. ....	69
<b>Table 2.1.4.</b>	Predictive Validity of the Brief Resilience Scale. ....	70
<b>Table 2.1.5.</b>	Differences in the Brief Resilience Scale scores by Age. ANOVAs and DMS Test. ....	71
<b>Table 2.2.1.</b>	Items of two of the situations included in The Situated Coping Questionnaire for Adults. ....	84
<b>Table 2.2.2.</b>	Situated Coping Questionnaire for Adults. Bi-factor CFA standardized weights and significance relating situations to items assessing the use of each kind of coping strategy. ....	90
<b>Table 2.2.3.</b>	Prediction of resilience from coping: $R^2$ and standardized regression weights. ....	91
<b>Table 2.3.1.</b>	Resiliency Questionnaire for Adults. Goodness of fit statistics for the CFA and the PALV of the two tested models. ....	107
<b>Table 2.3.2.</b>	Internal consistency of the scales and subscales of the Resiliency Questionnaire for Adults. ....	108
<b>Table 2.3.3.</b>	ANOVAs of differences in resiliency factors between Non-clinical and Clinical Samples. ....	110
<b>Table 2.4.1.</b>	Correlations among the general SSRQA scale, the SSRQA's subscales, the BRS and the 10-item CD-RISC.....	127
<b>Table 2.4.2.</b>	Correlations between the degree of experience for each adversity and the SSRQA subscales. ....	128

<b>Table 2.4.3.</b>	Lineal and quadratic relations between the degree of experienced adversity related to each situation (IV) and resilience on each situation (DV).....	129
<b>Table 2.5.1.</b>	Correlations between resilience, resiliency and coping. ....	146
<b>Table 2.5.2.</b>	Prediction of resilience from coping styles and resiliency factors. Regression analyses: R <sup>2</sup> values and standardized regression coefficients. ....	147
<b>Table 2.5.3.</b>	Prediction of resilience from coping styles and resiliency factors. Goodness of fit statistics for the baseline path analysis with latent variables (PALV) and for cross validation analysis (CVA).....	149
<b>Table 2.5.4.</b>	PALV: prediction of resilience from coping styles and resiliency factors. Direct and indirect effects. ....	150
<b>Table 3.1.1.</b>	Confirmatory Factor Analysis of the Abbreviated Perceived stress scale for PICU. Fit indexes of the two models tested. ....	166
<b>Table 3.1.2.</b>	Correlations between the A-PSS:PICU scores and the criterion variables selected. ....	168
<b>Table 3.1.3.</b>	Average scores, ranges, and standard deviations of the A-PSS:PICU and its subscales. ....	166
<b>Table 3.1.4.</b>	Pearson and point-biserial correlations between the A-PSS:PICU punctuations and the socio-demographic, cultural and medical variables chosen. ....	170
<b>Table 3.2.1.</b>	Factor Structure, sample and language of the PTGI in previous studies. ....	180
<b>Table 3.2.2.</b>	Items of the PTGI and its belonging to different dimensions among different factor structures.....	181
<b>Table 3.2.3.</b>	Goodness of fit statistics for CFA of the factor structures found in previous studies and of the factor structures that emerged in the PCA. ....	186
<b>Table 3.2.4.</b>	Loadings on the Three New Factors of the Spanish PTGI. ....	188
<b>Table 3.3.1.</b>	<i>(Supplementary)</i> Differences between parents who completed the T0 assessment and parents who did not completed it. (Student's t-	

test for continuous variables and Chi Square test for categorical variables) .....	204
<b>Table 3.3.2.</b> ( <i>Supplementary</i> ) Differences between parents who completed only the T0 assessment and parents who completed the whole study (Student's t-test for continuous variables and Chi Square test for categorical variables).....	205
<b>Table 3.3.3.</b> Socio-demographic and medical characteristics for children and parents .....	206
<b>Table 3.3.4.</b> Associations between socio-demographic/medical variables and psychological variables measured at baseline (T0). .....	208
<b>Table 3.3.5.</b> Associations between socio-demographic/medical variables and main psychological outcomes at 3 months and 6 months.....	211
<b>Table 3.5.1.</b> Correlation Coefficients between the PTGI, the DTS and the HADS total scores and subscales. ....	240
<b>Table 3.5.2.</b> Linear and quadratic relations between PTG (DV) and PTSD, anxiety and depression (IVs) in all parents, mothers and fathers.....	242
<b>Table 4.1.1.</b> Demographic and professional characteristics of the sub-samples of PICU and non-PICU pediatric staff. ....	257
<b>Table 4.1.2.</b> Prevalence of burnout and posttraumatic stress for PICU and non-PICU staff and Chi square tests. ....	258
<b>Table 4.1.3.</b> Association of demographic and work-related variables with burnout and posttraumatic stress. ANOVAs and Pearson's correlation tests. ....	259
<b>Table 4.1.4.</b> Pearson correlations between resilience, coping and demographic and work-related variables with psychological outcomes. ....	261
<b>Table 4.1.5.</b> Prediction of burnout dimensions and posttraumatic stress from coping and resilience Goodness of fit for path analysis with latent variables (PALV), for cross validation analyses (CVA), and for multiple group analyses (MGA). ....	263

<b>Table 4.1.6.</b>	Differences in measurement weights between PICU and non-PICU staff for the model of prediction of burnout and posttraumatic stress. Z-Clogg, Petkova and Haritou test. ....	265
<b>Table 4.2.1.</b>	Prevalence of posttraumatic growth and its dimensions in PICU and non-PICU subsamples.....	279
<b>Table 4.2.2.</b>	Association of demographic and work-related variables with posttraumatic growth. ANOVAs and Pearson’s correlation tests...	280
<b>Table 4.2.3.</b>	Correlations between coping strategies and resilience with PTG and its dimensions.....	282
<b>Table 4.2.4.</b>	Predictive model of PTG. Goodness of fit for path analyses with latent variables (PALV), for cross validation analyses (CVA), and for multiple group analyses (MGA). ....	284
<b>Table 4.2.5.</b>	Differences in measurement weights between PICU and non-PICU staff for the model of prediction of posttraumatic growth. Z-Clogg, Petkova and Haritou test. ....	285
<b>Table 4.3.1.</b>	Association of demographic and work-related variables with Satisfaction With Life. ANOVAs and Pearson’s correlation tests...	297
<b>Table 4.3.2.</b>	Correlations between Burnout Syndrome dimensions (EE, DP and PA), Post-traumatic Stress Disorder (PTSD), Post-Traumatic Growth (PTG) total score and dimensions, and Satisfaction With Life (SWL) for the whole sample.....	299
<b>Table 4.3.3.</b>	Predictive model of SWL. Goodness of fit for path analysis with latent variables (PALV), cross validation analyses (CVA), and multiple group analyses (MGA) for PICU and non-PICU staff.....	301
<b>Tabla 5.1.</b>	Objetivos y principales resultados de los estudios que conforman esta tesis doctoral.....	307
<b>Table 5.1. (bis)</b>	Objectives and main results of each of the studies conforming this doctoral dissertation.....	344
<b>Tabla 5.2.</b>	Resumen de las implicaciones para la intervención con padres de niños críticamente enfermos.....	333

<b>Table 5.2. (bis)</b> Summary of the implications for intervention with parents of critically ill children.....	368
<b>Tabla 5.3.</b> Resumen de las implicaciones para la intervención con personal de cuidados intensivos pediátricos.....	339
<b>Table 5.3. (bis)</b> Summary of the implications for intervention with pediatric critical care staff.....	373

## FIGURES

<b>Figure 1.1.</b> Conceptual map of the studies included in this dissertation .....	46
<b>Figure 2.1.1.</b> Measures completed by each subsample in the study to validate the Brief Resilience Scale. ....	63
<b>Figure 2.1.2.</b> Confirmatory factor analysis of the Brief Resilience Scale (BRS).	67
<b>Figure 2.2.1.</b> Situated Coping Questionnaire for Adults. Initial confirmatory standardized solution. ....	87
<b>Figure 2.2.2.</b> Situated Coping Questionnaire for Adults. Confirmatory bi-factor standardized solution. ....	89
<b>Figure 2.3.1.</b> Confirmatory standardized solution of the Resiliency Questionnaire for Adults: original model (9x3x1) proposed by Prince-Embury...	106
<b>Figure 2.3.2.</b> Confirmatory standardized solution of the Resiliency Questionnaire for Adults: alternative model (9x2x1).....	108
<b>Figure 2.3.3.</b> Path analysis with latent variables. Prediction of Resilience by Resiliency factors. ....	109
<b>Figure 2.4.1.</b> Situated Subjective Resilience Questionnaire for Adults: Baseline confirmatory standardized solution. ....	124
<b>Figure 2.4.2.</b> Situated Subjective Resilience Questionnaire for Adults: Situational confirmatory standardized solution.....	125
<b>Figure 2.4.3.</b> Lineal and quadratic relations between degree of experienced adversity related to each situation (IV) and resilience on each situation (DV).....	130
<b>Figure 2.5.1.</b> Path model of the hypothesized relationships between coping styles, resiliency factors and resilience. ....	140

<b>Figure 2.5.2.</b> Prediction of resilience from coping styles and resiliency factors. Path analysis with latent variables: Initial standardized solution....	149
<b>Figure 3.1.1.</b> Initial confirmatory standardized solution for the two-factor model of the Abbreviated Parental Stressor Scale Pediatric Intensive Care Unit (A-PSS:PICU). .....	167
<b>Figure 3.2.1.</b> Initial confirmatory standardized solution for the bi-factor model of the 12-item PTGI that emerged after removing the items that failed to load differentially. ....	190
<b>Figure 3.3.1.</b> Hypothesized predictive model of parental psychopathology from resilience, stress, and subjective severity of the child’s condition...	198
<b>Figure 3.3.2.</b> Predictive model of parental distress six months after the child’s discharge from PICU (T2). .....	214
<b>Figure 3.3.3.</b> ( <i>Supplementary</i> ). Predictive model of parental distress three months after the child’s discharge from PICU (T1). ....	215
<b>Figure 3.4.1.</b> Hypothesized predictive model of posttraumatic growth from resilience, negative emotions, positive emotions, subjective severity and stress related to the PICU stimuli. ....	223
<b>Figure 3.4.2.</b> Predictive model of parental posttraumatic growth from resilience, subjective severity, positive emotions, negative emotions and stress related to the PICU stimuli. ....	228
<b>Figure 4.1.1.</b> Prediction of burnout dimensions and posttraumatic stress from coping and resilience. Standardized estimates and squared multiple correlations for the path analyses with latent variables....	262
<b>Figure 4.2.1.</b> Standardized estimates and squared multiple correlations for the predictive model of Posttraumatic growth (PALV).....	283
<b>Figure 4.3.1.</b> Standardized estimates and squared multiple correlations for the predictive model of Satisfaction with Life (PALV).....	300
<b>Figura 5.1.</b> Diagrama resumen de las principales relaciones entre las variables exploradas en esta tesis.....	323
<b>Figure 5.1. (bis)</b> Diagram summarizing the main relations among the variables explored along this dissertation. ....	360

---

## RESUMEN

---

**Antecedentes y objetivos:** tras enfrentarse a situaciones difíciles o potencialmente traumáticas, algunas personas desarrollan problemas psicológicos, como estrés postraumático o depresión. Sin embargo, otras son capaces de volver a la normalidad rápidamente. Estas últimas son denominadas personas “resilientes”. Para saber cómo favorecer que las personas sean capaces de afrontar sus problemas de la mejor manera posible, es importante saber cuáles son los determinantes de la resiliencia. Por ello el objetivo de la primera parte de esta tesis (parte I) es explorar en qué medida la resiliencia depende de factores protectores de personalidad, y en qué medida de las estrategias de afrontamiento que los individuos utilizan.

Por otro lado, a consecuencia de las dificultades que cada uno de nosotros hemos afrontado en el pasado, todos tenemos una percepción de nuestro propio grado de resiliencia (resiliencia subjetiva). Dicha percepción puede utilizarse como variable para predecir la adaptación psicológica que tendrán personas que se enfrentan a situaciones potencialmente traumáticas. Por ello, las partes segunda y tercera de esta tesis (partes II y III) se centran en explorar en qué medida la resiliencia subjetiva, junto con otras variables psicológicas (como estrés o estrategias de afrontamiento), predice consecuencias psicológicas positivas y negativas derivadas de atravesar una situación potencialmente traumática. Estos estudios se han realizado en padres de niños tras el ingreso de su hijo en una unidad de cuidados intensivos pediátricos (UCIP) y en profesionales de UCIP, ya que ambos están expuestos a situaciones difíciles que potencialmente pueden afectar a su salud mental.

**Metodología:** para estudiar los determinantes de la resiliencia 430 adultos (256 población general, 77 adultos con VIH o cáncer y 97 padres de niños con cáncer o problemas de desarrollo) respondieron cuestionarios de estrategias de afrontamiento, factores de personalidad (protectores y de riesgo) y resiliencia. Dado que hasta el momento no existían

instrumentos adecuados para evaluar muchos de estos constructos en adultos y en castellano, se han adaptado y desarrollado varios cuestionarios (adaptación de la *Brief Resilience Scale* al castellano y desarrollo de la *Situated Subjective Resilience Scale for Adults*, el *Situated Coping Questionnaire for Adults* y la *Resiliency Scale for Adults*). Para validarlos se han realizado análisis correlacionales, de regresión y factoriales confirmatorios. Además, para explorar en qué medida afrontamiento y personalidad predicen resiliencia, se llevaron a cabo análisis correlacionales, de regresión y *path analyses* con variables latentes.

En segundo lugar, para estudiar los efectos de la resiliencia subjetiva sobre la salud mental en padres de niños críticamente enfermos (parte II) realizamos un estudio longitudinal. Un total de 196 padres respondieron cuestionarios de resiliencia, percepción de severidad de la condición médica de su hijo, emociones y estrés inmediatamente después del alta de su hijo de una unidad de una UCIP. Dado que no existía ninguna escala breve para evaluar el estrés parental producido por los estímulos de la UCIP, se desarrolló y validó la *Abbreviated Parental Stress Scale for Pediatric Intensive Care Unit*. Tres y seis meses después del alta se evaluaron sus niveles de ansiedad, depresión, estrés postraumático y crecimiento postraumático. Las propiedades psicométricas de la escala de crecimiento postraumático utilizada (*Posttraumatic Growth Inventory*) no se habían explorado previamente en esta población, por lo que realizamos un estudio adicional con este propósito. Con el objetivo de estudiar cómo resiliencia, percepción de severidad, emociones y estrés predicen ansiedad, depresión, estrés postraumático y crecimiento postraumático realizamos *path analyses* con variables latentes.

En el caso de los profesionales de UCIP (parte III), realizamos un estudio multicéntrico transversal. Un total de 298 médicos, enfermeros/as y auxiliares de UCIP de nueve hospitales y 189 de otras unidades de pediatría en los mismos centros respondieron cuestionarios de resiliencia, afrontamiento, burnout, estrés postraumático, crecimiento postraumático y satisfacción con la vida. Se realizaron análisis correlacionales, de regresión y *path analyses*



con variables latentes para explorar cómo resiliencia y afrontamiento se relacionan con las consecuencias psicológicas negativas (burnout, estrés postraumático) y positivas (crecimiento postraumático) de trabajar en UCIP. Realizamos el mismo tipo de análisis para explorar cómo dichas consecuencias afectan a la satisfacción con la vida de los profesionales.

**Resultados y conclusiones:** los estudios incluidos en la parte I muestran, en primer lugar, que los instrumentos de evaluación adaptados o desarrollados tienen adecuadas propiedades psicométricas. En segundo lugar, los resultados muestran que afrontamiento y factores personales predicen más del 60% de la varianza en resiliencia. Los datos –de naturaleza correlacional– apoyan el modelo según el cual la relación entre estrategias de afrontamiento y resiliencia está mediada por los factores de personalidad evaluados. Las personas que utilizan más un estilo de afrontamiento centrado en el problema, y menos un estilo centrado en la emoción fueron aquellas cuyo sentido de dominio y de sentido de relación fueron mayores, y su reactividad emocional menor. Sentido de dominio se relacionó con mayor resiliencia y, por su parte, reactividad emocional y sentido de relación con menor resiliencia. Estos resultados sugieren que las intervenciones para incrementar la resiliencia deberían enfocarse en promover estrategias de afrontamiento centradas en el problema, evitando las centradas en la emoción. Además, debería evitarse que las personas confíen exclusivamente en sus recursos externos (sentido de relación) para hacer frente a sus dificultades.

Los resultados derivados de la parte II muestran, en primer lugar, que durante el ingreso de su hijo los padres muestran niveles elevados de estrés, pero también de emociones positivas. Tres y seis meses después del alta de UCIP, los padres mostraron elevados niveles de estrés postraumático, ansiedad, depresión y crecimiento postraumático. En segundo lugar, nuestros resultados mostraron que alrededor del 50% de la varianza en ansiedad, depresión y estrés postraumático puede predecirse principalmente a partir del nivel parental de resiliencia subjetiva –cuyo efecto es indirecto–, y su nivel de estrés percibido durante el ingreso de su hijo

en UCIP. Por otro lado, más del 20% de la varianza en crecimiento postraumático se puede predecir a partir de resiliencia y el grado en que los padres experimentan emociones positivas durante el ingreso. Los padres que manifestaron mayor psicopatología tras el alta, son también los que refirieron mayor crecimiento postraumático, lo que indica que los efectos positivos y negativos de la experiencia traumática tienden a coexistir en la misma persona.

Los resultados derivados de la parte III indican, en primer lugar, que los profesionales muestran niveles elevados de burnout y estrés postraumático, pero también de crecimiento postraumático y satisfacción con la vida. Los profesionales mostraron niveles mayores de patología y crecimiento cuando el fallecimiento de un paciente o conflictos con compañeros habían ocurrido recientemente en la unidad. Las estrategias de afrontamiento centradas en el problema predijeron menor burnout y estrés postraumático, y las centradas en la emoción mayores niveles de estos problemas. Por otro lado, ambos tipos de estrategias de afrontamiento se relacionaron con mayor crecimiento postraumático. Resiliencia no se relacionó directamente ni con patología ni con crecimiento. Al igual que en el caso de los padres, los profesionales con mayor estrés postraumático, también refirieron mayor crecimiento. Los profesionales con menor burnout y estrés postraumático, y con mayor crecimiento postraumático mostraron una mejor satisfacción con su vida.

Las tres partes de la tesis mencionadas arriba se exponen a continuación en trece artículos. En la discusión de los mismos y en la discusión general de la tesis se sugieren futuras líneas de intervención para incrementar la resiliencia y la adaptación a situaciones potencialmente traumáticas, con énfasis en el ámbito de los cuidados intensivos pediátricos. Se espera que esto contribuya a mejorar el estado psicológico de los padres tras esta experiencia, así como de los profesionales que trabajan en estas unidades.

---

## ABSTRACT

---

**Background and objectives:** after facing difficult or potentially traumatic situations some people develop psychological disorders, such as traumatic stress or depression. On the contrary, others are able to quickly return to normal. These people are labelled as “resilient”. In order to know how to help people to face their problems in the best possible way, it is important to know which the determinants of resilience are. For that reason, the aim of the first part of this doctoral dissertation (part I) is to explore in which degree resilience depends on protective personality factors and in which degree on the coping strategies that people use.

Furthermore, as a consequence of the difficulties faced in the past, every individual has a degree of subjective resilience, that is, a perception about his/her own degree of resilience. Such perception can be used as a variable to predict future psychological adaptation in people facing potentially traumatic situations. Thus, the second and the third parts of this dissertation (parts II and III) are aimed at exploring in which degree subjective resilience, along with other psychological variables (such as stress or coping strategies), predicts psychological consequences –positive and negative- derived from having experienced a potentially traumatic situation. These studies have been conducted in parents after their child’s discharge from a Pediatric Intensive Care Unit (PICU), and in PICU professionals because both groups are exposed to difficult situations which can potentially impact their mental health.

**Methods:** to study the determinants of resilience 430 adults (256 general population, 77 adults with HIV or cancer and 97 parents of children with cancer or development problems) completed questionnaires assessing coping strategies, protective and risk personality factors and resilience. As, until now, did not exist adequate measures to assess many of these constructs in adults and in Spanish language, some questionnaires have been adapted and validated (adaptation of the *Brief Resilience Scale* to Spanish, and development of the *Situated*

*Subjective Resilience Scale for Adults*, the *Situated Coping Questionnaire for Adults* and the *Resiliency Scale for Adults*). With the purpose of validating these tools, correlational, regression and confirmatory factor analyses were conducted. Besides, to explore in which degree coping and personality factors predict resilience, correlational, regression and path analyses with latent variables were carried out.

In the second place, to explore the effects of resilience over mental health in parents of critically ill children (part II) a longitudinal study was conducted. A total of 196 parents completed resilience, perception of severity of their child's medical condition, emotions and stress questionnaires when their child was discharged from PICU. As there was no brief scale to explore the parental stress produced by the PICU stimuli, the *Abbreviated Parental Stress Scale for Pediatric Intensive Care Unit* was developed and validated. Three and six months after the child's discharge, parental levels of anxiety, depression, traumatic stress and posttraumatic growth were evaluated. The psychometric properties of the measure used to assess posttraumatic growth (The *Posttraumatic Growth Inventory*) had never been explored among this population, so we conducted an additional study to do it. With the purpose of studying how resilience, perceived severity, emotions and stress predicted parental anxiety, depression, posttraumatic stress and posttraumatic growth, path analyses with latent variables were conducted.

In the studies conducted on PICU professionals (part III) we carried out a multicentric cross-sectional study. A total of 298 physicians, nurses and nursing assistants working in PICU and 189 working in other units completed resilience, coping, burnout, traumatic stress, posttraumatic growth and satisfaction with life questionnaires. Correlational, regression and path analyses with latent variables were conducted to explore how resilience and coping are related to the psychological negative (burnout, traumatic stress) and positive (posttraumatic

growth) outcomes derived from working in a PICU. The same kind of analyses were used to explore how these consequences affect professionals' life satisfaction.

**Results and conclusions:** the studies included in part I show, in the first place, that the assessment tools adapted or developed have adequate psychometric properties. In the second place, the results show that coping and personal protective and risk factors predict more than 60% of the total variance in resilience. Data –correlational in nature– support the model according to which the relation between coping strategies and resilience is mediated by the personality factors assessed. People who use more the problem-focused coping style and less the emotion-focused coping style showed higher scores in sense of mastery and sense of relatedness, and also lower scores in emotional reactivity. Sense of mastery was related to higher resilience, while emotional reactivity and sense of relatedness with lower resilience. These results suggest that interventions aimed at fostering resilience should focus on avoiding the emotion-focused coping style and promoting the problem-focused coping style, preventing that people exclusively rely on their social support to face difficulties.

Results from part II showed, in the first place, that during their child's admission to PICU parents showed high rates of stress, but also of positive emotions. Three and six months post-discharge, parents showed high rates of posttraumatic stress, anxiety, depression and posttraumatic growth. In the second place, our results showed that around 50% of the variance in anxiety, depression and posttraumatic stress can be predicted mainly from the parental level of subjective resilience –whose effect is indirect– and the extent to which they experience stress during their child's critical hospitalization. On the other hand, more than 20% of the variance in posttraumatic growth could be predicted from resilience and the degree in which parents experience positive emotions during their child's admission. Parents who showed higher psychopathology were also those who referred higher growth, which shows that the positive and negative effects of the traumatic experience tend to coexist in the same person.

Results from part III showed, in the first place, that professionals report high levels of burnout and traumatic stress, but also of posttraumatic growth and satisfaction with life. Professionals showed higher distress and growth when the death of a patient or conflicts with work colleagues had occurred recently in the unit where they work. The problem-focused coping style predicted lower burnout and posttraumatic stress levels, while the emotion-focused coping style predicted higher levels of these negative outcomes. Additionally, both types of coping styles were related with higher posttraumatic growth. Resilience was not directly related neither with distress nor growth. As occurred in the case of parents, professionals with higher posttraumatic stress levels showed higher growth. Professionals with lower burnout and posttraumatic growth showed better satisfaction with life.

The above mentioned three parts of this doctoral dissertation will be next exposed in thirteen articles. Future lines of intervention to increase resilience and adaptation to potentially traumatic situations will be proposed in the discussion of such articles and in the general discussion of the thesis, with an emphasis in the field of pediatric intensive care. We expect that this will contribute to improve mental health in parents of children after this experience, and in professionals working in pediatric intensive care.

---

# **1. GENERAL INTRODUCTION**

---

## 1.1. WHY THIS THESIS? GENERAL PURPOSE.

During the normal course of their lives, most adults face one or more potentially traumatic events (e.g., life-threatening illness, violent events, or the illness or death of a loved one). Following such events, many people feel anxious, confused, or depressed; and they may not eat or sleep properly. Some people have such strong and enduring reactions that they are unable to function normally long time afterward. These dramatic reactions are so damaging for the individual's health that it should come as no surprise that they have dominated the trauma literature. Some people, however, will show the opposite reaction: the maintenance of a relative stable trajectory of healthy functioning following exposure to a potentially traumatic event (Bonanno, 2005). The reactions of these individuals are labelled as "resilient".

Given the fact that some individuals are able to recover while others suffer from an important impairment in their mental health, a relevant question arises: *why are some people able to bounce back (and, thus, show resilience) while others are not?* Answering this question is important because it will provide clues about how to help people act in a more resilient way, preventing and treating the dramatic consequences that might derive from the exposure to an adverse event. The first section of this dissertation (part I) will try to answer that question by exploring in which degree the tendency to show a more or less resilient response depends on what the individual does to face adversities (coping strategies), or on which are his/her protective and risk personality characteristics (resiliency factors). Thus, exploring how these coping strategies and resiliency factors determine resilience constitutes the first objective of this dissertation. That will help us clarify what mechanisms are behind resilience, which will have relevant implications for intervention.

Furthermore, it is known that a high level of subjective resilience –the individual's perception of his/her own capacity to successfully cope with adversity– is a protective factor in front of several potentially traumatic situations. Not many situations are more difficult than



having a child critically ill and fighting to survive; however, the effect of resilience in subsequent parental mental health after having had a child hospitalized in intensive care has never been explored before. Thus, the aim of the second part of this dissertation (part II) is to explore in which degree the level of subjective resilience of parents at child's discharge from pediatric intensive care –along with other factors– can predict their post-discharge psychological adaptation in terms of negative outcomes (i.e. anxiety, depression and posttraumatic stress) and positive ones (i.e. posttraumatic growth). Furthermore, to better understand the whole parental response to the potentially traumatic situation of a child's critical illness, we are interested in exploring how positive and negative post-trauma outcomes relate to each other.

Finally, in the context of pediatric intensive care, not only the parents face potentially traumatic situations. The personnel who work in these units (physicians, nurses, etc.) are constantly exposed to a very difficult environment, which could be potentially traumatizing for them. Thus, the objective of the third part of this dissertation (part III) is to explore in which degree resilience, along with coping strategies, contribute to predicting mental health outcomes (i.e. burnout, traumatic stress and posttraumatic growth) in pediatric intensive care personnel. Besides, we will explore how positive and negative post-trauma outcomes relate to each other in this context, and how they contribute to predicting professionals' satisfaction with life.

## **1.2 RESILIENCE: DEFINITION, MEASUREMENT, DETERMINANTS AND EFFECTS.**

### **1.2.1. Definition of resilience**

The construct of resilience has received growing attention over the past decades. Since its introduction in the scientific literature during the second half of the twentieth century, it has been increasingly considered of remarkable importance, which has led to a significant body of literature (Luthar, 2006). Even though research on resilience is proliferating, the complexities of defining what appears to be a relatively simple concept have been widely recognized (Luthar, Cicchetti & Becker, 2000; Masten, 2007). As a consequence, the term resilience has remained conceptually fuzzy and with little consistency (Luthar, Cichetti & Becker, 2000; Ungar & Liebenberg, 2009). Thus, one of the first challenges that researchers have to face when conducting research on resilience is to adopt and make explicit a definition of resilience which will guide the whole research process. This step is skipped in some studies, which has led to misunderstanding. With the purpose of avoiding such confusion, we are going to start by presenting the definition of resilience that we have adopted along this dissertation, as well as the similarities and differences of this perspective with the other two most-widely used resilience approaches.

Based on some authors' perspective (Smith et al., 2008), in our work we are adopting the original and most basic meaning of the word *resilience*. Etymologically, the root for the English word "resilience" is the word "resile" which means "to bounce or spring back" (from re- "back" and salire- "to jump, leap"; Agnes, 2005). Thus, resilience is defined as the ability to bounce back or recover from stress. However, what is exactly "*bouncing back*" from a difficult situation? Trying to answer that question, Bonanno (2005) proposed a model describing the prototypical trajectories of disruption in normal functioning during the 2-year

period following a potential trauma. He established a difference between a *recovery path*, characterized by a disrupt in normal functioning after the adverse event and that decline only gradually over the course of many months before returning to pre-trauma levels, and a *resilient path* characterized by relatively mild and short-lived disruptions and a stable trajectory of healthy functioning across time.

This definition of resilience as positive adaptation despite experiences of significant adversity (that is, despite life situations that usually produce maladjustment) implies that two elements need to be present for resilience to occur. The first is a significant risk or adversity, and the second a positive adaptation or quick recovery in front of such adversity (Luthar, 2006). Risk is defined in terms of statistical probabilities: a high risk condition is one that carries high odds for showing maladjustment in critical domains (Masten, 2001).

A different perspective on resilience understands it as the characteristics of the individual that favor facing a traumatic situation without suffering an impairment in mental health. From this perspective, resilience is equivalent to some personal protective characteristics such as optimism, or cognitive flexibility (Connor & Davidson, 2003). From our perspective, these protective factors predispose individuals to a resilient recovery, but do not constitute resilience itself. This set of personality traits susceptible of benefiting resilience have been termed as “resiliency” (Masten, 1994; Prince-Embury, 2007) or “ego-resiliency” (Luthar, 2006) to establish a difference with resilience. However, some authors still use the term resilience to refer to them, or affirm that they are assessing resilience, when what they are really assessing is resiliency (Connor & Davidson, 2003; Friborg, Hjemdal, Rosenvinge & Martinussen; 2003).

From an ecological perspective (Ungar, 2008), resilience has been defined as follows: “In the context of exposure to significant adversity, whether psychological, environmental, or both, resilience is both the capacity of the individuals to navigate their way to health-sustaining

resources, including opportunities to experience feelings of wellbeing, and a condition of the individual's family, community and culture to provide these health resources in culturally meaningful ways" (p. 225). In our view, this is a very comprehensive perspective, as includes risk, adaptation and context in the conceptualization of resilience. However, from our point of view only the first part of the definition ("In the context of exposure to significant adversity (...) resilience is the capacity of the individuals to navigate their way to health-sustaining resources") refers to resilience. The second part ("a condition of the individual's family, community and culture to provide these health resources in culturally meaningful ways") refers to the conditions of the context that might influence adaptation, but would not be resilience itself. Of course, we agree that someone who faces an adversity in a supportive context which provides him/her with the resources that he/she needs in culturally meaningful ways will probably show a better pattern of adaptation than someone who faces an equivalent adversity with less external support. Agreeing on that, we believe that considering both the individual's capacities and the context as "resilience" can lead to confusion. Thus, not forgetting the importance of including the context as a factor influencing resilience, we consider that defining resilience as the individual's ability to bounce back is a clearer and more operative conceptualization for the purposes of our studies.

### **1.2.2. Resilience and related terms: Competence, ego-resiliency, hardiness**

In the literature there have also been questions about whether resilience is truly a unique scientific construct or redundant with others. Luthar (2006), relying on theoretical criteria, tried to clarify the similarities and differences between resilience and some related constructs, such as competence, ego-resiliency, and hardiness.

Competence is defined as a track record of effective performance in relevant tasks for the society where the individual lives. Thus, although both terms have in common that they refer to "doing okay", resilience implies that the effective performance is produced in front of

an adverse condition, whereas competence do not require the presence of a significant risk or adversity to occur. Ego resiliency is a personality trait reflecting general resourcefulness of the individual, but it doesn't suppose risk conditions. However, as it has been previously stated, many authors consider that they are studying resilience, when they are studying resiliency (e.g., Connor & Davidson, 2003). As for hardiness, it shares some attributes with resilience, as it presupposes risk too. However, according to Kobasa, Maddi, and Kahn (1982), hardiness is a general trait including three personality dispositions: commitment (feeling connected, having a purpose, being active, etc.), feelings of control about what happens in one's environment, and challenge (welcoming change), while resilience is not a trait, but a process.

### **1.2.3. Problems in the measurement of resilience.**

As there is so much diversity of opinions regarding what resilience is, and each measure is based on a previous conceptualization of resilience, some measures which claim to be assessing "resilience" are really measuring different aspects. Thus, before selecting or developing a resilience measure for research purposes, it is crucial to be fully informed about what the idea of resilience behind each scale is.

Two works have reviewed the existing resilience measures. The first is a systematic examination of conceptual and methodological problems on measuring resilience carried out in the context of the project "Reaching In... Reaching out" (2010), which examined a total of 38 assessment instruments intended to measure resilience and related characteristics (e.g., hardiness, protective/risk factors). The second is a methodological and conceptual review of the quality of 19 resilience questionnaires carried out by Windle, Bennet and Noyes (2011). The criteria used included content validity, internal consistency, criterion validity, construct validity, reproducibility, responsiveness to intervention, control of floor and ceiling effects, and interpretability. Many of the scales were included in the "Reaching in... Reaching out" project. According to these two works and a subsequent literature review, the current available

questionnaires and scales which claim to be assessing resilience are included in Table 1.1. Many of them were developed for children or adolescents. The questionnaires developed for adults are marked with an asterisk (\*).

Table 1.1.

*Main instruments for assessing resilience.*

Scale	Authors
Adolescent Resilience Questionnaire	Gartland et al. (2006)
Adolescent Resilience Scale	Oshio, Kaneko, Nagamine & Nakaya (2003)
Youth Resiliency: Assessing Developmental Strengths questionnaire	Donnon & Hammond (2007)
Brief Resilience Coping Scale*	Sinclair & Wallston (2004)
Brief Resilience Scale*	Smith et al. (2008)
Child & Youth Resilience Measure	Ungar & Leibenberg (2009)
Child and Youth Resilience Measure- 12 items	Liebenberg, Ungar & LeBlanc (2013)
Connor-Davidson Resilience Scale*	Connor & Davidson (2003)
Connor-Davidson Resilience Scale- 10 items*	Campbell-Sills & Stein (2007).
Connor-Davidson Resilience Scale- 2 items*	Vaishnavi,, Connor & Davidson (2007)
Devereux Student Strengths Assessment	LeBuffe, Naglieri & Shapiro (2009)
Ego Resilience 89 Scale*	Block & Kremen (1996)
Resilience Scale for Adolescents (READ)	Bromley, Johnson & Cohen (2006)
Ego Resilience*	Klohn (1996)
Psychological Resilience*	Windle, Markland & Woods (2008)
Resilience and Youth Development Module	Constantine & Benard (2001)
Resilience Scale*	Wagnild & Young (1993)
Resilience Scale 14-items	Wagnild (2009)
Resilience Scale 11-items	Schumacher, Leppert, Gunzelmann, Strauss, & Brahler (2005)
Resilience Scale 5-items	von Eisenhart Rothe et al. (2015)
Resilience Scale for Adolescents	Hjemdal, Friborg, Stiles, Martinussen & Rosenvinge (2006)
Resilience Scale for Adults*	Friborg et al. (2003)
Resilience Attitudes and Skills Profile	Hurtes & Allen (2001)
Resilience Scale *	Jew, Green & Kroger (1999)
The Resilience Scale of the Student Survey	Sun & Stewart (2007)
Resilience Scales for Children & Adolescents	Prince-Embury (2007)
The Dispositional Resilience Scale*	Bartone (2007)
The Baruth Protective Factors*	Baruth & Carroll (2002)
Subjective resilience for students	Alonso-Tapia, Nieto & Ruiz (2013)
Coping Competence Questionnaire*	Schroder & Ollis, (2013)
Stress Resilience Questionnaire*	Tamm et al. (2015).

The two abovementioned reviews agreed that most of the available measures, even those included under the heading “resilience”, are centered on factors favoring resilience, but do not measure the phenomenon or ability to bounce back. So, for example, the well-known measures Connor Davidson Resilience Scale (Connor & Davidson, 2003), Resilience Scale (Wagnild & Young, 1993) and Resilience Scale for Adults (Friborg et al., 2003) are designed to assess personal significant determinants of a healthy adjustment such as optimism or self-efficacy (which we have previously defined as “resiliency” or “ego-resiliency”). However they both are recognized and named as “resilience” measures.

Furthermore, the results by Windle et al (2011) showed that most scales were questionable on the basis of the criteria used, and that the Brief Resilience Scale (BRS), developed by Smith et al. (2008), was the only measure whose aim was assessing individuals’ perceived ability to recover from stressful circumstances. Furthermore, this was the only scale including the two elements which are necessary for resilience to occur: a significant adversity and the capacity of bouncing back from adversity (example of item: ‘I tend to bounce back quickly after hard times’).

While some measures such as the Connor-Davidson Resilience Scale or the Brief Resilience Coping Scale have been adapted to Spanish language (Notario-Pacheco et al., 2011; Limonero et al., 2014), some others are not available to be used in Spanish population. As all the studies of this dissertation have been conducted on Spanish samples, it was necessary to have a measure of resilience as the ability to bounce back in Spanish, which did not previously exist. As the Brief Resilience Scale was the only adult resilience measure whose definition of resilience matches with ours, it was necessary to adapt this measure to Spanish and to study its psychometric properties as a previous step to conduct our studies.

#### **1.2.4. Determinants of resilience.**

Having stated what resilience is and how it can be measured, it is important to point out that resilience can be impacted by many different factors. Some of them are contextual (such as the severity of the traumatic situation, or the available social support), and some others are individual characteristics of the person (such as personality traits). In the next section we will describe the most important factors that can affect an individual's ability to recover from adversity as suggested by the literature ("Reaching In... Reaching out", 2010).

##### ***1.2.4.1. Contextual determinants/predictors of resilience***

The degree of resilience manifested by a person may change depending on the threat that such person is facing. According to Luthar (2006), an individual may be resilient when facing a particular adversity (e.g., an illness) but not a different one (e.g., sexual abuse). This being so, which are the elements of the threat that may impact the resilient response to it?

- *Temporal dimension:* Threats can be acute or episodic, that is, difficult events can occur over a very short time (e.g., a terrorist attack), or they can endure (e.g., growing up in poverty). Also, there may be threats that are repeated over the course of time (e.g., different hospitalizations in a person with an illness). The issue of the quantity and quality of threat in a person's life may be quite difficult to capture accurately. Thus, aspects such as for how long or how many times has an individual been exposed to the threat can impact the individual's resilience.
- *The source of threat.* There are threats that originate from the 'outside' (e.g., natural disasters or abuse) and threats that are internally generated (e.g., risky behaviors resulting from decisions made by a person). The case of suffering from an illness is different because it is not originated from the outside, but is not necessarily a



consequence of decisions made by a person. In any case, this aspect is susceptible to impact the individual's resilience ("Reaching In... Reaching out", 2010).

- *The degree of exposure to the traumatic event.* The relation between the degree of exposure and resilience is complex (Bonanno, Brewin, Kaniasty & La Greca, 2010; Bonanno, Westphal & Mancini, 2011). The inoculation model proposes a protective effect of experiencing stressful situations with regard to future adaptation in adverse events, whereas the sensitization model postulates a vulnerability effect (Masten & Narayan, 2012). Also, the possibility of nonlinear models has been suggested, with moderate degrees of challenge associated to better outcomes (Seery, Holman & Silver, 2010).
- *The severity of the traumatic situation.* The severity of the situation can affect resilience. However, current research agrees that what has a stronger impact on mental health is not the objective severity of the stressor, but the perception of the individual of such severity (e.g., Balluffi et al., 2004). This approach is consistent with Lazarus and Folkman's (1984) transactional stress model, which conceptualizes psychological stress as the result of a transaction between the environment (e.g., the illness) and the person's perception of the environment. Thus, when we talk about a high-risk situation, we term it 'potentially traumatic' to reflect the subjective nature of trauma experiences.
- *Support provided by the environment.* As we mentioned when we presented the ecological perspective of resilience, when people who face significant threats have external resources to help them (e.g., a supportive family, a healthy and supportive work environment), we may expect a better adaptation than when people have to face the situation with less support (Bonanno, Galea, Bucciarelli & Vlahov, 2007). However, to be useful, these external resources must be accessible, culturally meaningful and relevant for the individual (Ungar, 2008).

It is important to make it clear at this point, before moving forward, that although an individual's response to adversity can be influenced by the nature and characteristics of the threat that he/she is facing, resilience is not only context-dependent. According to a study conducted by Alonso-Tapia et al. (2013) resilience does change across different contexts of adversity, but also tends to generalize across situations, so a person may tend to show a certain level of resilience no matter the context. This might happen because resilience also depends on personal determinants, which will be described in the next section.

#### ***1.2.4.2. Personal determinants/predictors of resilience***

Some of the most important personal determinants of resilience are coping strategies and protective personality factors. There are some demographic variables that might be associated to resilience as well. We will also mention some other personal factors susceptible of affecting an individual's degree of resilience.

##### ***a) Coping strategies/ styles***

Coping is defined as the process by which an individual manages the demands and emotions generated by which is appraised to be stressful (Lazarus, 1999). Most researchers and practitioners agree that coping is not a trait, as it implies "a constant change of cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Nevertheless, this fact does not imply a lack of generalization of coping strategies across time and situations, as an individual can use different coping strategies to face different situations (Schwarzer & Schwarzer, 1996; Steed, 1998).

The different coping styles used by the individual to face stressful circumstances materialize in specific behaviors (Kato, 2015), which can become traits. Some of these behaviors are more effective to face certain kinds of problems than others. Thus, the utilization

of more adaptive coping strategies to face stressful situations will result in a higher level of resilience (Leipold & Greeve, 2009).

Many typologies of coping have been adopted. In fact, Skinner, Edge, Altman and Sherwood (2003) collected more than 400 category labels for coping responses. To organize the variety of coping responses, researchers have developed hierarchical models with higher order categories (Schwarzer & Schwarzer, 1996; Carver & Connor-Smith, 2010). A well-known distinction, put forward by Lazarus and Folkman (1984), is between problem-focused and emotion-focused coping. This distinction, which will be explained next, is the one that we are going to use along this dissertation.

*Problem-solving focused coping style* takes place when a person actively tries to solve his/her problem, and to learn from it. We expect that the utilization of this coping style will be related to better outcomes (Alok et al., 2014), and thus to higher resilience, as people who try to actively find a solution and to learn from difficulties might be likely to find the best possible solution and to face problems as challenges from which is possible to learn. Regarding the *emotion focused coping style*, it takes place when, instead of trying to solve the problem, the person tries to avoid or minimize the negative emotions generated by the adverse situation or to focus on the negative experiences generated by it. Such strategy tend to be associated to poorer outcomes (Herman & Tetrick, 2009), and, thus, it is expected to be related to lower resilience. However, these hypotheses should be tested.

There is also a possibility that the effectiveness of certain coping styles depends on the situation or the difficulty that the person is facing. For example, the utilization of a problem-focused coping style may be useful when there is a solution for the problem, or when there is something that the person can do to improve it, but it might lead to frustration and learned helplessness when the individual keeps on trying solving something that cannot be solved or improved. Thus, it is possible that the tendency more related to resilience is the usage of

different coping strategies in a flexible manner, depending on the adverse situation that the person is facing. Nevertheless, to do so it would be necessary to develop an assessment tool to evaluate coping strategies in adults taking into account its situational dimension.

***b) Protective personality factors (resiliency)***

As well as coping strategies, protective personality factors can significantly contribute to predicting an individual's level of resilience. In fact, as it has been previously stated, resilience has been frequently confused with such protective factors, which have also been named resiliency or ego-resiliency. But *which specific personal characteristics may favor resilience?* The main line of work in that sense is represented by Prince-Embury (2007) and the recently published set of works related to her own studies (Prince-Embury & Saklofske, 2013, 2014), most of which were developed with children and adolescents. She defends that personal resiliency may be conceptualized by three constructs and the relationship among them (Prince-Embury, 2007): *Sense of Mastery*, *Sense of Relatedness* and *Emotional Reactivity*. The first two have found to be positively related to resilience, acting as protective factors, while the third have found to be inversely related to resilience, acting as a personal risk factor (Prince-Embury & Courville, 2008).

*Sense of Mastery* is defined as a sense of competence, mastery or efficacy that is driven by an innate curiosity, and is intrinsically rewarding and the source of problem-solving skills. The specific aspects of sense of mastery are the following:

- *Optimism*: it has been defined as a positive attitude about the world or life in general and about an individual's life specifically, currently and in the future (Prince-Embury & Courville, 2008).
- *Self-efficacy*: it is the sense that one can master one's environment. It can be conceptualized as an internal expectancy about the impact of behavior in specific domains (Bandura, 1997).

- *Adaptability*: it is defined as the ability to be personally receptive to feedback, to learn from one's own mistakes, and to ask others for assistance (Prince-Embury & Courville, 2008).

*Sense of Relatedness* refers to the way in which the individual relates to others in the face of adversity, and comprehends the following characteristics:

- *Trust*: it is defined as the ability to receive and accept what is given by other people, or the confidence one has in other people. It is based on attachment experiences to parents, adults and peers that sustain socioemotional development and social integration (Wallin, 2007).
- *Perceived access to support*: this characteristic refers to the perception of having access to social support if needed. According to Prince-Embury & Courville (2008), its influence on resilience is at least as significant as the "real" availability of the support and that receptivity to support.
- *Comfort*: it refers to the degree in which the individual feels comfortable when interacting with others. It is a facet of the personality trait "extraversion-introversion", which has been found related to resilience (e.g., Friborg, Barlaug, Martinussen, Rosenvinge & Hjemdal, 2005).
- *Tolerance*: tolerance of differences refers to the ability to have one's own thoughts and express them even though they may differ from the thoughts of others. It has also been conceptualized as assertiveness, which is positively related to effective social problem solving (Seyedfatemi, Moshirabadi, Borimnejad, & Haghani, 2014).

The third of the resiliency factors proposed by Prince-Embury, *Emotional Reactivity*, is defined as the individual's ability to modulate and regulate his/her emotional reactions. Strong emotional reactivity and its subsequent difficulty with self-regulation have been associated

with behavioral difficulty and vulnerability to pathology (Prince-Embury & Courville, 2008).

According with these authors, emotional reactivity includes the following characteristics:

- *Sensitivity*: it refers to the speed and intensity of the person's negative emotional response.
- *Recovery*: this term defines how soon and how well an individual returns to normal functioning after a strong emotional reaction. Although Prince-Embury considers recovery a personal characteristic enhancing resilience, we believe that this term refers to resilience itself, understood as the ability to bounce back from adversities.
- *Impairment*: this term refers to the decrease in the individual's ability to function normally as a result of the emotional arousal. A person with low impairment is able to function well even if is experiencing intense negative emotions, while someone with high emotional impairment is not.

There is plenty of evidence that the factors labeled as protective by Prince-Embury are related to higher resilience degrees. However, a study by Villasana and Alonso-Tapia (2016) found that sense of relatedness is unrelated to resilience. Thus, it might be that the way in which the individual relates to others in the face of adversity does not warrant a resilient response, as other factors may need to be present.

A remarkable aspect that should be considered is that Prince-Embury's model of protective and risk resiliency factors has been developed in the context of children and adolescents. We may expect that it will be adequate to assess adult's protective and risk factors as well. Nevertheless, this has to be tested, and to do so it would be necessary to develop an assessment tool to evaluate the aforementioned resiliency factors in adults.

### *c) Demographic variables*

Apart from coping strategies and personality factors, there are some demographic characteristics that might be related to resilience. Female gender has been found to be associated with a reduced likelihood of resilience (Smith et al., 2008; Bonanno et al., 2007). Belonging to an ethnic minority has been found to be associated to lower resilience; however, when the effect of socioeconomic factors has been controlled, this effect has disappeared (Bonanno et al., 2007). When age effects have been reported, the most adverse reactions have been observed in younger people (Brewin, Andrews & Valentine, 2000; Bonanno et al., 2007; Smith, Tooley, Christopher & Kay, 2010). Higher educational level has also been found to be related to lower resilience after the effects of other variables have been controlled for (Bonanno et al., 2007). Other studies, nevertheless, have found that higher education predicts the highest degree of resilience (Frankenberg, Sikoki, Sumantri, Suriastini & Thomas, 2013), which suggests a lack of clarity on this matter.

### *d) Other factors*

The factors that we have described so far are not the only ones that can have an impact on resilience. Other variables, such as biological factors (Haglund, Nestadt, Cooper, Southwick, & Charney, 2007) or intelligence (Friborg et al., 2005) have been explored in the literature. However, as the study of the influence of such factors in resilience is far from the objectives of this dissertation, we will not go deeper onto this topic.

Up to this point we have described the potential determinants of resilience which will be taken into account along this work. In the next section we will describe the potential consequences of having a higher or lower level of subjective resilience.

### **1.2.5. The effects of subjective resilience**

Difficult experiences faced in the past allow people to have a perception of their own degree of resilience. This subjective resilience can be assessed with measures such as the Brief Resilience Scale (e.g., ‘I tend to bounce back quickly after hard times’). Such degree of subjective resilience may have an important predictive power, as it can be used as a factor to estimate how people will cope with present or future adversities.

Thus, we might expect that people whose subjective resilience is higher will bounce back better from adversities than people who perceive themselves as less resilient. Consequently, after a significant adversity, they will show lower negative psychological outcomes (psychopathology) than people with lower subjective resilience. However, the consequences of the perceived own’s resilience can be not only in terms of no mental health impairment after an adversity, but also in terms of development of positive post-trauma outcomes (Reaching In... Reaching out, 2010). Thus, people with higher subjective resilience might also show positive outcomes after a traumatic experience. In the next section we will describe the most relevant positive and negative post-trauma outcomes that have been explored in the literature.

#### ***1.2.5.1. Negative post-trauma outcomes: psychopathology***

After experiencing potentially traumatic events, the most explored outcome has been, by far posttraumatic stress disorder (PTSD). Consequently, it is the psychiatric diagnosis that has more often been related to resilience, to the extent that the merely absence of PTSD after an adverse event has frequently been defined as resilience (e.g., Levine, Laufer, Stein, Hamama-Raz and Solomon, 2009).

PTSD occurs as a consequence of an exposure to an event which is a threat to an individual’s life, or to the life of a close family member or friend. Furthermore, it may result



from specific circumstances under which the individuals are repeatedly exposed to intense aversive situations (Jorge, 2015), such as professionals working in touch with people who have suffered traumatic events (e.g., rescue workers, emergency personnel). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V; American Psychiatric Association, 2013), a PTSD diagnosis requires symptoms of at least one month's duration that have a significant impact on social and occupational functioning and that are not the result of either another medical condition or the effect of substances. The DSM-V identifies four symptom clusters that characterize PTSD:

- *Intrusive symptoms*: including distressing memories of the traumatic event, nightmares, and dissociative experiences in which the subject re-experience the event. This cluster includes the presence of intense physiological responses to trauma-related reminders.
- *Avoidance*: this symptom includes active avoidance of distressing memories about the traumatic event and of environmental cues that may lead the individual to remember the event. At least one form of avoidant behavior must be present in order to substantiate a PTSD diagnosis.
- *Disturbed emotional states*: including negative cognitions, beliefs about the self and the world, a sense of detachment in interpersonal relationships, and the inability to experience positive emotions and to get gratification from doing pleasurable activities. At least two of these symptoms need to be present to substantiate a PTSD diagnosis. In the DSM-IV, these symptoms were part of the avoidance cluster (American Psychiatric Association, 2011), but in the DSM-5, they constitute a distinct domain.
- *Alterations of arousal and reactivity*: includes physiological responses such as an exaggerated startle response, irritability, angry outbursts, aggressive behavior directed at the self or others, hypervigilance, and sleep problems.

Although PTSD has been the outcome most frequently (negatively) associated to resilience in the literature, high levels of resilience have found to be associated to lower prevalence of other psychiatric diagnosis, such as depression (Fredrickson, Tugade, Waugh & Larkin, 2003), anxiety disorders different from PTSD (Maestas, Sherer, Sander, Tulskey & Nick, 2014), or burnout in professionals working in very stressful environments, such as intensive care (Colville et al., 2014).

#### ***1.2.5.2. The possibility of positive post-trauma outcomes: posttraumatic growth***

As opposed to the traditional exploration of negative post-trauma outcomes, there is currently a growing body of literature exploring the possibility of a different outcome: posttraumatic growth (PTG), which is defined as a positive psychological change that occurs as the result of one's struggle with a potentially traumatic event (Tedeschi & Calhoun, 1995). The occurrence of PTG has been documented after different traumatic situations, such as war (Lee, Luxton, Reger & Gahm, 2010), the death of a child (Polatinsky & Esprey, 2000), and health-related conditions, like cancer (e.g., Costa-Requena & Gil Moncayo, 2007; Ho, Chan & Ho, 2004) or cardiovascular disease (Sheikh and Marotta, 2005). This phenomenon has been also explored in children with severe illnesses and their parents (Picoraro, Womer, Kazak & Feudtner, 2014).

Resilience and PTG have been frequently considered the same phenomenon in the literature, and sometimes PTG has been deemed superior to resilience (Westphal & Bonanno, 2007). In contrast, we consider that PTG and resilience refer to different phenomena, and one is not necessarily superior to the other one. While resilience refers to the ability to quickly recover from the difficult situation, PTG implies that the person experiences a positive change in a significant area of his/her life (e.g., social relationship, spirituality) as a consequence of the adverse situation. We think that it is possible that someone shows resilience, but not PTG and vice versa.

Although we consider that PTG and resilience are different phenomena, according to some authors they are positively associated, as both are reflecting salutogenic outcomes (Tedeschi, 2011 Frazier, Tashiro, Berman, Steger & Long, 2004; Ullrich & Lutgendorf, 2002). However resilient people are less likely to perceive difficult events as traumatic, which is a necessary condition for the development of PTG (Janoff-Bulman, 2004). Consequently, there is a possibility that the relation between resilience and PTG might be negative. This idea is supported by Levine et al. (2009), who examined the relation between resilience (understood as the absence of psychopathology) and PTG and found that people with the best adaptation showed the lowest PTG scores. Other authors have defended that resilience and PTG are inversely related because PTG is not a real phenomenon, but a positive illusion of “wishful thinking” (Sumalla, Ochoa, & Blanco, 2009). This illusion for positive outcomes to adversity might be stronger among those more vulnerable individuals who lack resilience, as they might try to solve the disequilibrium produced by the traumatic situation by showing unrealistic optimism. Because resilient individuals retain their equilibrium, they need not resort to unrealistic optimism.

In any case, the relation between subjective resilience assessed as the perceived own ability to bounce back and PTG has not been previously addressed. This is an important aspect to study, as it would help us to better understand the nature of these concepts/constructs.

#### ***Assessment of posttraumatic growth: dimensionality of the construct***

Although seven measures assessing PTG have been published (Linley, Andrews & Joseph, 2007), the most widely-used instrument is, by far, the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The PTGI was originally developed to account for three dimensions (changes in self, changes in interpersonal relationships and changes in philosophy of life), but an initial principal component analysis showed five factors: New Possibilities, Relating to Others, Personal Strength, Spiritual Change and Appreciation for Life.

Subsequent studies aimed at exploring the PTGI factor structure in different samples have yielded inconsistent results. While some were able to replicate the 5-factor structure (e.g., Palmer, Graca & Occhieti, 2014; Teixeira & Pereira, 2013), many authors failed to replicate this structure. Thus, some studies have found a mono-factorial solution (e.g., Costa- Requena & Gil Moncayo, 2007; Joseph, Linley & Harris, 2005), others a three-factor solution, consistently with the original theorization of the construct (e.g., Anderson & Lopez-Baez, 2008; Weiss & Berger, 2006) and, finally, others found a four-factor solution (e.g., Ho, Chan & Ho, 2004; Taku et al, 2007). Consequently, when the PTGI is used to explore the degree of PTG in a new population, it should not be assumed that the 5-factor structure will work. Thus, a recommendable step in order to use the PTGI in a population in which it has never been used before is to explore how this measure works in that population.

So far, we have described potential consequences of resilience in the mid-long term. However, resilience can also have consequences in the short-term, which are likely to affect the long term consequences above described. That is, resilient individuals can have different immediate post-trauma reactions, which can impact their subsequent mental health. This being so, these variables would mediate the relation between resilience and mental health outcomes. They are considered in the following section.

#### **1.2.6. Variables which could mediate the relation between subjective resilience and positive adaptation**

As we have just described, people who score higher in subjective resilience are likely to show a better path of adaptation in the mid and long term. However, there is a possibility that the relationship between the initial level of resilience reported by an individual at the time of or soon after an adverse event and the subsequent adaptation may be mediated by some variables. We introduce here two different but related variables which might mediate that

relation, namely perceived stress and positive emotions experienced during a traumatic situation.

#### ***1.2.6.1. Perceived stress***

By definition, people who show resilience in front of a difficulty face such situation with lower stress (Bonanno et al., 2011). This might happen because people who tend to bounce back better from adversities are less likely to perceive the event as traumatic or stressful. Thus, people who perceive themselves as more resilient, may be likely to perceive present or future adversities as less stressful.

The level of stress that a person perceives during a traumatic event is related to the intensity of subsequent posttraumatic stress symptoms (Balluffi et al., 2004). Thus, it is possible that the absence of long-term negative outcomes after traumatic events reported by individuals who perceive themselves as more resilient is influenced by their lower rates of perceived stress while they are facing the event. If that would be the case, perceived stress would act as a mediator between the subjective resilience of the individual, and his/her post-trauma outcomes.

#### ***1.2.6.2. Emotions***

A second variable which might mediate the relation between subjective resilience and subsequent positive adaptation is the degree in which the person experience positive and negative emotions at the time of the adverse event. Positive emotions provide a number of adaptive benefits in everyday life (Fredrickson, 2001). However, its positive effect appears to be especially prominent in the context of aversive situations (Bonanno et al., 2011). In an experimental study conducted in New York just after the 9/11 terrorist attacks, Papa & Bonanno (2008) exposed college students to either a sadness-induction or an amusement-induction task (a film) and then asked them to talk about their life since the attacks. The expression of genuine smiles during their speech predicted better psychological adjustment two

years later, but only for the students who were first inducted to feel sad. This implies that the students who, despite feeling sad, expressed positive emotions (and presumably that is their usual pattern in their lives) had better psychological outcomes. Also, it has been found that bereaved individuals who exhibited genuine laughs and smiles while talking about their recent loss had better adjustment over the next several years than those who did not show these expressions (Bonanno & Keltner 1997). So, according to these studies it seems that positive emotions are related to a better recovery in the aftermath of potentially traumatic events.

It is likely that individuals whose subjective resilience is higher experience more positive emotions during and after an adverse experience, so positive emotions can mediate the relation between subjective resilience and subsequent adaptation, in terms of lower psychopathology and higher PTG. This idea is supported by the prospective study conducted on college students by Fredrickson et al. (2003), which showed that experiencing positive emotions (e.g., love interest, gratitude) in the aftermath of a traumatic experience (the 9/11 terrorist attacks), fully mediated the relation between pre-event *ego resilience*, and post-event depression and perceived growth. Also, a study showed that positive emotions mediated the relation between resilience and pain-catastrophizing in patients with chronic pain (Ong, Zautra & Reid, 2010), supporting the idea of the mediating role of positive emotions between subjective resilience and positive adaptation.

Summarizing, in the context of the ideas described until now, this dissertation aims to study, on the one hand, whether coping and resiliency factors influence resilience and how (that is, the determinants of resilience) and, on the other hand, which are the consequences of subjective resilience in terms of positive and negative post-trauma outcomes, and the role of variables that can mediate these effects. However, resilience needs to be studied in the context of an adverse or potentially traumatic situation. This dissertation will be focused in exploring the effects of resilience towards health related problems, as the following section will show.

### **1.3. RESILIENCE TOWARDS HEALTH-RELATED PROBLEMS**

Suffering from a severe or chronic illness or having a loved one suffering from an illness is one of the potentially traumatic experiences in front of which resilience is susceptible of being studied (Reaching In... Reaching out, 2010).

The protective effect of subjective resilience in people who suffer from different illnesses has been explored in multiple studies in the last 20 years. As two systematic literature reviews have shown, studies exploring the effect of resilience on people suffering from diseases have exponentially grown in the last years, mostly in Anglo-Saxon countries (Stewart & Yuen 2011; Trivedi, Bosworth y Jackson, 2011). To cite some recent studies, the protective effect of perceiving oneself as resilient has been proved in adult individuals suffering from chronic pain (Ong et al., 2010), HIV (Dale et al., 2014), cancer (Eicher, Matzka, Dubey, & White, 2015), traumatic brain injury (Maestas et al., 2014) and chronic kidney disease (Vinaccia, Quiceno & Remor, 2012; Rodríguez-Rey et al., 2015).

While the effect of subjective resilience in individuals suffering from diseases has received increasing attention, its effect in children with illnesses has been generally less studied. By far, the illness in which resilience has been more explored in the context of pediatric illness is cancer (Kim & Yoo, 2010; Howard Sharp et al., 2015), but there are also a few studies exploring resilience in children suffering from other conditions, such as different chronic illnesses (Kern de Castro & Moreno-Jiménez, 2007) and HIV (Betancourt, Meyers-Ohki, Charrow & Hansen, 2013). Research examining children's responses to the challenges posed by cancer reveals that, when compared with population norms, children diagnosed with cancer typically show no greater evidence of emotional maladjustment or psychological dysfunction (Phipps, 2007). Thus, a significant negative life event, such as childhood illness, is neither necessary nor sufficient to predict present or future maladjustment. Although a child in a risky

situation has a higher probability of experiencing psychological problems (Cummings, Davies & Campbell, 2000), he or she may also exhibit a resilient response (Masten, 2001).

Nevertheless, struggling with an illness is not only distressing for the child suffering from it, but also for their close persons (e.g., parents, siblings, etc.). Thus, resilience is susceptible of being explored in family members too, but this aspect has received scarce attention. For this reason, we are going to focus on exploring the effects of subjective resilience in families of children with illnesses, and specifically in mothers and fathers, as will be described in the following section.

### **1.3.1. Resilience in families of children suffering from illnesses**

When a person is diagnosed with a severe illness, the whole family is affected in some way (Long & Marsland, 2011), as this is a stressful experience that can challenge and disrupt the family system and its members (Alderfer and Kazak 2006). This disruption is especially strong if the person diagnosed with an illness is a child. The importance of considering the severely ill child within the context of the family is one of the core assumptions of the Pediatric Medical Traumatic Stress model (Kazak et al. 2006), which considers family members' reactions to pediatric cancer along a continuum of post-traumatic stress symptoms ranging from normative, acute stress reactions to longer-term, impairing reactions.

The possibility of multiple negative consequences of pediatric illness in parental mental health has been explored in a number of publications (e.g., Goldstein & Kenet, 2002; Katz, 2002; Del Rincón, Remor & Arranz, 2007). These studies conclude that parents whose child has a severe illness report high stress, poor sleep quality (Pollock, Litzelman, Wisk, & Witt, 2013; Meltzer & Moore, 2008), depression, anxiety, posttraumatic stress (Lindahl Norberg & Boman, 2008; Muscara et al., 2015) and a decreased quality of life (Salvador, Crespo, Martins, Santos & Canavarro, 2014).



As pediatric illness can affect the whole family, multidisciplinary teams taking care of these children should include attention to the needs of parents, caretakers, and also the siblings, as they are also socially and emotionally impacted by the disease (Alderfer et al., 2010). Furthermore, taking care of the parents' mental health is crucial to prevent mental health issues in the children, as previous studies have shown that parental mental health is related to children's distress and adjustment to the illness (Rees, Gledhill, Garralda & Nadel, 2004; Long & Marsland, 2011). Thus, by preventing and treating parental distress, we might contribute to promote children's mental health. Subjective resilience, as a protective factor for mental health, can have a crucial role in that sense.

In this line, there is a growing body of literature examining not only the risks, but also the strengths and resources in parents of children with diseases. Most of the studies aimed at exploring parental resilience have also been conducted in the context of oncology (e.g., Gudmundsdottir, Schirren, & Boman, 2011; Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014).

A recent systematic review on family resilience after pediatric cancer diagnosis supports the notion that many families are resilient and are able to adapt well to the crisis of cancer diagnosis, but recognizes that a subset of these families still experiences difficulties (Van Schoors, Caes, Verhofstadt, Goubert & Alderfer, 2015). Other studies have found that, although parents of children with cancer are at risk for poor psychosocial outcomes, resilience resources act as protective factors, as lower resources are related to poorer psychosocial health (Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014; Gudmundsdottir et al., 2011). These studies defend the advantages of using a strengths-oriented approach when designing psychological interventions to support these families, and conclude that interventions directed at promoting resilience resources may contribute to improve

outcomes for families facing pediatric cancer. They also recognize that it is necessary to include concurrent and/or longitudinal assessment of resilience in parents.

It is important to notice that there are theoretical and methodological concerns that might be affecting the results of these studies. While some of them considered that a parent was resilient when he/she did not show significant distress (Gudmundsdottir et al., 2011; Gerhardt et al., 2007), others considered resilience as protective personality factors, and, consequently, used scales which assess such protective factors –resiliency factors- (Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014). However, they have not tended to understand and assess resilience as the ability to bounce back from stress.

Although most research in the field of parental resilience has focused on pediatric cancer –as occurred in the case of research conducted in children with illnesses-, some studies have been published in other areas such as chronic illnesses (Hamall, Heard, Inder, McGill & Kay-Lambkin, 2014). Conclusions of these studies are parallel to the ones derived from studies in cancer. While the experience of living with childhood chronic illness can increase parental vulnerability to psychological problems, some families are able to positively manage the impacts of the illness on their lives (Hamall et al, 2014; Gannoni & Shute, 2010).

However, there is a context of pediatric illness in which resilience remains unexplored: the period in which the child’s condition is critical, and he/she needs intensive care treatment. As this is a particularly high-risk situation for all involved individuals (parents, professionals, etc.), resilience research might make significant contributions in by providing guidelines to prevent and treat negative outcomes derived from this experience. Consequently, we are focusing our studies in that particular environment, as will be fully described next.

### **1.3.2. A high-risk context: The pediatric intensive care unit**

The Pediatric Intensive Care Unit (PICU) admits those children who, as a consequence of their critical health condition, require continuous supervision of their vital functions as well

as life support measures. These life support measures are used as a way to “gain some time” while all the intensive care team has the priority objective of saving the child’s life (Casanueva et al., 2005). During that time, the patient can evolve towards healing (which is obviously the best possible outcome), can survive with very severe sequelae, or can die. An especial case of the last possible outcome occurs when the unavoidable death of the child is pointlessly postponed in the PICU through the use of the technology, prolonging his/her suffering, which is known as “therapeutic obstinacy” (Salas, Gabaldón, Mayoral, Pérez-Yarza, & Amayra, 2005). There are multiple reasons why a child can be admitted to the PICU (e.g., accidents, post-surgery treatment, acute periods in a severe/chronic illness), so the diagnoses of the children hospitalized in intensive care are very heterogeneous. The only common aspect among all these children is that their lives are severely threatened, so they require constant care and supervision.

Over 200.000 children require admission to a PICU annually in the United States for the treatment of critical illnesses (Odetola, Clark, Freed, Bratton, Davis, 2005). In the United Kingdom, recent data provided by the Pediatric Intensive Care Audit Network showed that between 2012 and 2014 there were 59.642 admissions in a PICU in the UK, which in terms of prevalence means that 146 children per 100.000 are admitted annually in the PICU in that country (Pediatric Intensive Care Audit Network, 2015). As far as we know, there are not available data regarding how many children are admitted to the PICU in Spain every year. However, according to data from the Spanish Society of Pediatric Intensive Care, there are 29 PICUs currently running in Spain that belong to the public health system (Sociedad Española de Cuidados Intensivos Pediátricos, 2010). This fact indicates that in Spain there are many children and families who face an admission to a PICU every year.

Advanced preventive, diagnostic, and technical modalities have changed the course of numerous illnesses in pediatric critical care medicine. These changes have resulted in less

mortality in intensive care settings, so many children are alive now who would not have been before (Colville, 2015). Nevertheless, there has been a shift to increased morbidity in survivors and their families. As a consequence, research has shifted the focus to the importance of examining morbidity and long-term outcomes of these PICU survivors and their families (Bronner et al., 2010; Colville, 2015). However, even though mortality rates have decreased, around 4.7-7% of PICU admissions result in the death of the child (Feudtner, Silveira, Christakis, 2002; Martino, Casado & Ruiz, 2007; Prieto-Espuñes et al., 2007), and the majority of in-hospital deaths of children occur in pediatric and neonatal intensive care units (Bloomer, O'Connor, Copnell, & Endacott, 2015). These data evidence that the PICU is an especially though context in the field of pediatric illness.

#### ***1.3.2.1. Why researching on resilience in pediatric intensive care?***

*So, why do we think that it is important to conduct research on resilience in such a though context?* As it has been previously stated, resilience needs to be studied in the context of a significant adversity. The PICU, where most of the hospitalized children are very sick and the death of a child is not at all unusual, is obviously a context of significant adversity. Such context is a potential source of traumatic experiences for all the people involved: the children themselves, their families, and also the personnel working in these units.

The adverse consequences for mental health of the exposure to the PICU have been proved in children (Colville, 2015; Rennick et al., 2014; Rees et al., 2004), parents (Balluffi et al., 2004; Bronner, Knoester, Bos, Last & Grootenhuis, 2008; Bronner et al., 2010; Colville & Gracey, 2006; Colville & Pierce, 2012; Fauman et al., 2011) and PICU professionals (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995; Mealer, Shelton, Berg, et al., 2007). All these studies agree that the PICU is a high-risk environment for the development of psychological problems.

According to Luthar (2006), from an applied perspective, there is a broad consensus that, in working with at-risk groups, it is far more prudent to promote the development of resilient functioning rather than to implement treatments to repair disorders which have already crystalized. Thus, it is extremely important to detect individuals with a high risk of developing psychological problems in order to conduct preventive interventions. As we have previously stated, resilience is known to be a strong protective factor for mental health in people suffering from a variety of health-related events (e.g., Stewart & Yuen 2011; Trivedi et al., 2011). Thus, we may expect that subjective resilience can also contribute to predict mental health in families of critically ill children and critical care clinicians. However, the effects of the perceived level of resilience have been scarcely studied in parents of critically ill children and in PICU workers, and thus we believe that it is crucial to do it.

***1.3.2.2. The impact of the pediatric intensive care in children/families. The potential contribution of studying resilience in parents of critically ill children.***

Starting with the impact of a child's critical hospitalization on parents, having a child admitted to the PICU is an extremely difficult experience for multiple reasons. First, children hospitalized these units are at increased risk of death. Furthermore, multiple procedures susceptible of causing pain or significant disturbance are conducted on the child, so sometimes parents see their children suffering. Also, as a consequence of the especial care required by these children, parents cannot take care of their child as usual, which can alter their parental role. Finally, they have to adapt to a completely new and changing environment, full of complete strangers and unknown machinery, which can be an additional source of stress (Casanueva, 2013).

As a consequence of the exposure to such a difficult situation, months after the child's discharge from intensive care, a significant number of parents show PTSD, depression and anxiety (Balluffi et al., 2004; Bronner et al., 2008; Bronner et al., 2010; Colville & Gracey,

2006; Colville & Pierce, 2012; Fauman et al., 2011). This impairment in parental mental health can have devastating consequences for the whole family (Rosenberg, Baker, Syrjala, Back & Wolfe, 2013), which evidences the importance of making efforts to prevent and treat psychological problems in parents after their child's critical treatment.

Bronner et al. (2008), however, pointed out that, even though many parents experience psychopathological reactions as a consequence of the experience of having a critically ill child, most of them do not, and are able to recover and function normally, as also happens with parents of with cancer and chronic illnesses. So as not every parent exposed to his/her child's critical admission develops psychopathology, it seems important to identify which environmental or personal factors are associated with mental health outcomes. An important protective factor, as many studies in the field of pediatric oncology have shown, are parental resilience resources (Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014; Gudmundsdottir et al., 2011). However the role of subjective resilience in predicting parental mental health has never been explored in parents after their child's critical admission. Consequently, this was a gap in research which we attempted to fill with this dissertation.

In addition, not only is it important to explore whether subjective resilience may predict psychological post-trauma outcomes or not, but also how this influence works. For this reason, it is crucial to explore the possible effect of mediating variables between subjective resilience and parental psychological outcomes, such as the emotions and the level of stress that they experience during admission.

Additionally, although parental posttraumatic growth (PTG) seems to be a reality among parents of children with illnesses (Picoraro, Womer, Kazak & Feudtner, 2014), only one study has explored this possibility in the context of intensive care, finding that 88% of parents had experienced growth four months after their child's discharge from a PICU (Colville & Cream,

2009). Thus, it seems necessary to add further evidence to this, and also about which factors (including parental subjective resilience) can contribute to predict PTG.

Finally, to better understand the parental post-trauma reactions, it would be important to explore how positive (PTG) and negative (depression, PTSD, etc.) post-trauma outcomes relate to each other. The relation between PTSD and growth in parents after having had their child admitted to PICU has only been addressed by Colville and Cream (2009), who found that intermediate levels of PTSD were related to the highest levels of PTG.

Summarizing, in the line of the ideas above exposed, we decided to longitudinally study the effect of subjective resilience and of the variables that can mediate its effect in parental adaptation, including both the possibility of negative post-trauma outcomes (psychopathology) and positive post-trauma outcomes (PTG).

### ***1.3.2.3. The impact of working in pediatric intensive care. The potential contribution of studying resilience in PICU workers.***

Pediatric intensive care workers are exposed to a very demanding work environment in which they daily face changing and stressful circumstances, as well as very difficult situations which involve staying in touch with suffering children and families. Communicating bad news about a child's illness is a difficult task commonly faced by intensive care physicians (Meert et al., 2008). Also, all the PICU personnel frequently have the crucial role of supporting the children and the family in their worst moments of uncertainty about the child's survival. Additionally, and even more importantly, when the child does not survive the critical care, clinicians have to provide end-of-life care, which involves providing support to these families in which probably are the darkest moments of their lives (Casanueva et al., 2005; Casanueva, 2013).

Considering the difficulty of the situations that PICU staff face in their work, and that sometimes these professionals consider that they do not have enough strategies and resources

to face them (Martino et al., 2007), it is not strange that the scarce research aimed at studying mental health among intensive care staff agrees that they show rates of work-related stress at the level of an epidemic (Curtis & Puntillo, 2007).

Previous studies have also shown that around 50% of PICU professionals report clinically significant *burnout* (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995), and around 20% report posttraumatic stress (Colville et al., 2014). Burnout is defined as the experience of long-term emotional exhaustion and diminished interest in the work context, as well as a sense of low personal accomplishment (Maslach, Schaufeli & Leiter, 2001). It has been found to be associated with diminished work effectiveness (Maslach, Schaufeli, Leiter, 2001) and decreased quality of care (Shanafelt, Bradley, Wipf, Back, 2002; Arnedt et al. 2005), which may have particularly negative consequences in the PICU.

The high rates of distress and its consequences evidence the importance of identifying which factors are related to higher burnout and PTSD in order to develop preventive interventions. Coherently with research conducted in patients and families with severe illnesses, studies conducted in critical care staff have found that perceived resilience (Colville et al., 2014; Mealer et al., 2012; Ríos-Rísquez, Sánchez-Meca and Godoy-Fernández, 2010) and certain coping strategies (Colville et al, 2014) can contribute to predict better mental health. However, a model to predict distress including both coping strategies and subjective resilience has never been proposed for this population. Our expectation is that PICU professionals who refer higher subjective resilience levels will use different –and more effective– coping strategies, which might lead to lower levels of burnout and PTSD.

Furthermore, as occurs in the case of parents of critically ill children, the fact that PICU workers face potentially traumatic situations implies that they can also experience posttraumatic growth (PTG). However, the possibility of growth has never been explored in PICU professionals. As far as we know, to date, only one study has focused on exploring the



prevalence of PTG in professionals working in critical situations (ambulance personnel), finding that 98.6% of them experienced at least one positive change derived from their work-related traumatic experiences (Shakespeare-Finch, Smith, Gow, Embelton & Baird, 2003). Thus we may expect that the level of PTG will also be high in PICU staff.

Besides, the factors which can potentially contribute to showing PTG in critical care staff have never been explored, which would be crucial for intervention purposes. Evidence from studies conducted on ambulance personnel found that specific adaptive and maladaptive coping strategies were respectively linked to PTG and negative symptoms after trauma (Kirby, Shakespeare-Finch & Palk, 2011). Thus, we consider that it would be relevant to explore how the professionals' level of subjective resilience along with the coping strategies that they use to face some of the difficulties that they find in their daily work impact their PTG levels.

Additionally, even though it is expected that working in PICU has both negative (e.g., PTSD, burnout) and positive consequences (PTG), the relation between these positive and negative post-trauma outcomes among pediatric staff is unknown. Finally, although it is known that the professionals' negative psychological consequences of working in highly stressful contexts reduces their work performance (e.g., Maslach et al., 2001), the impact of such consequences for their own satisfaction with life – understood as a global assessment of a person's quality of life which is dependent upon a comparison of one's circumstances with what the person expects to have or achieve in his/her life (Diener, Emmons, Larsen & Griffin, 1985) – have been scarcely explored (Demerouti, Bakker, Nachreiner and Schaufeli, 2000).

Summarizing, in the line of the ideas above exposed, it was decided to explore, in a sample of critical care staff, in which degree subjective resilience, along with coping, can predict negative (burnout y PTSD) and positive post-trauma outcomes (PTG), as well as how these positive and negative consequences of working in intensive care relate to each other and contribute to predict satisfaction with life.

## **1.4. ORGANIZATION OF THIS DOCTORAL DISSERTATION.**

### **1.4.1. Conceptual map of the studies conforming this dissertation**

This dissertation comprehends three sections, each of them including different separate but related studies. For clarification purposes, we are including a conceptual map of the sections and the studies included in this dissertation in the next page (Figure 1.1). Following that, we will describe the aims of each of the three parts of the thesis, as well as the purpose of each study.

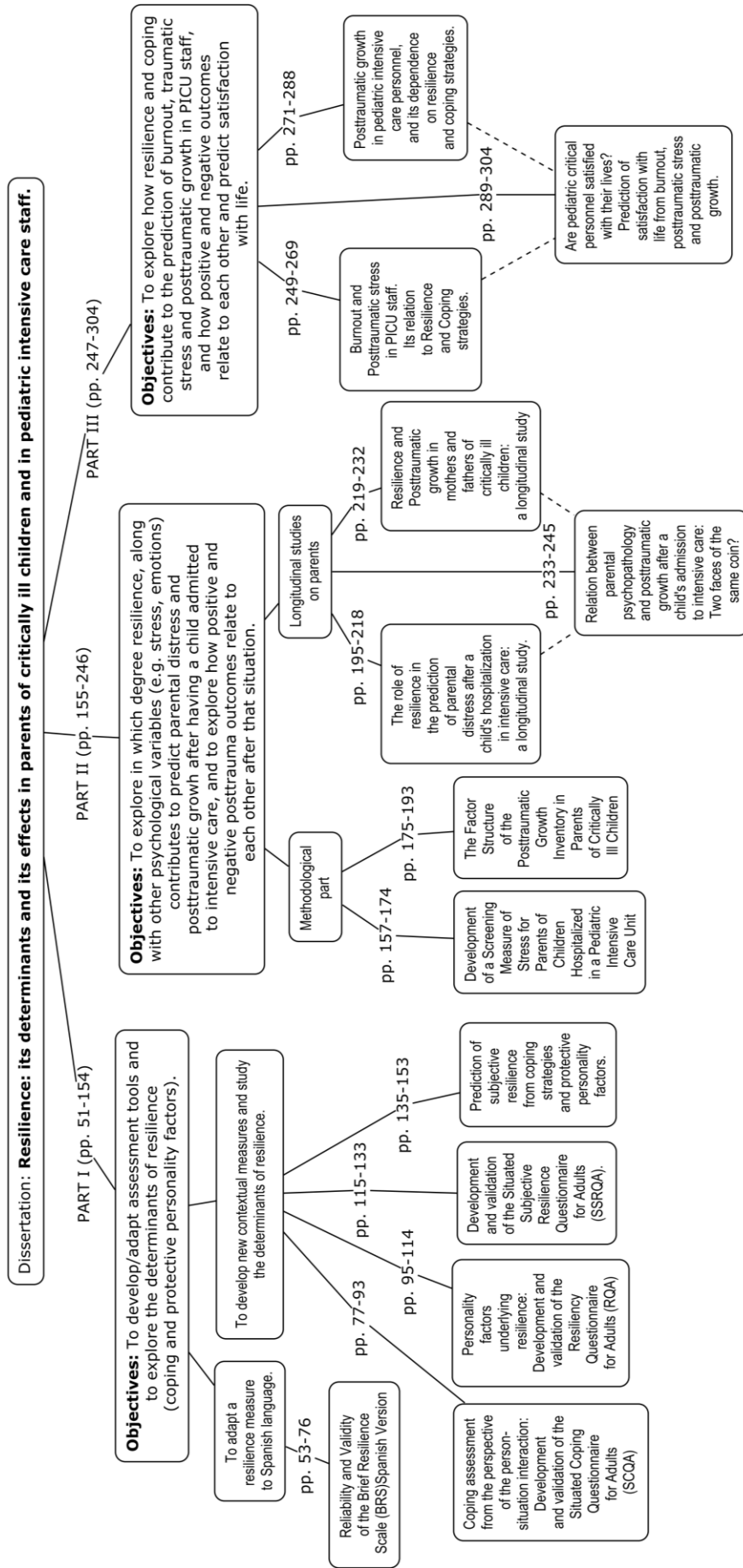
### **1.4.2. Description of the sections of this dissertation and the studies conforming each section**

As the conceptual map in the previous page shows, this doctoral thesis is composed by three different sections. The first one, entitled “*Assessment and determinants of resilience*” has two main objectives: 1) to adapt and develop measures to assess resilience understood as the ability to bounce back in Spanish adults, as well as measures to assess factors related to resilience (resiliency and coping) and 2) to explore in which degree resilience as the ability to bounce back depends on coping strategies and protective/risk personality factors. This section will also be the starting point of the dissertation of Helena Hernansaiz Garrido, and consists of the following five studies:

- **Reliability and Validity of the Brief Resilience Scale (BRS) Spanish Version.**

The purpose of this study is to adapt the Brief Resilience Scale to Spanish and to analyze the reliability and validity of its scores.

Figure 1.1. Conceptual map of the studies included in this dissertation.



- **Coping assessment from the perspective of the person-situation interaction. Development and validation of the Situated Coping Questionnaire for Adults (SCQA).** The main objective of this study is to develop and validate the Situated Coping Questionnaire for Adults, designed to assess the “situation by person” interaction when using coping strategies, and to analyze the relationships between coping styles and resilience.
- **Development and validation of the Resiliency Questionnaire for Adults (RQA).** The objective of this study was to develop the Resiliency questionnaire for Adults, based on Prince-Embury’s theory, which understands resiliency as grouped in two general protective factors –Sense of Mastery and Sense of Relatedness–, and one risk factor –Emotional Reactivity–. We attempted to test whether this three-factor structure fits our data, and to explore how the resiliency factors contribute to predict resilience as measured by the Brief Resilience Scale.
- **Development and validation of the Situated Subjective Resilience Questionnaire for Adults (SSRQA).** This study describes the development and validation of the Situated Subjective-Resilience Questionnaire for Adults, which assesses resilience in the context of five different kinds of adverse situations, taking into account its situational dimension.
- **Prediction of subjective resilience from coping strategies and protective personality factors.** This study aims to explore in which degree resilience can be predicted from coping strategies (problem-focused coping and emotion-focused coping), and protective or risk personality characteristics (Sense of Mastery, Sense of Relatedness and Emotional Reactivity).

The main objective of the second section, entitled *“The role of subjective resilience in predicting adaptation in parents of critically ill children”*, is to explore in which degree subjective resilience predicts parental distress (in terms of anxiety, depression and posttraumatic stress) and posttraumatic growth following their child’s admission to intensive care. Additionally, the development of a brief instrument to explore parental sources of stress in the PICU will be described in this part, and we will analyze the factor structure of the posttraumatic growth inventory in that sample. Finally, this section analyzes the relation between positive and negative post-trauma outcomes. All these aspects will be explored in the following five studies:

- **Development of a Screening Measure of Stress for Parents of Children Hospitalized in a Pediatric Intensive Care Unit.** This study aims (1) to develop and validate the Abbreviated parental stress scale for PICU (A-PSS:PICU), which assesses the degree in which the PICU stimuli are stressful for parents; (2) to study which environmental factors of the PICU are more stressful in a sample of Spanish parents, and (3) to study which variables are related to higher levels of stress among this group.
- **The Factor Structure of the Posttraumatic Growth Inventory in Parents of Critically Ill Children.** The aim of this study is to analyze the factor structure of the Posttraumatic Growth Inventory (PTGI) in parents whose children were hospitalized in intensive care in order to consider the construct validity of this measure for this population and to inform our understanding of posttraumatic growth as a construct.
- **The role of resilience in the prediction of parental distress after a child's hospitalization in intensive care: a longitudinal study.** The main purposes of this study are 1) to explore the degree in which parents experience anxiety, depression

and PTSD following their child's admission to intensive care, and 2) to study the role of resilience, positive and negative emotions, stress and perception of child's severity in the degree of psychopathology.

- **Resilience and Posttraumatic growth in mothers and fathers of critically ill children: a longitudinal study.** The objectives of this study are 1) to explore the degree in which parents report posttraumatic growth six months after their child's discharge from a PICU and 2) to study the role of parental resilience, positive and negative emotions and stress in predicting the degree of parental posttraumatic growth after having a critically ill child.
- **Relation between parental psychopathology and posttraumatic growth after a child's admission to intensive care: Two faces of the same coin?** The aim of this study was to explore the relation between psychopathology –posttraumatic stress, anxiety and depression– and posttraumatic growth in parents six months after their child's critical treatment in a PICU.

The third and last section, entitled "*The protective role of subjective resilience and coping for personnel working in intensive care*" aims 1) to explore the rates of distress (in terms of burnout and posttraumatic stress) and posttraumatic growth in PICU personnel, 2) to explore how coping strategies and resilience contribute to predict distress and posttraumatic growth in that sample, and 3) to study how positive and negative outcomes relate to other and contribute to predict professionals' satisfaction with life. This part includes the following three studies:

- **Burnout and Posttraumatic stress in pediatric intensive care staff. Its relation to resilience and coping strategies.** This study attempts 1) to explore the prevalence of burnout and PTSD in a sample of Spanish PICU staff, and to compare these rates with a sample of general pediatric staff, 2) to explore in which degree

and how resilience and coping strategies contribute to predict burnout syndrome and PTSD and 3) to explore the influence of sociodemographic and professional variables in burnout and PTSD.

- **Posttraumatic growth in pediatric intensive care personnel and its dependence on resilience and coping strategies.** The objectives of this study are (1) to explore the degree of PTG in PICU staff for the first time, and to compare it with PTG scores of staff from other pediatric units, (2) to explore the role of resilience and coping strategies in predicting PTG and (3) to explore the influence of demographic and work-related variables in PTG.
- **Prediction of life satisfaction in pediatric critical personnel from burnout, posttraumatic stress and posttraumatic growth.** The purpose of this study is to explore the levels of satisfaction with life in PICU staff and how positive and negative outcomes derived from working in the PICU relate to each other and contribute to predict such satisfaction.

---

**2. PART I:**

**ASSESSMENT AND DETERMINANTS OF  
RESILIENCE**

---



## **2.1. Reliability and Validity of the Brief Resilience Scale (BRS)**

### **Spanish Version**

Rocío Rodríguez-Rey, Jesús Alonso-Tapia & Helena Hernansaiz-Garrido.

Department of Biological and Health Psychology, Psychology Faculty.

Universidad Autónoma de Madrid

Paper published in *Psychological Assessment*. Citation:

Rodríguez-Rey, R., Alonso-Tapia, J., & Hernansaiz-Garrido, H. (2015, October 26). Reliability and Validity of the Brief Resilience Scale (BRS) Spanish Version. *Psychological Assessment*. Advance online publication. <http://dx.doi.org/10.1037/pas0000191>

#### **Acknowledgements**

The authors would like to acknowledge all physicians and nurses from the PICU of Hospital 12 de Octubre (Madrid) for their help with the data collection of parents of critically ill children. The authors would like to acknowledge Carmen Nieto for her help in data collection of parents of children with intellectual disabilities or development disorders, Fundación Blas Méndez Ponce for their help in the data collection of the parents of children with cancer, and Jorge Calvo for his help with the creation of the IT solution and databases management. The first and the third authors would like to acknowledge the financial support given, respectively, by the Universidad Autónoma de Madrid through a FPI fellowship and by the Spanish Ministerio de Educación, Cultura y Deporte through a FPU fellowship.

### 2.1.1. Abstract

Resilience is defined as the ability to recover from stress. However, all resilience measures with exception of the Brief Resilience Scale (BRS) assess resources that make resilience possible instead of recovery. The purpose of this study was to translate the BRS to Spanish and to analyze the reliability and validity of its scores. The psychometric properties of its scores were examined in a heterogeneous sample of 620 Spanish adults. Confirmatory factor analyses were carried out to study its scores' evidence of structural validity. Besides, to study its scores' evidence of convergent, discriminant and predictive validity in relation to other resilience questionnaires (*Connor Davidson Resilience Scale* 10-item version, *Situated Resilience Scale for Adults* and *Personality Factors for Resilience*) and to variables such as emotions (*Modified Differential Emotions Scale*), coping (*Situated Coping Scale for Adults*), anxiety and depression (*Hospital Anxiety and Depression Scale*), post-traumatic growth (*Posttraumatic Growth Inventory*), perceived stress (*Perceived Stress Scale*) and trauma (*Davidson Trauma Scale*), correlation and regression analyses were conducted. To study its sensitivity, we assessed the effect of socio-demographics and the ability of the scale to identify high-risk populations by conducting ANOVAs and Pearson correlations. The BRS scores showed adequate reliability ( $\alpha=.83$ ;  $ICC=.69$ ). Confirmatory factor analyses showed that the Spanish version of the BRS is mono-factorial ( $\chi^2/df=2.36$ ;  $SRMR=.036$ ;  $GFI=.980$ ;  $CFI=.984$ ;  $IFI=.984$ ;  $RMSEA=.067$ ). They also showed adequate evidence of the scores' convergent, concurrent and predictive validity. The Spanish version of the BRS is a reliable and valid means to assess resilience as the ability to bounce back.

*Keywords:* Resilience assessment, coping, brief resilience scale, adults, stress.

### 2.1.2. Introduction

Resilience has been defined in many different ways, but it originally refers to positive adaptation or recovery despite experiences of significant adversity, that is, despite life situations that usually produce maladjustment (Luthar, 2006). Thus, resilience refers to the ability to face stressful circumstances functioning above the norm (Tusaie & Dyer, 2004). However, as a recent systematic review on resilience scales has revealed, most of resilience measures assess the availability of protective factors that facilitate resistance to psychopathology (Windle, Bennett & Noyes, 2011). That is the case of the well-known resilience measures Connor Davidson Resilience Scale (Connor & Davidson, 2003) and the Resiliency Scales (Prince-Embury, 2007). Both of them are aimed to assess personal characteristics such as optimism or self-efficacy that enhance individual adaptation, instead of the ability to bounce back itself.

The Brief Resilience Scale (BRS), developed by Smith et al. (2008), was the only measure included in the aforementioned systematic review whose aim was assessing individuals' ability to recover from stressful circumstances. The BRS has also been translated to Dutch (Leontjevas, Beek, Lataster & Jacobs, 2014), its scores showing adequate reliability ( $\alpha=.83$ ; Intraclass Correlation Coefficient [ICC] = .94), and to Malaysian (Amat, Subhan, Jaafar, Mahmud, & Johari, 2014) with adequate psychometric properties as well ( $\alpha=.93$ ).

As the authors of the original scale noted, this ability to bounce back may be particularly important for people who are already dealing with stressful life events, such as health-related problems. This being so, they included in their sample –apart from undergraduate students– cardiac rehabilitation patients and women with and without fibromyalgia, finding a greater degree of resilience in women without fibromyalgia compared to those with fibromyalgia. Nonetheless, in a later work Smith, Tooley, Christopher and Kay (2010) did not include in their sample individuals in a health condition. As for the translations, the sample in Leontjevas et

al.'s study (2014) was mostly composed of older women in rehabilitation in a nursing home, and most of them were taking medication for pain and scored high on the Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983). The Malaysian translation study (Amat et al., 2014), however, was carried out with undergraduate students. Based on the fact that in the original study the resilience assessed through the BRS was higher in patients without fibromyalgia than in patients with this condition, we may hypothesize that groups under higher levels of stress would score lower on the BRS. However, as the remaining studies have only included healthy or unhealthy individuals, the BRS has not been systematically tested in heterogeneous samples under different levels of stress. It is not clear, then, whether there is any relation between degree of stress due to the situation and resilience scores and what its nature could be. Consequently, it seems necessary to compare the resilience scores of different groups who face different health-related stressors.

Some of the aforementioned studies also addressed gender and age differences in resilience. In the original study (Smith et al., 2008), male cardiac patients showed more resilience than female ones, but no difference was found in the undergraduate students subsample. Smith et al. (2010) also reported no difference in their sample of undergraduate students, suggesting a lack of clarity on this matter. Regarding age, it was found to correlate with higher resilience (Smith et al., 2010), but no other research using the BRS has provided data in this respect.

With regard to the availability of resilience measures in the Spanish language, it is noteworthy that, of the measures included in the review by Windle et al. (2011), only one of them is currently available in such language. It is the Connor-Davidson Resilience Scale 10-item version, validated both in undergraduate students (Notario-Pacheco et al, 2011) and fibromyalgia patients (Notario-Pacheco et al, 2014). However, this measure, as it has previously been stated, does not measure resilience itself but protective factors for resilience.

Thus, there is no measure of resilience understood as the ability to bounce back for the general Spanish population or for Spanish individuals in health conditions.

That is why, as the BRS has proven to be the only available scale for actually measuring resilience in its original meaning, and since the Spanish psychological community lacks such a kind of resilience measure, the objective of the present study was to adapt the BRS to Spanish language. We aimed as well to ascertain the psychometric properties of its scores in a heterogeneous sample (healthy individuals and individuals facing a health-related stressor). The translation and the first attempt of validation of this measure in Spanish language would provide the Spanish psychological and health communities with a tool for research and clinical practice, as well as would continue to provide the scientific community with data on the psychometric properties of this measure's scores in different languages, cultures and health-related samples.

### **2.1.3. Methods**

#### ***Participants***

The psychometric properties of the Spanish version of the BRS were examined in a sample of 620 adults: parents of children admitted on intensive care ( $n=196$ ), parents of oncology outpatient children ( $n=62$ ), parents of children with intellectual disabilities or development disorders ( $n=28$ ), oncology outpatients ( $n=22$ ), HIV-positive individuals who had been diagnosed more than three months ago ( $n=63$ ) and general population ( $n=249$ ).

We used this heterogeneous sample of Spanish adults in order to establish group comparisons in the level of resilience of people facing different specific health-related stressors. As we expected that participants under higher levels of stress would score lower in resilience, we hypothesized that the higher resilience group would be the general population.

The sub-samples that we expected to show lower resilience are the parents of outpatient cancer children, the parents of critically ill children, and the oncology outpatients because all

of them face life-threatening condition for themselves or for their child. The fact that these three groups experience high stress has been reported by several studies (Vrijmoet-Wiersma et al., 2008; Farber, Weinerman & Kuypers, 1983; Balluffi et al., 2004).

Regarding the HIV-positive individuals, research suggests that, whereas an HIV diagnosis increases stress, after 6 to 8 weeks individuals tend to return to a psychological status close to the one they had prior to diagnosis (Perry et al., 1990). This is why we expected that the level of resilience of this sample would be slightly lower than the resilience level of the general population, but higher than in the three sub-samples that have a higher degree of stress.

Regarding the sub-sample of parents of children with disabilities or developmental disorders, they have to face significant difficulties, so they experience more stress than parents of normally developing children (Peer & Hillman, 2014). However, as that situation does not imply an immediate threat to their child's life, we may expect that this group will show intermediate levels of resilience, that is, higher than the parents of outpatient oncology children and critically ill children and cancer patients, but lower than the general population.

Of the total sample, 67.4% were women and 32.6% were men. Regarding age, 32.7% of the sample was in the age interval between 31 and 40 years, 28.5% between 41 and 50 years, 26% between 20 and 30 years, 10.6% between 51 and 60 years, and 2.1% were above 60 years old. For the analysis of the BRS structure, the sample was randomly divided in two subgroups, one for the initial analysis and the other to be used for cross-validation. For the rest of analyses, different subsamples were used.

### ***Instruments***

- *Socio-demographics*: We assessed age, gender, marital and employment status, and education level in all samples.

- *Medical variables*: In the group of parents of critically ill children, we assessed the severity of the child's condition using the *Paediatric Index of Mortality II* (PIM2; Slater, Shann

& Pearson, 2003), whose scores had shown adequate psychometric properties. This rating index, which predicts mortality risk in the Pediatric Intensive Care Unit (PICU) during the first 24 hours of admission, was completed by one of the physicians that have treated every child during the PICU's hospitalization. It contains 10 questions regarding medical aspects of the child when admitted to the PICU (such as systolic blood pressure, pupillary reactions to bright light, or mechanical ventilation). A higher score indicates a higher mortality risk as assessed by the physician. As additional severity measures, parents were asked about length of admission, being the child on mechanical ventilation or not during admission and being the admission elective or not. To assess parental perception of the child's severity, parents were asked the following questions: 1) *Did you think that your child could die at any point of his/her PICU's admission?* (Yes/No) and 2) *How severe do you think that your child's condition has been during his/her hospitalization?* (Likert scale response format ranging from 0 to 7)

- Spanish translation of the *Brief Resilience Scale* (BRS; Smith et al., 2008). This is a 6-item self-report scale with a 5-point response scale ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score indicates a higher degree of resilience. The English version scores load into one factor, and showed good internal consistency ( $\alpha$  ranging from .80 to .91) and test-retest reliability (intraclass correlation coefficient –ICC– ranging from .61 to .69). Adequate convergent and discriminant evidence of the test's scores validity was also reported. The original BRS and the Spanish version are located in the Annex of this thesis (page 421).

- *Connor Davidson Resilience Scale* 10-item version (10-item CD-RISC; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003). This measure is composed of 10 items with five response options (0 = never; 5 = almost always) and a direct scoring (the higher the score, the higher the resilience). The scores of the Spanish version showed adequate reliability when used in samples of university students ( $\alpha=.85$ ; ICC=.71) (Notario-Pacheco et al, 2011), of

fibromyalgia patients ( $\alpha=.88$ ; ICC=.89) (Notario-Pacheco et al, 2014) and in our sample ( $\alpha=.88$ ).

- *Perceived Stress Scale* (PSS; Cohen, Kamarck & Mermelstein, 1983). This is a 14-item questionnaire with a 5-point response scale (0 = never; 5 = very often). A higher score indicates higher stress. The Spanish translation's scores demonstrated adequate reliability ( $\alpha=.81$ ; test-retest,  $r=.73$ ), concurrent evidence of validity, and sensitivity (Remor, 2006). They also showed good reliability in our sample ( $\alpha=.84$ ).

- *Modified Differential Emotions Scale* (mDES; Fredrickson, Tugade, Waugh & Larkin, 2003). It contains 10 items to assess positive emotions and 10 items to assess negative emotions, rated from 1 = "very slightly or not at all", to 5 = "extremely". Higher scores indicate greater levels of positive or negative emotions. The psychometric properties of the Spanish translation's scores (Páez, Bobowil, Carrera & Bosco, 2011) are not available, but in the original scale, the internal consistency evidence of both the Positive ( $\alpha=.79$ ) and the Negative emotions subscales ( $\alpha=.79$ ) was acceptable, as well as in our sample ( $\alpha=.82$  for both subscales).

- *Davidson Trauma Scale* (DTS; Davidson et al., 1997): This self-report measure assesses the 17 DSM-IV symptoms of PTSD, with its 17 items being rated on 5-point frequency (0 = "not at all" to 4 = "every day") and severity scales (0 = "not at all distressing" to 4 = "extremely distressing"). Higher scores indicate a higher degree of PTSD. Its Spanish adaptation's scores (Bobes et al., 2000) showed adequate reliability ( $\alpha=.90$ ; ICC=.87), as they did in our sample. ( $\alpha=.96$ )

- *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983). It is a 14-item, self-reporting screening scale that contains two 7-item Likert scales, one for anxiety and one for depression. It has a 4-point response format, and higher scores indicate higher anxiety and depression. The scores of the Spanish version (Quintana et al., 2003) showed adequate



test–retest reliability (presented correlation coefficients above .85), internal consistency ( $\alpha=.86$  for both anxiety and depression), and concurrent evidence of validity. Cronbach’s alpha in our sample was excellent ( $\alpha=.90$ ).

- *Posttraumatic Growth Inventory* (PTGI; Tedeschi & Calhoun, 1996). It contains 21 items with a 6-point rating scale to evaluate positive changes in the aftermath of crisis. Higher scores indicate higher post-traumatic growth. It was adapted to Spanish (Weiss & Berger, 2006) and first validated in a sample of Spanish oncology patients (Costa-Requena & Gil Moncayo, 2007). Reliability is high in both the scores of the English ( $\alpha=.90$ ; test-retest  $r=.71$ ) and the Spanish versions ( $\alpha=.95$ ), as well as in our sample ( $\alpha=.96$ ).

- *Situated Subjective Resilience Questionnaire for Adults* (SSRQA; Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz-Díaz & Nieto-Vizcaíno, 2016b). It is a 20-item scale based on a similar tool for adolescents (Alonso-Tapia, Nieto & Ruiz, 2013). It considers five problem areas (work, close person relationships, own health, close person health and economy) and has a 5-point response format (1 = totally disagree; 5 = totally agree). The higher the score is, the higher the degree of resilience. Its scores have shown good reliability for the whole scale ( $\alpha=.90$ ) and subscales ( $\alpha$  ranging from .71 to .83), and acceptable validity. The score for the whole scale had also good reliability in our sample ( $\alpha=.85$ ).

- *Situated Coping Questionnaire for Adults* (SCQA; Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz-Díaz & Nieto-Vizcaíno, 2016a). This questionnaire comprises 40 items that take into account eight different coping strategies –rumination, emotional expression, isolation, self-blame, help-seeking, solution-seeking, positive thinking and thinking avoidance– divided in two factors –emotion centered coping and problem centered coping–. All coping strategies are assessed across the same five problem areas of the SSRQA. The scale has a 5-point response scale format (1 = never; 5 = almost always) and the same scoring direction as the SSRQA. Its scores have shown adequate reliability both in the original study

( $\alpha=.79$  for the whole scale, and  $\alpha$  ranging from .71 to .88 for the coping strategies subscales) and in our sample ( $\alpha=.78$ ).

- *Resiliency Questionnaire for Adults (RQA)*. This 36-item questionnaire with a 5-point response format (1 = totally disagree; 5 = totally agree) is based on the Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2007). We elaborated four items for each of the ten subscales of the RSCA (Optimism, Self-Efficacy, Adaptability, Trust, Support, Comfort, Tolerance, Sensitivity, Recovery and Impairment) except for the subscale “Recovery”. That was because from our point of view this scale assesses not personality factor favouring resilience, but resilience itself. The ten subscales load on three factors: sense of mastery, sense of relatedness, and emotional reactivity. Higher scores indicate a higher degree of resilient-personality. Its scores showed an adequate reliability ( $\alpha=.91$ ).

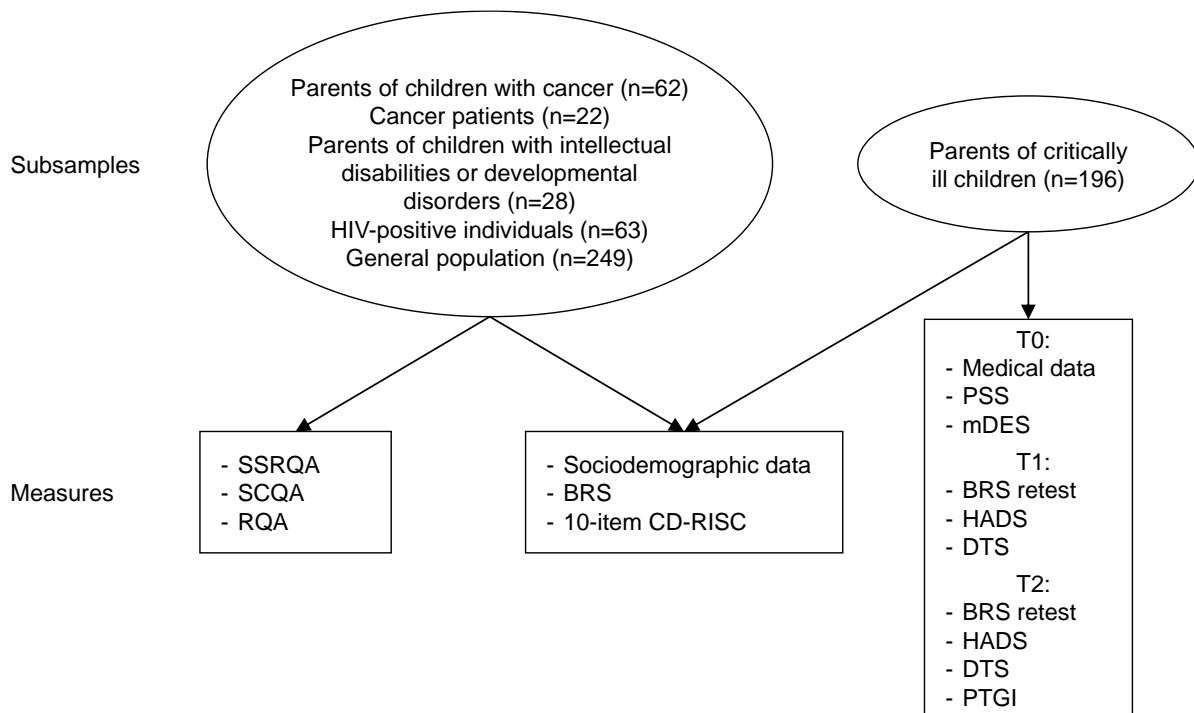
Not all the subsamples answered all the questionnaires. Figure 2.1.1 shows which subsamples completed each measure and at which time.

### ***Procedure***

A native English-speaking bilingual translator translated the Brief Resilience Scale from English to Spanish. After that, two native Spanish-speaking bilingual psychologists revised this translation independently and agreed on a final common translation. Finally, this common version was back-translated (Spanish to English) by a different bilingual native Spanish-speaking psychologist to ensure the equivalence of the translation. The translation resulted in the Spanish version of the BRS, which was administered to the 620-adult sample above described with the aim of assessing its scores' psychometric properties.

The study was approved by two ethical committees (from the Hospital where the sample of parents of critically ill children was collected, and from the authors' University).

Figure 2.1.1. Measures completed by each subsample in the study to validate the Brief Resilience Scale.



*Note.* Parents of critically ill children had three assessments: T0 (the first one), T1 (three months after T0), and T2 (six months after T0). *n* = number of individuals in each subsample. SSRQA = Situated Subjective Resilience Questionnaire for Adults. SCQA = Situated Coping Questionnaire for Adults. RQA = Resiliency Questionnaire for Adults. BRS = Brief Resilience Scale. 10-item CD-RISC = 10-item version Connor-Davidson Resilience Scale. PSS = Perceived Stress Scale. mDES = Modified Differential Emotions Scale. HADS = Hospital Anxiety and Depression Scale. DTS = Davidson Trauma Scale. PTGI = Posttraumatic Growth Inventory.

All data were collected between January 2013 and March 2014. Regarding data collection procedure, different subsamples were approached in different ways. With respect to the sub-sample of parents of critically ill children, a total of 300 parents admitted for >12 h in a PICU were approached in the first 48 hours after their child's discharge from intensive care by a trained researcher in psychology. All parents were fully informed about the study and its purposes, potential risk and benefits, and confidentiality and were asked to participate. Of them, 196 (65.33%) agreed to participate and completed the questionnaires in paper and pencil format. Reasons for not participating were not giving their consent (74.04%), not speaking Spanish (25%), and in one case suspect of maltreatment or negligence as the cause of the hospitalization of the child (0.96%).

Three months post-discharge they were contacted again by post, email or telephone and asked to complete the BRS retest and the other questionnaires for validation purposes. In this second measurement 158 parents (80.61% of those who completed the first assessment) answered the questionnaires. Reasons for not continuing in the study were not sending back the questionnaires completed after one month of having re-contacted each parent (42.11%), the explicit desire to leave the study (21.05%), inability of the researchers to contact them (e.g., they didn't answer the phone) (26.32%), death of the child (7.89%), and death of one participant (2.63%). Six months post-discharge they were contacted again and, 143 parents replied the last set of questionnaires (90.5% of those who completed the second assessment). Reasons for not completing this last set of questionnaires were not sending back the questionnaires completed after one month of having re-contacted each parent (80%) and inability to contact them (20%).

For data collection of the rest of clinical samples, the researchers contacted several different NGOs (for HIV-positive individuals, for adult cancer patients, for children with cancer and their families and for parents for children with disabilities or developmental disorders and their families) and asked them to send to the potential sample an email which contained information about the study, and a link to the informed consent and the questionnaires. Those who received the email and decided to participate completed the questionnaires online. The sample of general population was recruited by email using a snowball approach in which students and colleagues were asked for collaboration to spread the questionnaire.

### ***Statistical analyses***

Descriptive statistics (mean, standard deviation, and range) were calculated for all variables. In order to determine the BRS factor structure, a confirmatory factor analysis (CFA) was conducted. Wording half the items positively and the other half negatively serves to avoid

the acquiescence bias (Cronbach, 1950) but, on the other hand, it generates the wording effect by which the items often form two factors even though the content of these items is consistent (Alonso-Tapia & Villasana, 2014; Marsh, 1996; Wu, 2008). Thus, we included two first-order factors in our model to account for this effect. Estimates were obtained using the maximum likelihood method after examining whether data were adequate for the analysis. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ , SRMR), relative fit indexes (IFI), and non-centrality fit indexes (CFI, RMSEA) were used, as well as criteria for acceptance or rejection based on the degree of adjustment described by Hair, Black, Babin, Anderson, & Tathan (2010).

Then, a multi-group confirmatory analysis was carried out in order to cross-validate the results of the previous analysis. The proposed theoretical model was used as a base for comparing without restrictions the equality of parameters between samples. Several theoretical models were compared to this one, in which for the different sets of parameters equality between groups prevailed. The relative fall in the goodness of fit was assessed by means of the difference in the Chi-square statistic between the model with imposed restrictions and the model without them.

The reliability was examined in terms of internal consistency of the scores (evaluated by Cronbach's alpha) in all groups and test-retest reliability (examined by Pearson's correlation and ICC for absolute agreement) in the group of parents of critically ill children.

To address convergent and concurrent evidence of validity, correlations between BRS scores and CD-RISC, PSS, mDES, SCQA, SSRQA and RQA scores were calculated. Predictive validity was assessed in the group of parents of critically ill children by calculating the correlations between BRS scores and HADS, DTS and PTGI scores assessed at T1 and T2.

Sensitivity of the scale was assessed by two strategies. In the first place, we studied the effect of socio-demographic variables (age, gender, education level and marital status) on BRS scores, to test whether the effect of these variables was in the same direction that had been found

in previous studies. To do so, we conducted ANOVAs in which gender, age, education level and marital status were the independent variables and BRS score the dependent variable.

The second strategy we used to test sensitivity was to address the ability of the scale to detect populations under different levels of health-related stress, which is supposed to be related to the degree of resilience (Smith et al., 2008). To do so, an ANOVA was first conducted using the total BRS score as the dependent variable, and category –parents of children with cancer, parents of children with disabilities, parents of critically ill children, cancer patients, HIV-positive individuals, and general population– as the independent variable. We also examined the following aspects in the parents of critically ill children: a) the effect of the severity of the child’s condition on BRS scores by calculating Pearson’s correlation coefficients between the BRS and the PIM2, the length of admission and the perceived severity, and b) the effect of mechanical ventilation and unexpected admission on BRS scores by conducting ANOVAs.

All analyses were carried out with SPSS v.21 package, except the CFA, which was conducted with AMOS v.21 package, and the ICC, calculated with R (R Core Team, 2014).

#### **2.1.4. Results**

##### *Descriptive results of the resilience measures*

The mean score of the BRS for the complete sample was 3.01 ( $SD=.87$ ; range 1-5). For the 10-item CD-RISC it was 28.38 ( $SD=6.82$ ; range 0-40), and for the SRSA it was 55.37 ( $SD=14.12$ ; range 23-100).

##### *Factor structure*

Figure 2.1.2 shows the standardized estimates of the confirmatory model and Table 2.1.1 the unstandardized estimates and the standard errors. All the estimated loadings were significant ( $p < .001$ ). Regarding the fit statistics, Chi-square statistic was significant, probably due to the size of the sample (Hair et al., 2010), but the ratio  $\chi^2/df$  ( $\chi^2/df=2.36<5$ ), the SRMR

(Standardized Root Mean square Residual=.036<.08), the RMSEA (Root Mean Square Error of Approximation=.067<.08), the GFI (Goodness of Fit Index=.980>.90), the CFI (Comparative Fit Index=.984>.90), and the IFI (Incremental Fit Index=.984>.90) were well inside the limits that allow the model to be accepted. Thus, confirmatory factor analyses showed that the BRS scores are mono-factorial, although two first-order factors are presented in the model to account for the aforementioned wording effect.

Figure 2.1.2. Confirmatory factor analysis of the Brief Resilience Scale (BRS)

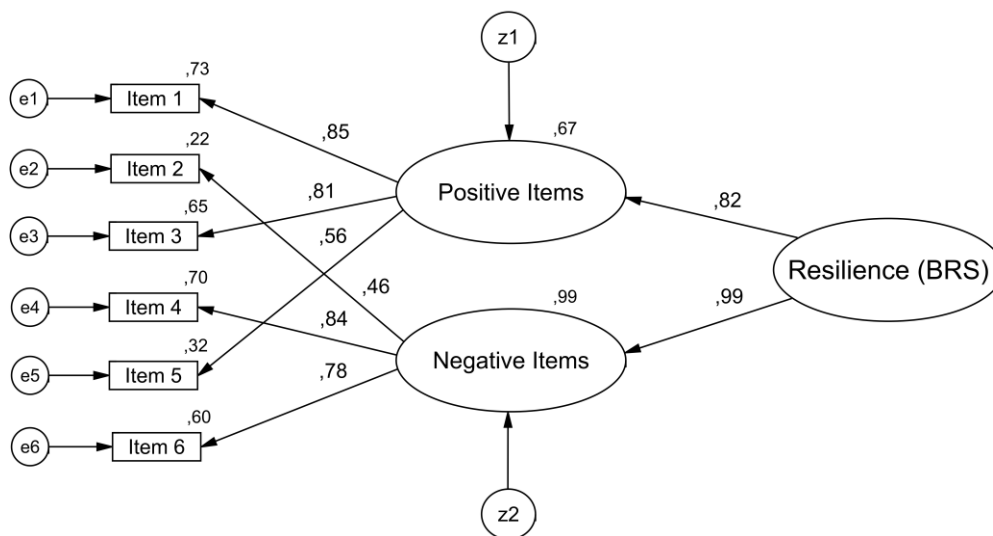


Table 2.1.1.

Confirmatory Factor Analysis of the Brief resilience Scale. Regression Weights.

			Estimate	S.E.
BRS-positive items	<---	RESILIENCE	1.000	
BRS-negative items	<---	RESILIENCE	1.132***	.100
BRS-Item 1	<---	BRS-positive items	1.000	
BRS-Item 3	<---	BRS-positive items	0.969***	.067
BRS-Item 5	<---	BRS-positive items	0.664***	.068
BRS-Item 2	<---	BRS-negative items	0.533***	.071
BRS-Item 4	<---	BRS-negative items	1.046***	.081
BRS-Item 6	<---	BRS-negative items	1.000	

Note. Estimates represent the regression weights. S.E. = Standardized Error. \*\*\*  $p < .001$ .

### ***Multi-group cross-validation analyses***

In order to offer additional guarantees for the factor structure of the BRS scores, we conducted a multi-group cross-validation analysis using the two subsamples. Comparison statistics included in Table 2.1.2 show that fit is not significantly reduced even if restrictions on measurement weights, structural weights, structural covariances, structural residuals and measurement residual are imposed. Therefore, it may be concluded that the model is well estimated and that it should not be rejected.

Table 2.1.2.

*BRS Cross Validation of the Model Using Multi-group Analyses.*

Model	<i>df</i>	$\chi^2$	<i>p</i>
Measurement weights	4	1,730	,785
Structural weights	5	1,732	,885
Structural covariances	6	2,200	,900
Structural residuals	7	2,364	,937
Measurement residuals	13	11,875	,538

*Note.* Table shows the Chi-square differences for model comparison against the unconstrained multi-sample model. *Df* = degrees of freedom. *p* = level of significance.

### ***Reliability analyses***

The BRS scores showed adequate internal consistency ( $\alpha=.83$ ). Test-retest was conducted in the group of parents of critically ill children. Pearson's T0-T1 correlation was .636, T1-T2 was .755, and T0-T2 was .665 ( $p <.001$  for all correlations). The ICC was calculated for the 143 parents that completed the three assessments and had a value of .69 (95% CI=.62 to .76).



### *Convergent and concurrent validity*

Correlations between the BRS scores and the rest of related measures are included on Table 2.1.3. The correlation is positive and significant ( $p < .001$ ) with other resilience measures, positive emotions, problem centered coping, sense of mastery, sense of relatedness and emotional reactivity, and negative with stress, negative emotions and emotion centered coping. Thus, we can conclude that the questionnaire has adequate convergent and concurrent evidence of validity.

Table 2.1.3.

#### *Convergent and Concurrent Evidence of Validity of the Brief Resilience Scale.*

Measure	<i>n</i>	Pearson's correlation with BRS
10-item CD-RISC	620	.560**
SSRQA Total score	424	.723**
SSRQA Work problems	424	.608**
SSRQA Economic problems	424	.466**
SSRQA Health related problems	424	.528**
SSRQA Family health related problems	424	.550**
SSRQA Social problems	424	.583**
PSS	196	-.538**
mDES Positive Emotions	196	.359**
mDES Negative Emotions	196	-.417**
SCQA Emotion centered coping	424	-.514**
SCQA Problem centered coping	424	.305**
RQA Sense of Mastery	424	.604**
RQA Sense of Relatedness	424	.367**
RQA Emotional Reactivity	424	.552**

*Note.* 10-item CD-RISC = 10-item version Connor-Davidson Resilience Scale. SSRQA = Situated Subjective Resilience Questionnaire for Adults. PSS = Perceived Stress Scale. mDES = Modified Differential Emotions Scale. SCQA = Situated Coping Questionnaire for Adults. RQA = Resiliency Questionnaire for Adults. BRS = Brief Resilience Scale. *n* = number of participants that completed each measure. \*\*  $p < .01$ .

### ***Predictive validity***

Correlations between the BRS score and anxiety, depression and PTSD assessed three and six months after discharge are presented in Table 2.1.4. All of them are significant at  $p < .001$  and negative, so we can conclude that the BRS scores have adequate predictive evidence of validity, as they predict recovery from an important life stressor. Regarding positive outcomes, their relation to the BRS scores have remained unexplored so far despite the fact that Smith et al. (2008) suggested the necessity of examining it. We explored it and found no significant correlation between the BRS scores and posttraumatic growth six months after a child's discharge from intensive care.

Table 2.1.4.

#### *Predictive Validity of the Brief Resilience Scale.*

Measure	<i>n</i>	BRS
HADS (3 months)	158	-.548**
HADS-A (3 months)	158	-.506**
HADS-D (3 months)	158	-.517**
DTS (3 months)	158	-.519**
HADS (6 months)	143	-.441**
HADS-A (6 months)	143	-.393**
HADS-D (6 months)	143	-.454**
DTS (6 months)	143	-.371**
PTGI (6 months)	143	-.092

*Note.* HADS = Hospital Anxiety and Depression Scale. HADS-A = Hospital Anxiety and Depression Scale, Subscale Anxiety. HADS-D = Hospital Anxiety and Depression Scale, Subscale Depression. DTS = Davidson Trauma Scale. PTGI = Posttraumatic Growth Inventory. BRS = Brief Resilience Scale. *n* = number of individuals that completed each measure.

\*\*  $p < .01$  level.

#### ***Sensitivity of the scale to gender and age effects***

Regarding gender differences, men had a significant higher level of resilience ( $M= 19.02$ ;  $SD= 5.26$ ) than women ( $M= 17.63$ ;  $SD= 5.16$ ) in our study, as the ANOVA showed ( $F = 9.85$ ;  $p = .002$ ).

Similarly to gender differences, ANOVA showed significant differences between age groups ( $F=2.308$ ;  $p=.05$ ). As DMS test in Table 2.1.5 shows, mean differences were significant between the age group 20-30 ( $M=17.10$ ) and the age groups 31-40 ( $M=18.52$ ), 41-50 ( $M=18.27$ ) and  $>60$  ( $M=18.08$ ), so that the younger group showed a lower level of resilience than the rest.

Table 2.1.5.

*Differences in the Brief Resilience Scale scores by Age. ANOVAs & DMS Test*

Age (I)	Age (J)	Mean differences (I-J)	$p$	95% CI	
				<i>LL</i>	<i>UL</i>
20-30	31-40	-1.421*	.010	-2.501	-.341
	41-50	-1.131*	.047	-2.246	-.017
	51-60	-1.167	.126	-2.662	.328
	>60	-3.048*	.043	-5.998	-.097
31-40	41-50	.2898	.589	-.762	1.342
	51-60	.2543	.731	-1.195	1.704
	>60	-1.626	.276	-4.554	1.301
41-50	51-60	-.035	.962	-1.511	1.440
	>60	-1.916	.201	-4.857	1.024
51-60	>60	-1.881	.235	-4.986	1.224

Note.  $p$  = level of significance. CI = Confidence Interval. *LL* = lower limit. *UL* = upper limit.

***Sensitivity of the scale to education level, marital status and work status.***

Regarding education level, we expected that it would be related to higher resilience (Frankenberg, Sikoki, Sumantri, Suriastini & Thomas, 2013), while no data about the relation between marital and work status and self-reported resilience have been reported. ANOVAs showed that only the effect of the education level was significant ( $F= 3.85$ ;  $p=.022$ ). DMS test showed that the BRS scores were significantly different only between the Primary education group ( $M=16.61$ ) and the University education group ( $M=18.48$ ) ( $p=.008$ ).

### ***Sensitivity of the scale to detect high-risk populations***

Accordingly to Smith et al.'s results (2008), we hypothesized that groups under higher levels of stress would score lower on resilience. Following this, we predicted that the group scoring higher would be the general population and the groups scoring lower would be cancer patients, parents of children with cancer and parents of critically ill children. ANOVA and DMS test showed that differences in the level of resilience were only significant between parents of critically ill children who showed the highest degree of resilience ( $M=18.76$ ) and parents of children with cancer who showed the lowest degree of resilience ( $M=16.54$ ) ( $p=.004$ ).

In the group of parents of critically ill children, we expected that a higher severity of the child's condition would be related to lower levels of resilience, as the situation they face is more stressful. Results showed that none of the severity indices assessed (PIM2, length of admission, elective versus emergency admission, mechanical ventilation, and parental perceived severity) had any relation to the BRS score.

#### **2.1.5. Discussion**

The purpose of the current study was to ascertain the psychometric properties of scores of the Spanish Brief Resilience Scale, in a heterogeneous sample of the Spanish population. Our study suggests that the Spanish version of the scale showed adequate psychometric properties in terms of reliability, validity and sensitivity of its scores.

Regarding reliability, it was found that the BRS scores demonstrated good internal consistency and test-retest reliability, with similar values to those obtained in the English version (Smith et al., 2008). In that sense, it is noteworthy that the calculations for the test-retest reliability in our sample took into account three measurements separated by periods of three months, and yet the resulting value is equal to the higher value obtained in the original work, which corresponded to a retest after just one month.

With respect to the factorial construct evidence of validity, our data –obtained through confirmatory factor analyses– clearly supported the mono-factorial structure previously found. Furthermore, our analyses to test concurrent and convergent evidence of validity showed that the BRS scores are significantly related to those questionnaires measuring similar constructs. In this respect, it should be mentioned that the highest correlation was with the SSRSA, which, like the BRS and unlike other measures (such as the 10-item CD-RISC and the RQA), was designed to measure resilience as the ability to bounce back and not as the presence of protective factors. Our work has also provided information about the predictive evidence of validity of the BRS, showing that resilience scores can predict a better or worse health outcome in terms of anxiety, depression and posttraumatic stress.

Regarding sensitivity analyses, in our sample, higher BRS scores appear to be related to male gender, older age, higher educational level, and type of adverse situation. With respect to age and gender, the BRS original study found no gender differences in undergraduate students, but male cardiac patients showed a greater resilience (Smith et al, 2008). Also, Smith et al. (2010) found a weak correlation between being male and having a higher BRS score, and also a weak positive correlation between resilience and age. Moreover, previous general resilience literature (not necessarily measured with the BRS) has yielded mixed results regarding the effects of gender and age in resilience, and a recent meta-analysis has found no robust result on this matter (Lee et al., 2013). This lack of clarity is likely to be due to the small homogenous samples used in the different studies (Lee et al, 2013). It could be, then, that our results just add up to that controversy without providing further clarity. Nonetheless, our sample was not small and homogenous, as was the case of the studies included in the aforementioned meta-analysis, thus it could also be that our results point in a direction that must be explored in future research. However, for the moment our results regarding sensitivity of the scale to detect

gender and age effects should be treated with caution, since there are no previous conclusive data that support them.

As for the educational differences, they were only found between the primary education group and the university level group as expected, which provides some evidence about the sensitivity of the BRS scores. This fact would speak in favor of educational policies that foster higher levels of education, as those are related to a higher degree of resilience (Frankenberg et al, 2013).

Regarding the sensitivity of the scale to detect high-risk group differences, these differences were found only between two high-risk groups, in the sense that parents of critically ill children reported significantly higher resilience than cancer patients, while no differences were found among the rest of sub-samples. These data do not support our hypothesis that populations under a higher level of health-related stress would score lower in resilience. Furthermore, in the parents of critically ill children, severity of the child's condition was not related to resilience as hypothesized. As only one study (Smith et al., 2008) had previously explored differences among healthy individuals and individuals with health related conditions, and none had included stressors related to having a child with an illness of a disability, the relation between the degree of stress produced by the health-related stressors, and the degree of resilience that people report should be further explored. Thus, our data about the sensitivity of the scale scores to detect high-risk populations are not conclusive.

The lack of conclusiveness about the sensitivity of the scale deserves additional consideration. We are aware that our hypotheses about the expected resilience levels in each group were based on the idea that people under higher stress levels would score lower in resilience, as has been suggested in previous research (Smith et al., 2008). Consequently, we expected that participants facing health-related conditions related to higher stress levels in literature would score lower in resilience, while groups under lower stress would score higher

in resilience. However, it is possible that the relation between stress and resilience is more complex, as it may be influenced by many other factors such as the kind of coping strategies a person uses (Villasana & Alonso-Tapia, 2016). Thus, the inability of the Spanish version of the BRS to identify populations under higher or lower stress, may depend more on the lack of clarity about the relation between stress level and resilience level, than on a lack of sensitivity of this scale. Consequently, sensitivity data does not invalidate the potential usefulness of the BRS as an instrument for detecting the specific degree of resilience of each particular person and its stability or variation along time. Moreover, our study suggests that the relation between stress severity and resilience should be further explored.

Our study has several clinical implications. First, it provides the Spanish population with the adaptation of the only measure that specifically assesses resilience in its original meaning, and not protective factors (Smith et al., 2008; Windle et al., 2011). This scale, as it has been validated in a heterogeneous sample, can be used in clinical settings to assess resilience in both individuals with and without a health-related stressor, though further evidence of validity in other samples is still required. Our research has also contributed knowledge to the resilience studies by showing that the measurement of subjective resilience is able to predict the development of adverse psychological reactions months after a traumatic event. This is of paramount importance to the field of Health Psychology since the BRS can also be used in the clinical practice to detect individuals at high risk of developing a psychopathological reaction after a potentially traumatic event. If we were able to detect these individuals, we could implement preventive psychological interventions. Finally, since the sample used for the BRS validation is heterogeneous and include both healthy adults and adults under a health-related stressor, we hypothesize that data from future representative samples of the general population would not differ significantly from those reported above.

To conclude, our study also presents some limitations. It could be claimed that participant recruitment possibly resulted in only those highly motivated fulfilling the scales. This may imply a bias in our results, since it could be that the most motivated are at the same time the most resilient. Also, in spite of the fact that we tried to include in our study a variety of subsamples, some of them –particularly the cancer patients and the parents of children with disabilities or development disorders– are small. We recommend bigger subsamples for future research, which will allow better comparisons among groups and the development of normative studies which provide data specific to each type of population for the use of the scale in clinical settings.

In conclusion, the Spanish BRS is a reliable means of assessing resilience both for clinical and research purposes and in a variety of different samples. So, not only the quality of the translation, but also the quality of the psychometric properties of its scores based on a large heterogeneous sample makes this version preferable to other resilience scales that are currently available in Spanish. Besides these reasons, it is necessary to remember that the BRS is the only widely used scale that measures resilience as the ability to bounce back instead of as the factors contributing to it (Windle et al., 2011).



## **2.2. Coping assessment from the perspective of the person-situation interaction: Development and validation of the Situated Coping Questionnaire for Adults (SCQA)**

Jesús Alonso-Tapia<sup>1</sup>, Rocío Rodríguez-Rey<sup>1</sup>, Helena Hernansaiz-Garrido<sup>1</sup>, Miguel Ruiz<sup>2</sup> & Carmen Nieto<sup>3</sup>.

1. Department of Biological and Health Psychology, Psychology Faculty, Universidad Autónoma de Madrid.
2. Department of Social Psychology and Methodology, Psychology Faculty, Universidad Autónoma de Madrid.
3. Department of Basic Psychology, Psychology Faculty, Universidad Autónoma de Madrid.

### Acknowledgements

The second and the third authors would like to acknowledge the financial support given, respectively, by the Universidad Autónoma de Madrid through a FPI fellowship and by the Spanish Ministerio de Educación, Cultura y Deporte through a FPU fellowship.

### **2.2.1. Abstract**

*Background:* The coping strategies that people use are not stable, but vary depending of the faced adversity. However, to date most of the questionnaires assessing coping do not consider its situational character. The main objective of this study is to develop and validate the Situated Coping Questionnaire for Adults (SCQA), which assesses coping in front of five different kinds of adverse contexts to take into account its situational dimension.

*Methods:* A total of 430 Spanish adults (256 of the general population, 77 people suffering from cancer or HIV and 97 parents of children with cancer or developmental problems) completed the SCQA and two resilience questionnaires (the Brief Resilience Scale and the 10-item Connor-Davidson Resilience Scale) for validation purposes.

*Results:* Confirmatory factor analyses showed the superiority of the person-situation model: the situation influences the degree in which people use particular coping strategies; however, coping is also stable to some extent. Regression analyses showed that coping strategies contributed to predict resilience in the expected direction, supporting the validity of the SCQA. The questionnaire and its sub-scales showed adequate reliability.

*Conclusion:* The SCQA is deemed a reliable and valid means of situated coping assessment for use in several populations.

*Keywords:* Coping strategies; coping assessment; resilience; person-situation interaction; bi-factor models

### **2.2.2. Introduction**

Since people differ in the way they cope with stressful situations, and as not all coping strategies are equally effective, it is important to assess the types of coping strategies that individuals use to help them cope with stress. The assessment of coping, however, is not an easy task, as coping is a complex concept with a long history (Folkman & Moskowitz, 2004; Carver & Connor-Smith, 2010). Despite its complexity, most researchers and practitioners agree that coping, by its own nature, is not a trait, as it implies “a constant change of cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). Nevertheless, this fact does not imply a lack of generalization of coping strategies across time and situations, though the results of studies on temporal stability and situational consistency are not convergent (Kohlmann, 1993; McCrae, 1984; Steed, 1998).

Coping has often been assessed with standardized general scales, which assume that people use the same strategies to cope with stressful situations over time and across situations. This assumption reduces the complexity of coping assessment (Kato, 2015; Schwarzer & Schwarzer, 1996), as it implies assuming that the weight of the situation in determining coping responses is almost negligible, which may not be the case (Schwarzer & Schwarzer, 1996; Steed, 1998). On the other hand, some researchers have used scales for specific situations, such as chronic pain, marriage, emergency work, finance, parenting, occupation, etc. (Steed, 1998), or other assessment procedures, such as self-recording or narrative interviews (McCrae, 1984). This type of assessment can be more precise in some way, but it makes it more difficult to assess trans-situational consistency. Both types of procedures (general and situational) have their limitations, which we attempt to overcome in this study by developing a questionnaire which considers both the situational and personal dimensions of coping.

Research on the relation between coping strategies and different stressful situations has focused either on studying the influence of a particular situation on the degree of use of different coping strategies, or on studying the differences in the degree of use of a particular coping strategy in different stressful situations (Mattlin, Wethnigton & Kessler, 1990). The combination of both, different strategies and different situations, has not been considered yet in research. Nevertheless, different situations can activate an individual's preferred coping strategies in different degree, depending on the differential person's coping history in every stressful situation. That is, each person would probably be prone to use different coping strategies in different problem situations. This fact would constitute an additional source of variability in a coping questionnaires and could contribute to improve the prediction of coping effects. Given the practical interest in improving this prediction, as well as the methodological relevance of controlling the source of variability introduced by the situation when assessing coping strategies, we decided to develop a coping questionnaire which takes into account the person-situation interaction and to study its potential contributions to coping assessment and understanding. We post, therefore, that it is possible to use coping assessment general scales without missing the role that the type of situation plays in determining how people cope with stress. This can be done by systematically varying and combining coping strategies and situations in the design of the scale, and by testing the adequacy of such models using bi-factor structural equations (Guftafsson, & Åberg-Bengtsson, 2010). Nevertheless, in order to build the questionnaire, it is necessary to decide first which coping strategies and stressful situations to include in such scale.

### ***Coping strategies/styles***

Although coping responses are virtually infinite (Skinner, Edge, Altman and Sherwood, 2003), researchers have tried to organize the variety of coping strategies in different taxonomies, such as hierarchical models with higher order categories (dimensions or styles)

that allow organizing the different specific coping strategies. Different coping styles have been proposed (Schwarzer & Schwarzer, 1996; Carver & Connor-Smith, 2010), but a well-known distinction, put forward by Lazarus and Folkman (1984) is between problem-focused and emotion-focused coping (PFC and EFC respectively). PFC is directed at the stressor to evade it or to diminish its impact, whereas EFC pursues minimizing distress. This two-dimension model, which we decided to adopt in our study, comprises a myriad of coping strategies within the coping styles. A selection of strategies to be included in our assessment instrument is thus necessary.

A recent meta-analysis of coping measures (Kato, 2015) showed that some of the strategies included in the reviewed scales have good predictive power for positive and negative outcomes. Regarding the positive outcomes, well-being correlates with active coping and planning (that is, trying to solve the problem;  $r = .25$ ), positive reinterpretation and growth (positive thinking;  $r = .32$ ), seeking social support (help-seeking;  $r = .24$ ) and acceptance (avoiding to think about the problem when it is unsolvable;  $r = .18$ ). On the other hand, negative affect is related to thinking repetitively about the problem (rumination;  $r = .38$ ), behavioral disengagement (isolation;  $r = .40$ ) and focusing on venting emotions (emotional expression;  $r = .28$ ). Lastly, depression, anxiety and general distress correlate with self-blame ( $r = .43$ ,  $r = .32$  and  $r = .43$ , respectively). Based on these findings, we decided to include the above mentioned coping strategies in our questionnaire, grouped in the two styles EFC and PFC.

### ***Types of stressful situations***

Researchers have tried to characterize stressful situations depending on the type of stress involved –threat, loss or challenge (McCrae, 1984)–, or on their objective characteristics – work-related problems, problems with close persons’ relationships, own health problems, close persons’ health problems and economic problems (Mattlin, et al., 1990). As we intended to build a coping questionnaire that considered typical stressful situations, we decided to utilize

the latter classification, which corresponds to the types of problems that are more cited in the literature as stressful.

### ***Person-situation coping model***

To achieve the intended objective, we developed the models shown in Figures 2.2.1 and 2.2.2. Both include on its right part the eight coping strategies included in our questionnaire and the two coping styles in which they are grouped. However, the left part of Figure 2.2.2 also shows the five different types of stressful situations that we included in our questionnaire. This second model followed Guftafsson & Åberg-Bengtsson (2010) proposal, who suggested that it is possible to use a combination of hierarchical and bi-factor models to disentangle sources of variance when trying to measure a construct.

In a questionnaire based on the second model, the score on each item may depend, on the one hand, on the degree in which the person is prone to use a particular strategy in different situations and, on the other hand, on the degree in which a particular situation activates the different coping strategies. If people tend to use certain strategies no matter the situation –if its use generalizes across situations–, then the coping strategies category would explain most of the item variance. Nevertheless, depending on the degree in which the type of situation matters, the item variances would be explained by each situation. Our general hypothesis is that both – coping strategies and the situation– contribute to explain the person’s coping behavior. Therefore, we expect that the model that considers the situations will show a better fit to data than the same model without the type of situation.

### ***Relation to resilience***

Coping may materialize in different behaviors (Kato, 2015) which, depending on their adequacy, may have different short and long term effects. One of these effects is resilience, which refers to positive adaptation or recovery despite experiences of significant adversity

(Luthar, 2006). According to Leipold and Greeve (2009), the use of adequate coping strategies when confronting adversity could explain the degree of resilience that is shown towards such adversity. Therefore, we decided to use resilience as an external criterion to study the criterion-related validity of our measure. We expect that the utilization of the PFC style will be related to higher resilience, as it has been found to be related to better outcomes (Alok et al., 2014) and includes apparently more adaptive strategies such as searching for a solution or trying to learn from difficulties. Regarding the EFC style, it takes place when, instead of trying to solve the problem, the person tries to avoid or minimize the negative emotions generated by it. Such strategy has found to be associated to poorer outcomes (Herman & Tetrick, 2009), and thus, we expect it to be related to lower resilience.

### **2.2.3. Methods**

#### ***Participants***

A sample of 430 adults conformed the study. Three different groups of participants were recruited in order to gather a sample with enough variability in relation to the degree of stress they had confronted. The first subsample ( $n = 256$ ), termed “general population”, was composed by people who might have experienced stress, but that as a group could not be assigned to a particular category of people at risk. The second subsample ( $n = 77$ ) were adults who were suffering from VIH or cancer, and the third ( $n = 97$ ) were parents of children with serious problems: either cancer or developmental or sensorial problems. We included these clinical samples because it is well-known that facing health problems or being a parent of a child with a health-related condition or a disability may be an important source of stress (e.g., Perry et al., 1990; Vrijmoet-Wiersma et al., 2008). Of the total sample, 69.8% were women. Regarding age, 33.3% of the sample was in the age interval between 20 and 30 years, 22.8% between 31 and 40 years, 26.3% between 41 and 50 years, 14.9% between 51 and 60 years,

and 2.8% were above 60 years old. As for educational level, 70.46% had a university degree and 29.53% had primary, secondary or professional education.

### ***Instruments***

- *The Situated Coping Questionnaire for Adults (SCQA)*. This questionnaire, designed for this study, assesses to what extent the coping strategies used by adults generalize across situations or vary depending on the type of faced adverse situation. It is in Spanish language and comprises 40 items, which take into account eight different coping strategies grouped in two styles: EFC, which includes rumination, emotional expression, self-blaming, and self-isolation; and PFC, composed of thinking avoidance, help seeking, problem-solving, and positive thinking. It also considers five types of adverse situations: work-related problems, problems with close people –family, friends–, own health problems, close person’s health problems, and economic problems. The items are answered on a 5-point Likert scale, in which participants determined the degree of agreement with each statement (1 = I totally disagree, 5 = I totally agree). An English translation of the items for two of the five situations of the SCQA can be found in the Table 2.2.1. The full questionnaire is located in the Annex of this dissertation (page 425 original version in Spanish, page 427 English translation).

Table 2.2.1.

Items of two of the situations included in The Situated Coping Questionnaire for Adults.

---

When I have had **problems at work** that made me feel very upset:

---

I have repeatedly thought about the problem, and about how much I wish that it would have been different.

I have tried to think in other things, or to do something which helped me not thinking about the problem.

I have isolated myself so that I did not have to share my concerns with anyone.

I have tried to tell my problem to someone else, so that he/she could help me.

I have tried to find a solution to the problem by myself, without giving up.

I have acted impulsively, following my feelings or emotions.

I have blamed myself for not having be able to prevent the problem.

I have tried looking at the positives, trying to learn from what happened to avoid that it could happen again.

---



---

When I have had serious **problems in my relation with a relative, friend or colleague.**

---

I have repeatedly thought about the problem, and about how much I wish that it wouldn't have happened

I have tried to think in other things, or to do something which helped me not thinking about the problem.

I have isolated myself so that I did not have to share my concerns with anyone.

I have tried to tell my problem to someone else, so that he/she could help me.

I have tried to find by myself what I can tell them or what I can do to in order to solve the problem.

I have acted impulsively, following my feelings or emotions, without thinking twice.

I have blamed myself for not having been able to prevent the problem.

I have tried looking at the positives, trying to learn from what happened to avoid that it could happen again.

---

- *10-item Connor-Davidson Resilience Scale* (10-item CD-RISC; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003). This measure assesses resilience as the personal qualities that enable one to thrive in the face of adversity. It is composed of 10 items with five response options (0 = Never; 5 = Almost always) and a direct scoring (the higher the score, the higher the resilience). The scores of the Spanish version showed adequate reliability when used in samples of university students ( $\alpha = .85$ ; intraclass correlation coefficient, ICC = .71; Notario-Pacheco et al., 2011), and fibromyalgia patients ( $\alpha = .88$ ; ICC = .89; Notario-Pacheco et al., 2014).

- *Brief Resilience Scale* (BRS; Smith et al., 2008). It is a 6-item self-report resilience scale with a 5-point response scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). A higher score indicates a higher degree of resilience, understood as the ability to bounce back from stress. The English version scores loaded into one factor, and showed good internal consistency ( $\alpha$  ranging from .80 to .91) and test-retest reliability (ICC ranging from .61 to .69). As for the Spanish version (Rodríguez-Rey, Alonso-Tapia & Hernansaiz-Garrido, 2015), it also showed adequate internal consistency ( $\alpha = .83$ ) and test-retest reliability (ICC = .69).

## ***Procedure***

Ethics approval for this study was granted by the Research Ethics Committee at the authors' University.

To gather the participants, several Non-governmental organizations were contacted and asked to send the potential participants an email containing information about the study, along with a link to the informed consent and the questionnaires. Those willing to participate completed the questionnaires online. The sample of general population was recruited by email using a snowball approach in which students and University colleagues were asked for collaboration to spread out the questionnaire.

## ***Data analysis***

*Factorial validity.* A baseline model that included the eight coping strategies and the two coping styles –but not the situations– was estimated with a confirmatory factor analysis (CFA-1; see Figure 2.2.1). Estimates were obtained using the maximum likelihood method. Absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ , GFI), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA) were used to assess model fit, as well as criteria for acceptance or rejection based on the degree of adjustment described by Hair, Black, Babin and Anderson (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ). Then, the model shown in Figure 2.2.2, which also considers the type of stressful situation, was tested carrying out a bi-factor CFA (CFA-2) (Guftafsson & Åberg-Bengtsson, 2010) with the same method, fit indexes and criteria as the previous analysis.

*Reliability.* Cronbach's  $\alpha$  coefficients were calculated for each specific SCQA scale and for the two general styles.

*Criterion validity.* Several regression analyses were performed with resilience as criterion (assessed by the BRS and the CD-RISC) and coping strategies or styles as predictors.

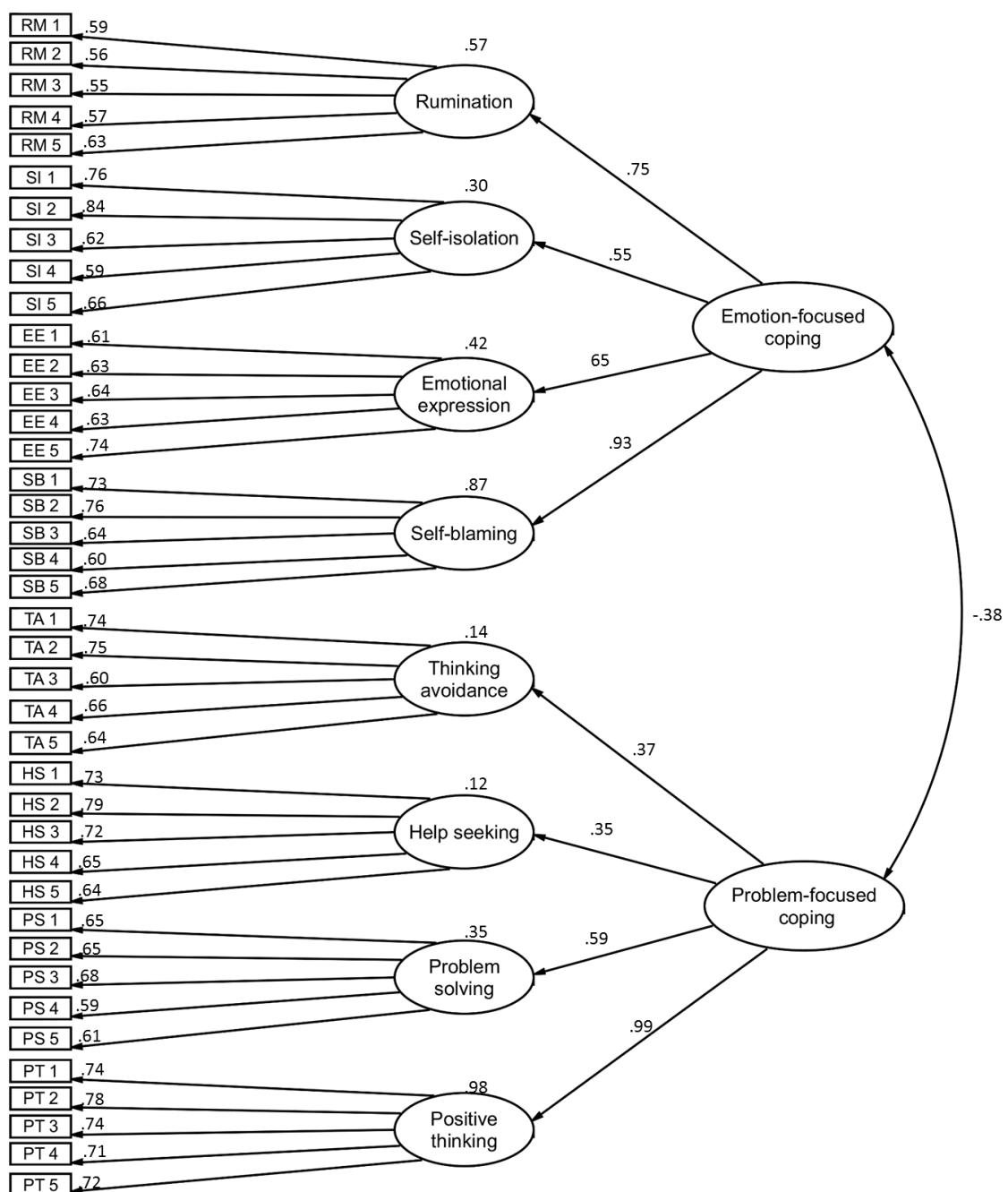
Analyses were carried out with SPSS v.22 and AMOS v.22.

## 2.2.4. Results

### *Factorial validity*

Figure 2.2.1. shows the standardized estimates of the baseline model, as well as the squared multiple correlations. All weights ( $\lambda$ ) were significant ( $p < .001$ ).

Figure 2.2.1. Situated Coping Questionnaire for Adults. Initial confirmatory standardized solution.



Chi-square statistic was significant, probably due to the sample size (Hair et al., 2010), but the  $\chi^2/df = 3.29 < 5$  and the RMSEA adjustment index (RMSEA = .07) were well inside the limits that allowed the model to be accepted. The remaining indexes (GFI = .77; IFI = .77; CFI = .76) fell short of the standard limits of acceptance. This was an expected result, as our expectation was that the type of adverse situation would moderate the results and thus, a situational model would probably show a better fit.

Figure 2.2.2 shows the standardized estimates of the bi-factor confirmatory model as well as the squared multiple correlations. Again, chi-square statistic was significant, probably due to the sample size, but  $\chi^2/df = 2.59 < 5$  and RMSEA = .03 < .08 were well inside the limits that allowed the model to be accepted. The remaining fit indexes fell slightly short of the standard limits of acceptance (GFI = .83; IFI = .85; CFI = .86).

As expected, the bi-factor model, which captures the person-situation interaction, fitted the data better than the hierarchic model, which only refers to coping strategies and styles. Besides, a comparison of  $R^2$  for each item between the baseline CFA (Figure 2.2.1.) and the bi-factor CFA (Figure 2.2.2.) shows that in the latter the amount of explained variance increased in many cases in a considerable degree.

All the weights ( $\lambda$ ) related to coping strategies and styles were significant ( $p < .001$ ). As for the weights related to each situation (see Table 2.2.2), most of them, but not all, were significant.

### ***Reliability***

Cronbach's  $\alpha$  coefficients, computed for the coping styles and strategies of this questionnaire, were as follows: PFC style ( $\alpha = .85$ ), problem solving ( $\alpha = .77$ ), help seeking ( $\alpha = .83$ ), positive thinking ( $\alpha = .85$ ), thinking avoidance ( $\alpha = .81$ ), EFC style ( $\alpha = .82$ ), rumination ( $\alpha = .71$ ), emotional expression ( $\alpha = .78$ ), self-isolation ( $\alpha = .82$ ) and self-blaming ( $\alpha = .81$ ).

Figure 2.2.2. Situated Coping Questionnaire for Adults. Confirmatory bi-factor standardized solution.

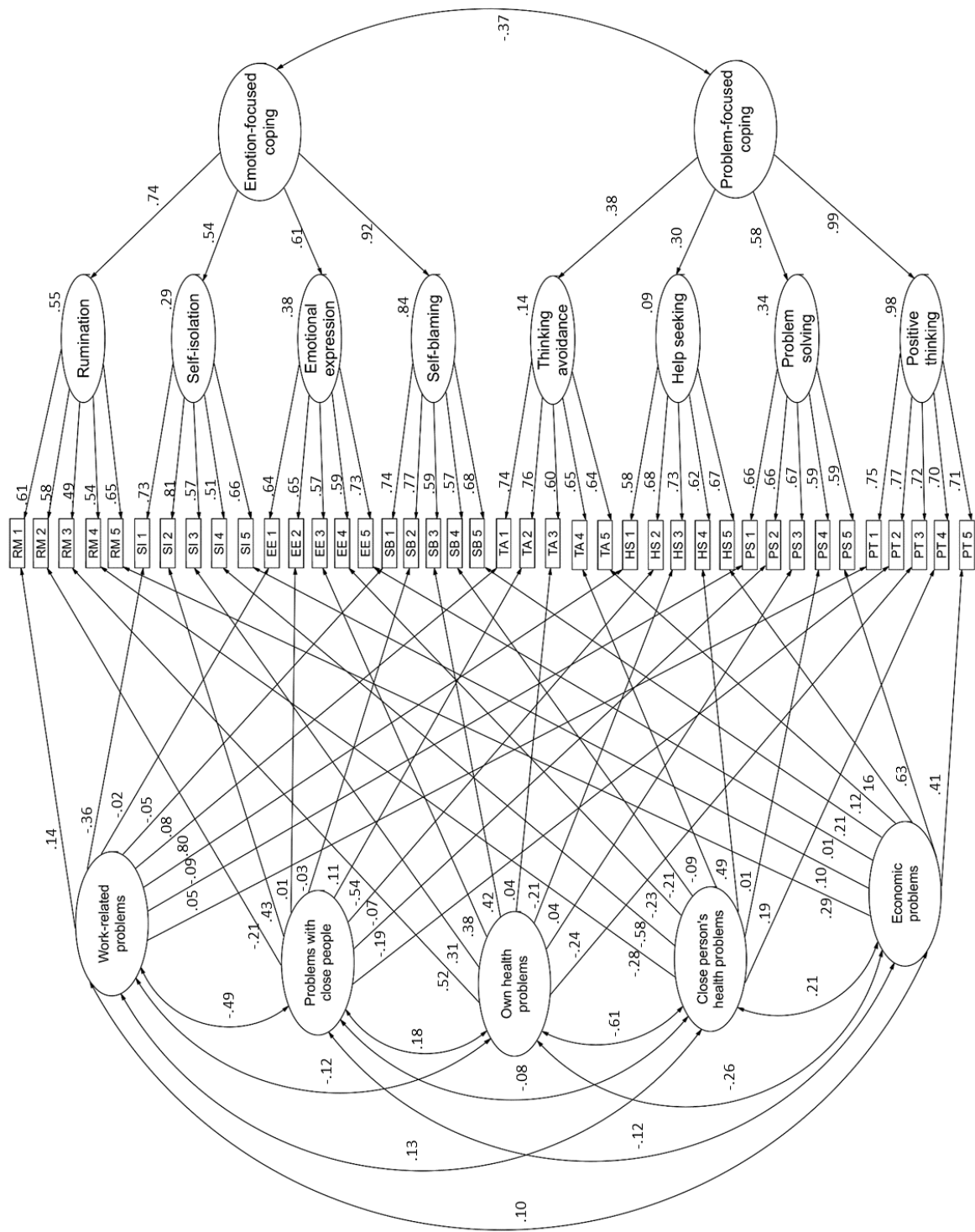


Table 2.2.2.

*Situated Coping Questionnaire for Adults. Bi-factor CFA standardized weights and significance relating situations to items assessing the use of each kind of coping strategy.*

Stressful situation	Coping strategy							
	RM	SI	EE	SB	TA	HS	PS	PT
Work-related problems	.14	-.36**	-.02	-.05	.08	.80***	-.09	.05
Problems with close people	-.21***	.43***	.01	-.03	.11*	-.54***	-.07	-.19***
Own health problems	.52***	.31***	.38***	.42***	.04	-.21***	.04	-.24***
Close person's health problems	-.18**	-.58***	-.23***	.21***	-.09	.49***	.01	.19***
Economic problems	.29***	.10*	.01	.21***	.12*	.16**	.63***	.41***

*Note.* RM = Rumination. SI = Self-isolation. EE = Emotional Expression. SB = Self-blame. TA = Thinking Avoidance. HS = Help-seeking. PS = Problem Solving. PT = Positive thinking.  
 \*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ .

### **Criterion validity**

Table 2.2.3 shows the results of the regression analyses. As expected, EFC and PFC contribute in a significant degree to predict general resilience in the expected direction, no matter the resilience questionnaire used. When the specific coping strategies are used as predictors, general resilience is predicted in a significant way –explained variance ranges between 33% and 51%–, being rumination (negatively) and positive thinking (positively) the strategies that most contribute to predict resilience in all cases.

### **2.2.5. Discussion**

The main objective of this study was to develop a situated coping questionnaire, the SCQA, and test whether it was possible to use a general scale without missing the role that the type of situation plays in determining how people cope with stress, and to ascertain the psychometric properties of such scale.

Table 2.2.3.

*Prediction of resilience from coping: R<sup>2</sup> and standardized regression weights.*

Criterion	R <sup>2</sup>	EFC	PFC	RM	SI	EE	SB	TA	HS	PS	PT
Prediction of resilience from coping styles											
BRS	.28***	-.40***	.33***								
CDRISC	.45***	-.31***	.61***								
Prediction of resilience from coping strategies											
BRS	.33***			-.37***	n.s.	-.11**	n.s.	n.s.	n.s.	n.s.	.30***
CDRISC	.51***			-.12**	n.s.	-.11**	n.s.	n.s.	.08*	.16***	.52***

*Note.* BRS = Brief Resilience Scale. CD-RISC = 10-item Connor-Davidson Resilience Scale. EFC = Emotion-focused coping. PFC = Problem-focused coping. RM = Rumination. SI = Self-isolation. EE = Emotional Expression. SB = Self-blame. TA = Thinking Avoidance. HS = Help-seeking. PS = Problem Solving. PT = Positive thinking.

\*\*\*p < .001. \*\*p < .01. \*p < .05.

Our results have provided evidence which supports the initial expectations about the reliability of the SCQA scales and its structure. The assessed coping strategies can be organized into the two general coping styles proposed by Lazarus and Folkman (1984), problem-solving focused coping (PFC) and emotion focused coping (EFC). These two styles correlate negatively ( $r = -.37$ ), result that parallels the one found by Villasana, Alonso-Tapia & Ruiz (2016) ( $r = -.19$ ), though the negative association seems to be greater in the adult sample. This fact could suggest a tendency to mainly focus on one coping style (and avoid the other) as adulthood is reached, possibly depending on the situation.

Furthermore, our results also showed that adding the type of stressful situation to the equation is very important, as a situated model fits the data better than a non-situated one. Moreover, the significance of the measurement weights which link the observed variables to the situations (Figure 2.2.2) vary in great degree depending on the considered situation. This means that people differ in the degree they use a certain coping strategy depending on the type

of adverse situation. For instance, regression weights in Table 2.2.2 show that people tend to seek help and not to isolate themselves in front of work-related problems, but the opposite pattern is found when facing relationship problems with close persons: people tend to isolate themselves and not to seek help, and they also tend not to ruminate or think positively.

Finally, evidence stemming from our results supports the idea that, in adults, resilience is related to coping styles as expected –positively to PFC and negatively to EFC–, a result that parallels those of Villasana et al. (2016) and that provides validity to the SCQA.

The facts just described have practical implications. Our study has provided the Spanish-speaking community with a reliable and valid tool which can be used in a variety of populations. More research is needed, both to confirm the psychometric properties of the scale in similar or different samples (e.g., in other Spanish-speaking countries) and to study coping and its relations to other constructs from a holistic perspective that advances current knowledge and impacts the development of psychological interventions. Regarding the clinical implications, our study suggest that psychologists and educators must take into account that people’s coping strategies may change across situations, so they should not assume that what an individual learns in a context will be automatically transferred to others. Additionally, in order to help people cope with stress, professionals should encourage the utilization of the strategies included in the PFC style, as they are related to higher resilience.

This study has some limitations. Firstly, the recruitment and participation were made online, so only those with access and knowledge about computers, e-mails and web-browsing were able to access the study, which could imply a sample biasing. Secondly, the fact that the situation contributes to activate different strategies and in different degree for each person is only a hypothesis that needs to be tested through longitudinal research, as our data are correlational. Thirdly, one hypothesis that derives directly from the relationship between coping styles and resilience is that, if coping styles were modified by means of psychological



intervention, and if they are not only a variable associated to resilience but a factor contributing to it, then resilience should change too. However, this is again a hypothesis that needs to be tested. Lastly, the results just described do not imply that the only strategies that people can use are the ones included in the SCQA. So, it would be interesting to study how the person-situation model found in this study applies to the other coping strategies.

In conclusion, although more research is necessary, the SCQA has shown to be a reliable and valid means of assessment of several coping strategies with a heterogeneous sample in a variety of stressful situations.

## **2.3. Personality factors underlying resilience: Development and validation of the Resiliency Questionnaire for Adults (RQA)**

Jesús Alonso-Tapia<sup>1</sup>, Helena Hernansaiz-Garrido<sup>1</sup>, Rocío Rodríguez-Rey<sup>1</sup>, Miguel Ruiz<sup>2</sup> & Carmen Nieto<sup>3</sup>.

1. Department of Biological and Health Psychology, Psychology Faculty, Universidad Autónoma de Madrid.
2. Department of Social Psychology and Methodology, Psychology Faculty, Universidad Autónoma de Madrid.
3. Department of Basic Psychology, Psychology Faculty, Universidad Autónoma de Madrid.

### Acknowledgements

The second and the third authors would like to acknowledge the financial support given, respectively, by the Universidad Autónoma de Madrid through a FPI fellowship and by the Spanish Ministerio de Educación, Cultura y Deporte through a FPU fellowship.

### **2.3.1. Abstract**

Resiliency is defined as the personality traits that configure resilience, the ability to bounce back from stress. This study aimed to develop the Resiliency Questionnaire for Adults, based on Prince-Embury's theory, which understands resiliency as two protective factors –sense of mastery and sense of relatedness–, and one risk factor –emotional reactivity. We performed reliability analyses, and factorial validity was tested by hierarchical confirmatory factor analysis of the original three-factor structure and a proposed two-factor one. Criterion validity was assessed with a path analysis with latent variables to predict resilience. Spanish adults from both general population and clinical settings (N=430) participated in the study. Results showed that the factor scales were reliable and both the three- and the two-factor models fitted the data. Path analysis showed that resiliency factors predict two thirds of the variance of resilience. As expected, sense of mastery was a protective factor for resilience and emotional reactivity was a risk factor; and both could conform a single factor since they are strongly negatively correlated. Contrary to that stated by Prince-Embury's theory, sense of relatedness worked as a risk factor. The Resiliency Questionnaire for Adults is a reliable and valid measure of personality factors underlying resilience.

*Keywords:* Resiliency, Resilience, Personality, Protective factors, Risk factors

### 2.3.2. Introduction

Many people confront their lives with a positive attitude and a life-style that makes them resilient (Freedman & Kern, 2014). However, though it is not unusual that children and adults exposed to adversities and life stressors develop positive adaptation, many of them do not reach such adaptation (Bonanno, 2005). So, a question arises: why do some people show resilience while others do not? Part of the answer may be in the personality traits susceptible to affect resilient behaviors, which have been termed *resiliency*. The first author who made the distinction between resilience and resiliency was Masten (1994), who defined the latter as the personality traits that configure resilience. Resilience has been defined as the ability to bounce back from stress (Smith et al., 2008), and is considered as the outcome or series of outcomes that occur when people successfully confront significant adversity (Leipold & Greeve, 2009).

It seems important to identify the personality factors configuring resiliency, to clarify their nature and to analyze the way they relate to resilience, as achieving these objectives would be a first step to provide educators, counsellors and therapists the possibility of helping people to act in a more resilient way. Different lines of research have tried to identify the resiliency factors affecting resilience in front of acute (e.g., a car accident), massive or chronic stressing situations (e.g., a war, a natural catastrophe) (Bonanno & Diminich, 2013; Masten & Narayan, 2012). However, in order to clarify the relationship between resiliency factors and resilience as a phenomenon –an outcome–, it is also convenient to develop an explicit model of the supposed relationships and to test the validity of these relations directly.

Nevertheless, to test such a model, it is necessary to be in possession of measures for both resiliency and resilience. There are adequate resilience measures for adolescent and adults, as different revisions and recent studies have shown (Alonso-Tapia, Nieto & Ruiz, 2013; Alonso-Tapia & Villasana, 2014; “Reaching In... Reaching out”, 2010; Rodríguez-Rey, Alonso-Tapia, & Hernansaiz-Garrido, 2015; Smith et al, 2008; Windle, Bennet & Noyes,

2011). As for resiliency, the only adequate measure we have found was designed for children and adolescents (Prince-Embury, 2007). Thus, there was no resiliency measure available for adult samples, and there was also no resiliency measure available in Spanish language. So, we decided to develop a resiliency questionnaire for the Spanish population based on Prince-Embury's theory of resiliency structure. This study aims to test its structural validity in an adult sample and, given the lack of other resiliency measures validated in Spanish, to explore its predictive validity in relation to resilience.

### ***Theoretical framework***

Considering the assessment of resiliency, the main line of work is represented by Prince-Embury (2007) and the set of works recently published related to her own studies (Prince-Embury & Saklofske, 2013, 2014). According to this line of work, mainly developed with children and adolescents, resiliency translates the combined effect of several personal traits organized in three resiliency factors that operate not only under adverse circumstances, but also in normal ones (Prince-Embury & Saklofske, 2013). *Sense of Mastery* would involve internal resources to face problems, and is expressed in the indicators optimism, self-efficacy and adaptability. *Sense of Relatedness* refers to perceived support from the environment and adequate social skills, and is manifested in the indicators trust, support, comfort and tolerance. Finally, *Emotional Reactivity* implies a lack of emotional self-regulation abilities, and comprises the indicators sensitivity, impairment and slow recovery. Furthermore, according to these authors, these factors have a positive or negative effect on resilience depending on whether they are resources (*Sense of Mastery* and *Sense of Relatedness*) or risk factors (*Emotional Reactivity*).

There is some evidence, however, showing that this is not always the case, especially for the factors grouped under the heading *Sense of Relatedness*. For instance, Villasana & Alonso-Tapia (2016), working with adolescents, found that this factor is not related at all with

resilience. So, in order to evaluate the relationships that could be expected between the resiliency characteristics proposed by Prince-Embury (2007) and subjective resilience, instead of accepting without consideration her initial theory, it is first necessary to have a close look at their nature. Next we will describe the characteristics conforming each of the three factors above named.

1) *Optimism*. According to Seligman (1995), optimism is a learned characteristic that involves attributing success and failure to causes perceived as controllable, and confronting the future with positive expectancies. The cognitive processes underlying such kinds of attributions and expectancies imply considering adversities as challenges and confronting them by looking for solution strategies. According to previous studies being optimistic is related to higher resilience scores (Segovia, Moore, Linnville, Hoyt & Hain, 2012).

2) *Self-efficacy*. According to Bandura (1997), self-efficacy expectancies involve looking at a future situation and considering that one has the personal or social resources for successfully confronting it. As self-efficacy influences whether people will do or not some actions necessary for achieving their objectives, it can influence whether people will bounce back and be resilient or not. So, according to Prince-Embury, this characteristic is a personal resource that makes people act in a resilient way. However, from our point of view, in some cases self-efficacy can be based more in the perception of social resources availability than in one's own competence, and so it could contribute to configure *Sense of Relatedness*.

3) *Adaptability*. When people confront a problem, they can consider different alternatives or courses of action. As such, adaptability is an extension of a problem-solving coping style (Lazarus, 2006). Besides, it is likely that people used to look for alternative strategies usually find them as a result of their search. This fact would contribute also to personal self-efficacy and to optimism and so, it can be expected that adaptability scores correlate positively such factors and that it contribute positively to resilience.

4) *Trust*. Trust is the confidence one has in other people. It is based on attachment experiences to parents, adults and peers that sustain socioemotional development and social integration (Wallin, 2007). If a person has developed a deep trust in people surrounding him/her, it will be easier for him/her to ask for help in front of adversity and, maybe, to find it. In fact, asking for help is one of the strategies configuring a problem-solving coping style (Kato, 2015). So, it is possible that trust contributes positively to resilience. However, if the first and main strategy that a person uses to confront adversities is asking for help due to the perception of social resources availability and of personal lack of own competence, then it would be possible to find not only a positive contribution from trust to resilience, but also a negative one or at least a null one.

5) *Access to support*. It has been shown to contribute to dealing with adverse situations in an adaptive way and is clearly related to well-being in children and adults (Prince-Embury, 2007; Prince-Embury & Saklofske, 2013). Nevertheless, some authors (Villasana & Alonso-Tapia, 2016) have found a negative relation between access to support and resilience. This may be due to the fact that well-being is not necessarily the result of resilience understood as the personal capacity of bounce back when confronted with adverse situations (Luthar, 2006). If a person perceives that he/she has a good supporting social network, he/she may enjoy proper well-being but this may not necessarily lead to resilience.

6) *Comfort*. To feel comfortable or not when interacting with other people is a facet of the personality trait extraversion-introversion that is usually associated with wellbeing (Magnus, Diener, Fujita & Pavot, 1993; Freedman & Kern, 2014). The fact that interacting with others can be easy or not for a person may influence his/her ability to ask for help when confronted with adverse situations if necessary. So, it can favor resilience if asking for help is not the main strategy used to cope with problems. However, if it were the main and almost exclusive coping strategy of a person, it would be possible to find not only a positive

relationship between comfort and resilience, but also a negative one or, at least, a null one, as in the case of support and trust, for the same reason.

7) *Tolerance*. The items assessing tolerance reflect a personal ability usually designed as assertiveness. This quality is known to be positively related to effective social problem solving (Seyedfatemi, Moshirabadi, Borimnejad, & Haghani, 2014) and so, it can be expected to relate to resilience positively. However, as a problem solving strategy, it might be more related to personal characteristics such as self-efficacy and adaptability than to trust, support and comfort, so it could contribute to configure *Sense of Mastery* instead of *Sense of Relatedness*.

8) *Sensitivity*. The term sensitivity refers to the intensity and quickness of the emotional response to the presence of an acute stressor. It has been demonstrated that people differ in their emotional sensitivity to adverse stimuli and situations (Aluja, Blanch, Blanco & Balada, 2015), and that this sensitivity makes people become upset, negatively affecting the possibility of coping in an adaptive way with adverse situations. Thus, it is very likely that this factor will be negatively related to resilience.

9) *Recovery*. Speed of recovery after an adverse experience has been considered as a resiliency factor by Prince-Embury. However, from our point of view, as it is usually measured through self-reports in which individuals declare their subjective experience, speed of recovery should not be used as a predictor of resilience. It implies that the person has bounced back from the problem and so, it should be considered a direct measure of subjective resilience, as Smith et al. (2008) have done. So a measure of this type could be used as a criterion for validating the predictive power of resiliency factors.

10) *Impairment*. Psychological impairment, either cognitive or behavioral, is the natural consequence of high sensitivity –emotional arousal– and thus, should correlate highly with this variable. However, it is possible to exert some degree of cognitive control over emotion



(Marusak, Martin, Etkin & Thomason, 2015), and so both variables should be distinguished, as they may not correlate perfectly. In any case, it can be expected that impairment, like sensitivity, correlates with resilience negatively and in high degree.

In summary, this consideration of the nature of different personal factors supposedly affecting resilience suggests three things. First, that recovery should not be considered a resiliency factor, but a direct indicator of resilience. Second, the possibility of an organization of resiliency factors different from that proposed by Prince-Embury, with *Sense of Mastery* and *Emotional reactivity* constituting a single factor, as both could be considered as opposite poles of the same dimension, and as two of the specific factors considered could load in a different way: tolerance in *Sense of Mastery*, and self-efficacy in both *Sense of Mastery* and *Sense of Relatedness*. Third, and most importantly, that *Sense of Relatedness*, depending on whether it associates positively or not with *Sense of Mastery* for each particular person, might not be positively related to resilience, a fact with direct implications for intervention.

This study seeks to develop and validate in general and clinical samples in Spain a resiliency questionnaire in Spanish language that takes into account the aforementioned resiliency characteristics. Specifically, we seek to test two things during the validation process: first, whether resiliency factors relate to each other in the same or in a different way from that proposed by Prince-Embury and, second, whether resiliency factors –especially *Sense of Relatedness*– relate to resilience as proposed by her or as suggested by the above described theoretical considerations. We also seek to explore if there are differences in resiliency factors across clinical and non-clinical populations, as this aspect has not been studied before. We do not have any particular hypothesis about what such differences may be, but we deem them possible since adverse experiences can be acute or chronic and can be due to personal risk behaviors or to external uncontrollable factors (Masten & Narayan, 2012), and clinical samples

may be different from the general population regarding these aspects. If such differences existed, it might have important implications for intervention depending on their nature.

### **2.3.3. Methods**

#### ***Participants***

A total of 430 Spanish-speaking adults were recruited through the Internet. As we were interested in gathering a sample as diverse as possible in relation to the degree of experienced stress, recruitment mails were sent to different populations: the general one and groups that had faced or were facing different health-related conditions, as it is well-known that having health problems or being a parent of a child with a health-related condition may be an important source of stress (e.g., Perry et al., 1990; Vrijmoet-Wiersma et al., 2008).

The sample was composed of 97 parents of children with either cancer or developmental or sensorial problems (i.e. intellectual disability, autism or deafness); 77 adults suffering from an illness (VIH or cancer), and 256 adults from the general population. Women conformed 69.8 % of the sample. With regard to age, 33.3 % was in the age interval between 20 and 30 years, 22.8 % between 31 and 40 years, 26.3% between 41 and 50 years, 14.9 % between 51 and 60 years, and 2.8% were above 60 years old. As for the educational level, 70.46% had a university degree and 29.53% had only primary, secondary or professional education.

#### ***Instruments***

- *Resiliency Questionnaire for Adults (RQA)*. This questionnaire was developed for this study and was inspired in the Resiliency Scales for Adolescents developed by Prince-Embury (2007). Thirty-six items were developed in Spanish language by the authors so as to assess the nine following personal characteristics with four items each of them: optimism, self-efficacy, adaptability, trust, support, comfort, sensitivity and impairment. Half of the items were positively worded and the other half negatively worded in order to avoid acquiescence bias. The nine personal characteristics were expected to be grouped either in the three or in the two

general factor solutions previously described. Items were answered on a 5-point Likert scale measuring the degree of agreement with each statement (1 = I totally disagree to 5 = I totally agree). This questionnaire is included in the Annex of this thesis (p. 422), as well as an English translation of the questionnaire (p. 423).

- *Brief Resilience Scale* (BRS; Smith et al., 2008). This is a 6-item self-report questionnaire with a 5-point Likert response scale. It was chosen with the purpose of analyzing predictive and construct validity, as it assesses subjective *resilience* as the ability to bounce back from adversity. It has shown adequate internal consistency ( $\alpha$  ranging from .80 to .90) and test-retest reliability ( $r=0.62 - 0.69$ ) in a number of different samples, and has been recommended on the basis of its psychometric properties in a recent review of 15 measures of resilience (Windle, Bennett & Noyes, 2011). In this study the Spanish version developed by Rodríguez-Rey, Alonso-Tapia and Hernansaiz- Garrido (2015) was used. The Spanish BRS scores showed adequate internal consistency ( $\alpha=.83$ ) and test-retest reliability (ICC= .69).

### ***Procedures***

The ethical committee of the authors' university approved the study, as anonymity was warranted and no potential risks were derived from participating in this study. The general population sample was contacted by email using a snowball method in which students and University colleagues were asked for collaboration to spread the questionnaire. Although these participants might have experienced stress, they could not be assigned as a group to a particular category of people at risk. Besides, several non-governmental organizations were contacted (for HIV-positive individuals, for adult cancer patients, for children with cancer and their families, and for parents of children with health disabilities or developmental disorders) and asked to send the potential participants an email containing information about the study, along with a link to the informed consent and the questionnaires. Those who received the email and decided to participate, completed the questionnaires online.

### *Data analysis*

First, to determine the factorial validity of the *Resiliency Questionnaire for Adults* (RQA), two hierarchical confirmatory factor analyses (CFA) were performed. In the first analysis (CFA-1), the structure derived from Prince-Embury's theory on resiliency structure – which includes nine first-order factors, three general personality factors and a superfactor supposed to be Resiliency– was used as baseline model to be estimated. In the second analysis (CFA-2), a structure with two general factors was used as alternative model. This structure was derived from the theoretical considerations above described and from the fact that the final information of Prince-Embury's scales is organized around two general indexes, the *resource index* and the *vulnerability index* (Prince-Embury & Saklofske, 2013). In both CFAs, as measures were ordered categorical indicators, estimates were obtained using the weighted least squares means and variance adjusted estimation method (WLSMV), following the suggestions by Beauducel and Herzberg (2006) and Wang & Wang (2012). Absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ) and non-centrality fit indexes (TLI, CFI, RMSEA) were used to assess model fit, as well as criteria for acceptance or rejection based on the degree of adjustment described by Hair, Black, Babin and Anderson (2010).

Second, the reliability of each specific RQA subscale and the general dimensions was estimated using Cronbach's  $\alpha$  coefficient.

Third, in order to know to what extent the personality variables configuring resiliency predicted resilience, a path analysis with latent variables (PALV) was performed for the original 9x3x1 factor model. We used overall latent personality factors as predictors –*Sense of Mastery*, *Sense of Relatedness* and *Emotional Reactivity*–, estimated by scores in the basic personality factors. The criterion was the score in the latent factor resilience, estimated by BRS scores. Again, estimates were obtained using the WLSMV method, and the same fit and criteria for acceptance or rejection used in the previous analyses were employed.

Finally, to determine the validity of the RQA for discriminating between clinical and non-clinical samples, an ANOVA was carried out to test possible differences in the three dimensions of the first resiliency model across the three subsamples of participants.

Estimates were obtained using IBM SPSS 22.0 and MPlus-7.3 software.

### 2.3.4. Results

#### *Initial confirmatory factor analysis*

*CFA-1.* Figure 2.3.1 shows the standardized estimates for the confirmatory model. All estimated weights were significant ( $p < .001$ ).

*Figure 2.3.1.* Confirmatory standardized solution of the RQA: original model (9x3x1) proposed by Prince-Embury (CFA1).

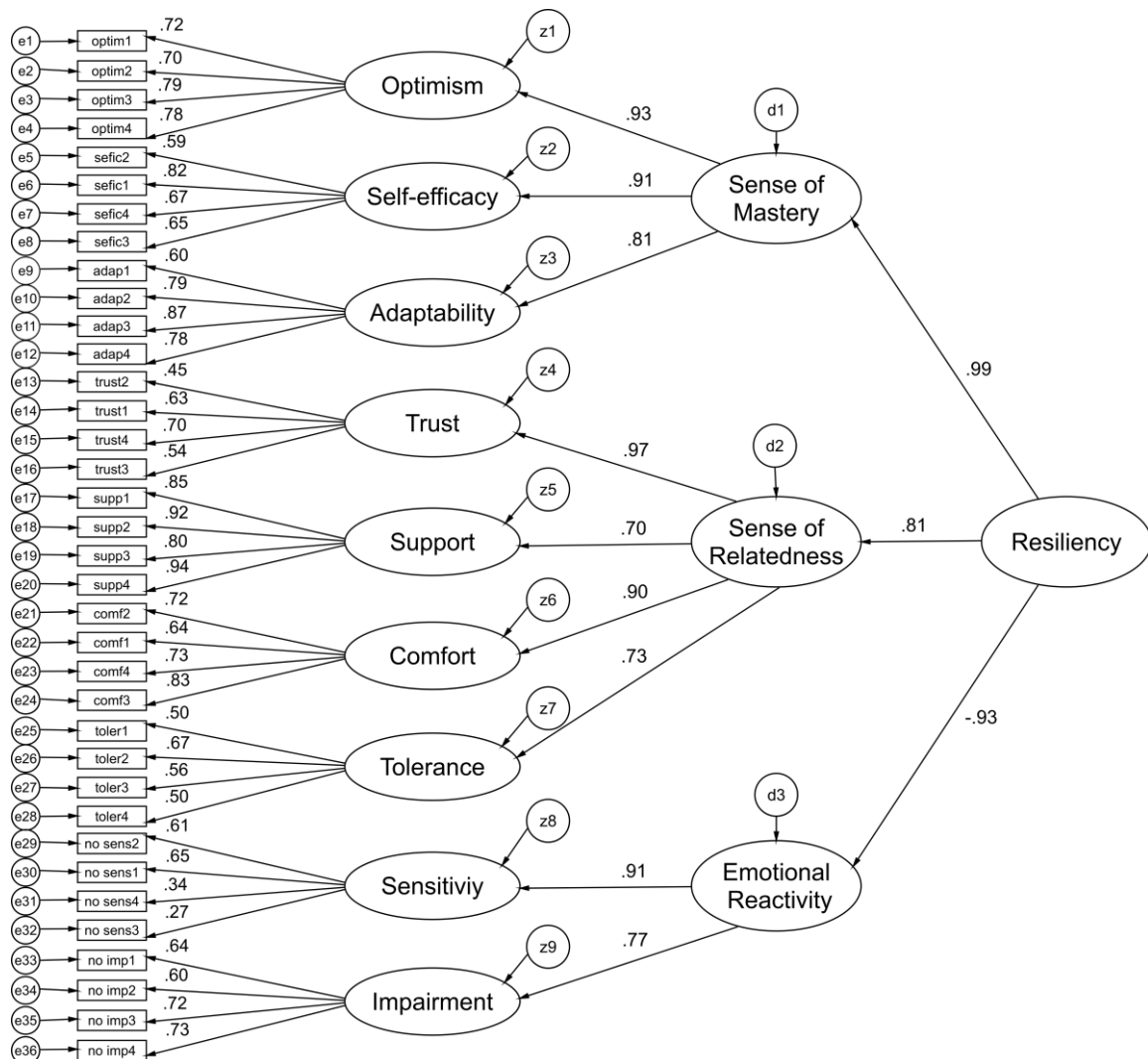


Table 2.3.1 shows model fit statistics. Chi-square statistic was significant, probably due to large sample size (Hair et al., 2010), but  $\chi^2/df = 2.64 < 5$ , and the remaining fit indexes (TLI = .90 > .90; CFI = .91 > .90; RMSEA = .06 < .08), were well inside the limits that allowed the model to be accepted. However, the very high degree in which *Sense of Mastery* and *Emotional Reactivity* loaded on resiliency suggested that perhaps a 9x2x1 factor model could adjust better. So, the following analysis was carried out.

Table 2.3.1.

*Resiliency Questionnaire for Adults. Goodness of fit statistics for the CFA and the PALV of the two tested models.*

	$\chi^2$	<i>df</i>	<i>p</i>	$\chi^2/df$	TLI	CFI	RMSEA
CFA1	1541.68	584	.000	2.64	.90	.91	.06
CFA2	1568.37	584	.000	2.68	.90	.91	.06
PALV	301.44	84	.000	3.58	.92	.93	.07

*Note.* *N* = 430. CFA = Confirmatory Factor Analysis. PALV = Path Analysis with Latent Variables. TLI= Tucker-Lewis Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation;

*CFA-2.* Figure 2.3.2 shows the standardized estimates for the confirmatory model. All estimated weights were significant ( $p < .001$ ). Table 2.3.1 shows model fit statistics. Chi-square statistic was significant, and  $\chi^2/df = 2.68 < 5$ , as well as the remaining fit indexes (TLI = .90 > .90; CFI = .91 > .90; RMSEA = .06 < .08), were also inside the limits of acceptance.

### **Reliability**

Cronbach's  $\alpha$  coefficients are shown in Table 2.3.2. Coefficients corresponding to general personality factors were quite satisfactory (Mean  $\alpha = .81$ ). As for coefficients corresponding to first order factors (Mean  $\alpha = .68$ , range from .53 to .88) were high enough for the purpose of the study.

Figure 2.3.2. Confirmatory standardized solution of the Resiliency Questionnaire for Adults: alternative model (9x2x1) (CFA2).

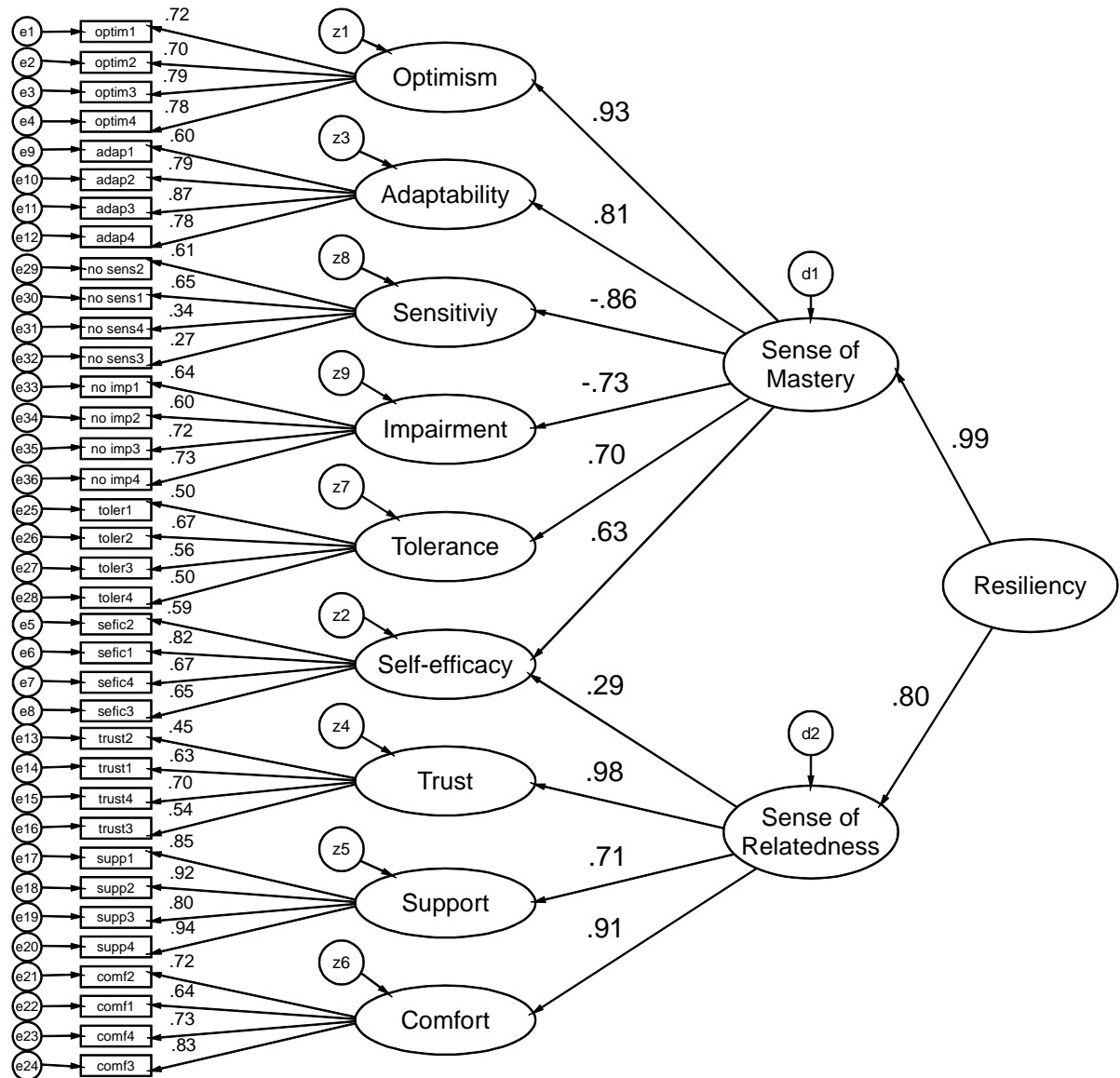


Table 2.3.2.

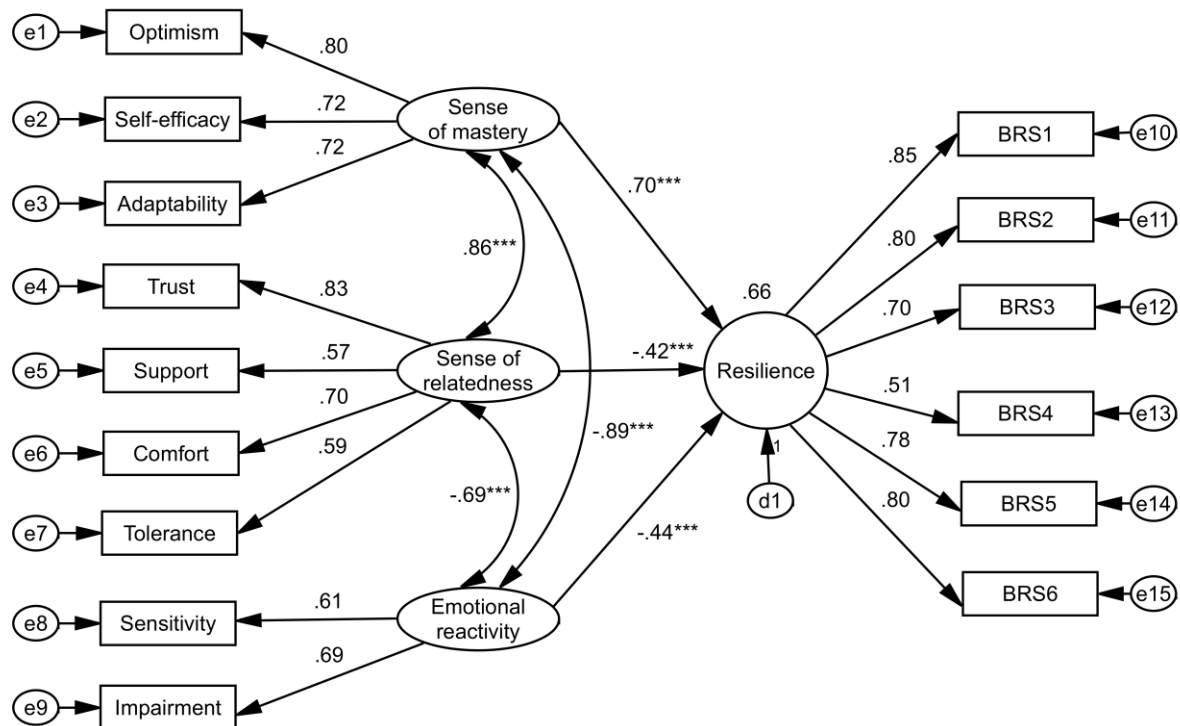
*Internal consistency of the scales and subscales of the Resiliency Questionnaire for Adults.*

Sense of Mastery	.87	Sense of relatedness	.85	Emotional reactivity	.71
Optimism	.77	Trust	.54	Sensitivity	.53
Self-efficacy	.81	Support	.88	Impairment	.71
Adaptability	.54	Comfort	.75		
		Tolerance	.55		

**Path analysis with latent variables (PALV)**

As results for both the three- and the two-factor models were very similar and both could be accepted, we decided to keep the original Prince-Embury’s model as there is evidence in the literature of its psychometric soundness. This being so, we conducted a PALV to predict resilience from the resiliency factors organized according to this model. Figure 2.3.3 shows the results of such analysis.

Figure 2.3.3. Path analysis with latent variables. Prediction of Resilience by Resiliency factors.



All estimated weights were significant ( $p < .001$ ). Table 2.3.1 shows model fit statistics. Chi-square statistic was significant, and the ratio  $\chi^2/df = 3.58 < 5$ , and the remaining fit indexes (TLI = .92 > .90; CFI = .93 > .90; RMSEA = .07 < .08), were all well inside the limits that allowed the model to be accepted. Most importantly, prediction weights ( $\gamma$ ) were all significant and the amount of variance in resilience that was explained by the three resiliency factors reached 66%. However, the direction of the association between *Sense of Relatedness* and



resilience was contrary to that expected according to Prince-Embury's model: the relation was negative instead of positive.

**ANOVA results**

As shown in Table 2.3.3, differences across samples were significant for the three dimensions.

Table 2.3.3.

*ANOVA of differences in resiliency factors between Non-clinical and Clinical Samples.*

Variables	Group	Mean	SD	F	p
Sense of Mastery	1	45.87	7.67	6.146	.002
	2	43.03	9.54		
	3	43.05	8.43		
Sense of Relatedness	1	63.89	9.21	8.147	.000
	2	59.69	10.99		
	3	60.40	9.72		
Emotional Reactivity	1	22.17	5.37	3.302	.038
	2	23.83	5.78		
	3	21.97	4.90		

*Note.* Groups: 1 = Non clinical adults; 2 = Adults with health problems; 3 = Parents of children with health problems. *SD* = Standard Deviation. *p* = level of significance.

Post hoc analyses between each pair of groups using the Scheffé statistic showed that, regarding Sense of Mastery and Sense of Relatedness, general population individuals scored higher than adults with health problems (Sense of Mastery:  $p = .03$ ; Sense of Relatedness:  $p = .004$ ) and parents with children with severe health or developmental problems (both  $p = .01$ ). Finally, in the case of Emotional Reactivity, differences fell slightly short from the standard limits of significance between the general group and the group of adults with health problems ( $p = .059$ ).

### 2.3.5. Discussion

The main objective of this study was to validate a resiliency questionnaire based on Prince-Embury's theory in a Spanish adult sample, both testing its structural validity and its predictive validity in relation to resilience –understood as the ability to bounce back from adverse experiences. What kind of contributions has this study made in relation to such objective?

In relation to the structural validity of the questionnaire, the two tested models –the three second-order dimensions model proposed by Prince-Embury, and the two second-order dimensions derived from our theoretical considerations– were acceptable, as fit indexes were practically the same. Consequently, it seems that the alternative model that we have tested explains the data as well as Prince Embury's, but we cannot claim its superiority, which is why we decided to keep the original model, more used in the literature. The reliability of the second-order scales (*Sense of Mastery*, *Sense of Relatedness* and *Emotional Reactivity*) was acceptable and they can be used, then, for research and clinical purposes. As for the first order scales, some of them should not be used by themselves, as their reliability was not high enough (e.g., sensitivity, trust). Regarding the predictive validity, two thirds of the variance of resilience scores could be predicted from the resiliency questionnaire. This is an important result, especially if we take into account the sign of each weight, since it can have significant implications for intervention.

We also found three important additional results. First, the extremely high and negative relationship between *Sense of Mastery* and *Emotional Reactivity* in the three-factor model gives support to the idea pointed by Marusak et al. (2015) that it is possible to exert some degree of cognitive control over emotion so that, as this control rises, so does resilience and vice versa. The same support is provided also by the fact that first order factor loadings on *Sense of Mastery* in the two-factor model have positive or negative sign depending on whether in the

three-factor model they belonged to *Sense of Mastery* (then the loading was positive) or to *Emotional Reactivity* (in which case the loading was negative). These facts give support to our hypothesis that *Sense of Mastery* and *Emotional Reactivity* are two sides of the same coin.

Second, the sign of prediction coefficients from *Sense of Relatedness* to resilience was negative. This result is contrary to expectations based on Prince-Embury's suppositions, but in line with results by Villasana & Alonso-Tapia (2016). It implies that, though trust, comfort and support can help people overcome adversity and improve their well-being—a result coherent with results gathered by Prince-Embury & Saklofske, (2013, 2014)—, they are not enough to make people resilient. Well-being after confronting adversity can be reached either because individuals have other people able to help them, or because they have the kind of agency underlying *Sense of Mastery*. So, without agency, it can be difficult for people to achieve resilience even if they score high in the factors that configure *Sense of Relatedness*.

Third, the kind of adversities that our clinical samples had to confront—personal or own offspring illnesses—depend on causes which are frequently outside personal control, not on the degree of *Sense of Mastery*. Hence, the significant differences found between non-clinical and clinical subsamples suggest that having experienced or being experiencing an adverse situation—like VIH patients do—could affect psychological processes underlying *Sense of Mastery* (the main resiliency factor contributing positively to resilience) and *Sense of Relatedness* (positively related to *Sense of Mastery*, but negatively to resilience). This fact implies that, though the resiliency profile may help people be resilient in front of adversity, they are not invulnerable, at least when the possibility of solving adversities is not under their own personal control. So, it would be interesting to study systematically whether the coping processes underlying resiliency factors vary depending on the nature of the adverse situation experienced, a fact that would support Masten's & Narayan's (2012) idea of different pathways of risk and resilience. Of course, we must not forget that people with a diversity of problems were grouped together,

so these results should be replicated in bigger and more homogeneous samples as this is an initial approximation.

### ***Theoretical and practical implications***

Above described results have theoretical and practical implications. First, as *Sense of Mastery* and *Emotional Reactivity* seem to be the opposite poles of the same dimension, it is important to study not only the general coping processes underlying the factors that configure *Sense of Mastery*, but also the specific “mastery” processes –cognitive or behavioral– through which people regulate and control their emotions, as both can be necessary. Sometimes, if emotion self-regulation is not used, it is not possible to apply the adequate problem-solving strategies due to the impairment effect that emotions have.

Second, given both the positive effect of *Sense of Mastery* and the negative effect of *Sense of Relatedness* on resilience, it is important to study the precise coping processes underlying the personality factors configuring them, as intervention could be built around such processes. This would imply answering the following question: which cognitive and social processes do people who score high in *Sense of Mastery* activate when confronting adversities of different types?

Finally, the fact that *Sense of Mastery* and *Sense of Relatedness* diminish after having experienced a great adversity, affects the possibility of confronting it in a resilient manner. The same effect can have the fact that *Emotional Reactivity* in the general population was only significantly lower than the group of adults with health problems (in fact, significance fell slightly short from the standard limit usually accepted). Both facts suggest that it is possible that resilience varies depending on the kind of situation confronted (Alonso-Tapia, Nieto & Ruiz, 2013; Alonso-Tapia & Villasana, 2014). So, it would be important to know whether the activation of coping processes underlying resiliency factors varies depending on the type of adverse situations a person has to cope with and, as stated previously, to study possible

differences across populations that may seem similar but could in fact be different –such as cancer patients and HIV-positive individuals.

### ***Limitations.***

This study has some limitations. First, the sample of participants did not include subsamples of people who have experienced non health-related adverse situations (e.g., unemployment), which limits the generalizability of our results.

Second, the convenience sampling of the participants may have resulted in only those motivated enough completing the questionnaires. Also, since the recruitment and participation were made online, only those with access and knowledge about computers, emails and web-browsing were able to enter the study. This would imply that our sample could be biased and thus limits again the generalizability of our results to other populations.

Third, score differences across the three groups might give place to different degrees of fit to the model, but the clinical samples sizes were too small to allow a multi-group analysis to test that, so this fact remains a limitation to this study and opens grounds for future research. There were also people experiencing very different adverse problems within the two clinical samples, and again the number of participants was not enough to study if the type of adverse situation has a relation with the specific resiliency profile of each group, or even of subgroups such as cancer patients. Fourth, our conclusions on the relations between resiliency personality factors and subjective resilience are based on correlations. So, the causal link is a hypothesis that remains to be tested.

## **2.4. Development and validation of the Situated Subjective Resilience Questionnaire for Adults (SSRQA)**

Jesús Alonso-Tapia<sup>1</sup>, Rocío Rodríguez-Rey<sup>1</sup>, Helena Hernansaiz-Garrido<sup>1</sup>, Miguel Ruiz<sup>2</sup> & Carmen Nieto<sup>3</sup>.

1. Department of Biological and Health Psychology, Psychology Faculty, Universidad Autónoma de Madrid.
2. Department of Social Psychology and Methodology, Psychology Faculty, Universidad Autónoma de Madrid.
3. Department of Basic Psychology, Psychology Faculty, Universidad Autónoma de Madrid.

### **Acknowledgements**

The second and the third authors would like to acknowledge the financial support given, respectively, by the Universidad Autónoma de Madrid through a FPI fellowship and by the Spanish Ministerio de Educación, Cultura y Deporte through a FPU fellowship.

### 2.4.1. Abstract

Although resilience varies depending of the adverse situation that the person faces, to date all resilience questionnaires do not consider its situational character. This study aims to develop and validate the *Situated Subjective Resilience Questionnaire for Adults (SSRQA)*, which assesses resilience in five different adverse contexts. A total of 430 Spanish adults completed the SSRQA, the Brief Resilience Scale and the 10-item Connor-Davidson Resilience scale. Confirmatory factor analysis results showed that the SSRQA structure fits the situational model well and better than the non-situational. The general scale and the situational subscales were shown to be reliable, and all were significantly and positively correlated with other resilience measures. Degree of exposure to each adverse situation was negatively correlated with resilience in front of that situation, supporting a vulnerability to stress model. The SSRQA has shown to be a reliable and valid situated measure for resilience towards different adverse contexts.

*Keywords:* Resilience; resilience assessment; contextual assessment, person-situation interaction, structural equation modelling, exposure to adversity.

### **2.4.2. Introduction**

People face different kinds of adverse situations during their lives. However, not all of them develop anxious or depressive symptoms or feel unhappy. Some people are able to achieve positive adaptation after experiences of significant adversity. Those people are said to show resilience. Luthar's review (2006), which covers five decades of research in resilience, showed that it is not unusual that children and adults exposed to different kinds of adversities develop positive adaptation. Resilience research, thus, could provide ways to help people achieve resilient outcomes. However, the diversity of conceptualizations and some methodological problems (e.g., Luthar, Cicchetti & Becker, 2000) make progress difficult.

Accordingly to Luthar (2006) and Leipold and Greve (2009), we understand resilience as the phenomenon of bouncing back after a significant adversity. It is an outcome or a series of outcomes that occur when people successfully confront significant adversity (Leipold & Greve, 2009). So, to measure resilience, it is necessary to measure the phenomenon itself, that is, the degree of positive adaptation in the face of conditions implying high risk of developing maladjustment (Alonso-Tapia, Nieto, & Ruiz, 2013; Alonso-Tapia & Villasana, 2014). Moreover, resilience is not an "all or none" concept, since people can show resilience when facing a kind of adversity but not when facing others, and they can be resilient in different degree (Luthar, 2006; Reaching In... Reaching out", 2010). For this reason, researchers should be able to assess resilience in different types of adverse situations to test whether an index of positive adaptation when facing a specific adverse context generalizes to the rest. Is that kind of measure available?

There are two recent works that reviewed resilience measures: the systematic examination carried out in the context of the project "Reaching In... Reaching out" (2010), and the methodological review of resilience measurement scales carried out by Windle, Bennet, and Noyes (2011). More than 40 assessment instruments were examined, and both reviews



reached the same conclusion: most of them are focused on factors favouring resilience, but do not measure the phenomenon of bouncing back itself, except for the Brief Resilience Scale (Smith et al., 2008). However, this scale does not take into account different risk contexts but considers adversity in general without any specification (e.g., 'I tend to bounce back quickly after hard times'). Nonetheless, since different resilience outcomes are possible depending on the type of adverse situation, a suitable scale is needed to ascertain the degree in which subjective resilience is specific for each kind of adversity or whether it generalizes across situations. Alonso-Tapia et al. (2013; Alonso-Tapia & Villasana, 2014) developed such a measure for adolescent population with promising results regarding its structural and predictive validity.

We decided, consequently, to develop and validate a subjective resilience scale for adults that explicitly dealt with different adverse situations. We also decided to assess the degree in which each adverse situation has been experienced, with the aim of exploring the relation of past adverse experiences of certain types and the resilience shown in front of them. There is an ongoing debate regarding the link of prior stress exposure with better or worse response to future adversities (Bonanno, Brewin, Kaniasty & La Greca, 2010). The inoculation model proposes a protective effect of experiencing stressful situations with regard to future adaptation in adverse events, whereas the sensitization model postulates a vulnerability effect (Masten & Narayan, 2012). Also, the possibility of nonlinear models has been suggested, where moderate degrees of challenge would be beneficial in preparing an organism for future challenges better than either no exposure or too much exposure (Seery, Holman & Silver, 2010). Extant literature has provided support to all models (Masten & Narayan, 2012). Consequently, we expect a relation between resilience and degree of experienced adversity, but we cannot specify its direction.

To sum up, this study seeks to develop and validate a resilience questionnaire in Spanish language that takes into account different adverse situations. Such validation will be in terms of structural, convergent and discriminant validity. An additional objective is to test whether resilience in front of each type of adverse situation is related to the degree of exposure to such situation. We do not have a hypothesis regarding the direction of the relationship, given that there are mixed findings in the literature.

### **2.4.3. Methods**

#### ***Participants***

The sample of the study was composed of 430 adults. To ensure diversity regarding the degree of experienced stress, three subsamples were recruited: a general population subsample ( $n = 256$ ) and two additional subsamples of 77 adults who were suffering from HIV or cancer, and 97 parents of children with serious problems: either cancer or developmental or sensorial problems (i.e. intellectual disability, autism or deafness). We selected these subsamples because it is well-known that facing health problems or being a parent of a child with a health-related condition or a disability may be an important source of stress (Perry et al., 1990; Vrijmoet-Wiersma et al., 2008).

Of the total sample, 69.8% were women. Regarding age, 33.3% were in the age interval between 20 and 30 years, 22.8% between 31 and 40 years, 26.3% between 41 and 50 years, 14.9% between 51 and 60 years, and 2.8% were above 60 years old. As for educational level, 70.46% had a university degree and 29.53% had only primary, secondary or professional education.

#### ***Instruments***

- *Situated Subjective Resilience Questionnaire for Adults (SSRQA)*. This questionnaire, designed for this study, assesses the extent to which a person's subjective resilience generalizes

across situations or varies depending on the kind of adverse situation. It is written in Spanish, and comprised of 20 items that consider five kinds of adverse situations (work-related problems, problems with close relationships, own health problems, health problems of a close person and economic problems). These situations were selected because according to the literature they tend to generate stress more often (Mattlin et al., 1990) To avoid the acquiescence bias by which people tend to agree with all the questions (Cronbach, 1950; Matesanz, 1997), half of the items for each situation are negatively worded and the other half positively worded. Answers are provided on a 5-point agreement Likert scale (1 = I totally disagree to 5 = I totally agree). Subscale and scale scores are calculated by recoding the inverse items and adding item response values. An English translation of this questionnaire is included in the Appendix.

- *Brief Resilience Scale (BRS)* (Rodríguez-Rey, Alonso-Tapia, & Hernansaiz-Garrido, 2015). This is the Spanish adaptation of the questionnaire by Smith et al. (2008), which assesses subjective resilience as the ability to bounce back from adversity. It consists of 6 items to be answered in a five-point Likert scale, and showed adequate internal consistency in the Spanish validation sample ( $\alpha = .83$ ) and in the sample of this study ( $\alpha = .85$ ). Scores are calculated as the sum of the item responses, after recoding its three inverse items.

- *Connor Davidson Resilience Scale 10-item version* (10-item CD-RISC; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003). This measure assesses resilience as the personal qualities that enable one to thrive in the face of adversity. It includes 10 items with five response options (0 = Never; 5 = Almost always). All of them are positively worded. The scale scores, which are calculated as the sum of the item responses, showed adequate reliability in Spanish samples of university students ( $\alpha = .85$ ) (Notario-Pacheco et al., 2011) and fibromyalgia patients ( $\alpha = .88$ ) (Notario-Pacheco et al., 2014), and the sample of this study ( $\alpha = .88$ ).

*Likert scales for assessing the degree of experienced adversity.* Participants indicated the degree in which they had experienced problems in each of the areas assessed in the SSRQA with five 5-point Likert scales (0 = Never; 5 = Almost always).

### ***Procedure***

Ethics approval for this study was granted by the Research Ethics Committee at the authors' University. To recruit the sample of general population, University workers and students were asked for collaboration to spread out among their acquaintances an invitation email containing information about the study and a link to the informed consent and questionnaires. Those willing to participate completed the questionnaires on an online platform. As for the other two subsamples, several NGOs were contacted and were asked to send the potential participants an e-mail with information about the study and a link to the informed consent and the questionnaires.

### ***Data analysis***

Regarding factorial validity, the sample was randomly divided into two subgroups, one for the initial analyses ( $n = 205$ ) and the other for cross-validation ( $n = 225$ ). Then, two confirmatory factor analyses (CFA) were performed with the first subsample to determine which model explained the factorial structure of the SSRQA better. The first model corresponded to that in Figure 2.4.1. The items of the scale are placed in the center of the figure. As this baseline model did not consider the situational character of resilience, its right part includes one single factor named "Resilience".

The second model corresponded to that in Figure 2.4.2, and considered the effect of the type of adverse situation. In order to test the effect of taking into account the situational dimension of resilience in our scale, we used a combination of hierarchical and bi-factor models, which allow to disentangle sources of variance (Guftafsson & Åberg-Bengtsson,

2010). The items of the scale are placed in the center of the figure. In the right part, there are five resilience variables, one for each of the five different kinds of adverse situations included on the SSRQA. Our expectation is that resilience may generalize to a certain degree across these situations, and so a general factor is also postulated.

The left part of Figures 2.4.1 and 2.4.2 includes two factors named “positive” (which include all the items positively worded) and “negative” (which include all the items negatively worded). We did so because respondents to a questionnaire have a tendency to reply differently to positively and negatively worded items, which is why they often form two separate factors, even when the content of these items is consistent. This is sometimes known as the wording effect (e.g., Wu, 2008) and it does not constitute a methodological artifact. The reason is that people respond in a different way to positively and negatively worded items because they are sensitive to the apparent implications of content; negatively worded items make threats more salient as people have different sensitivity to stressful contexts (Boyce & Ellis, 2005). Indeed, some authors are starting to take this into consideration in their fields (e.g., Aguado et al., 2015). Thus, the left part of both figures includes two factors to capture this effect, as it can be expected that a part of item variance will depend on the framing of the situation. We used AMOS v.22 statistical software to conduct these analyses.

Model fit of these two models was compared so as to distinguish the effect of allowing for the situational dimension of resilience. Estimates were obtained using the maximum likelihood method. Absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ , SRMR), relative fit indexes (IFI, TLI) and non-centrality fit indexes (CFI, RMSEA) were used to assess model fit, as well as criteria for acceptance or rejection based on the degree of adjustment (Hair, Black, Babin, & Anderson, 2010). The AIC (Akaike Information Criterion) was also used for comparing models. Then a multi-group analysis was carried out to cross-validate the results of the situational model using

the two subsamples and the same estimation method, fit assessment indexes and criteria as before.

Reliability of each specific scale and of the general one was calculated in terms of internal consistency using Cronbach's  $\alpha$  coefficient. Correlations of the SSRQA scale's and subscales' scores with BRS and 10-item CD-RISC scores were obtained to ensure the convergent and discriminant validity of the measure. We expected stronger relations with BRS scores since it shares with the SSRQA the understanding of resilience as the ability to bounce back. To explore the relation between degree of exposure to adverse situations and resilience in front of these situations, Pearson correlations were calculated. Lastly, to explore the possibility of non-linear associations between degree of exposure and resilience we calculated a quadratic solution for each situation and compared it to a lineal solution.

#### **2.4.4. Results**

##### ***Factor structure (model comparison) and cross validation analysis.***

We first tested the baseline model of the SSRQA (Figure 2.4.1) with the first subsample. Chi-square statistic was significant ( $p < .001$ ), and the rest of the fit indices were as follows: the ratio  $\chi^2/df = 3.00$ , IFI = .84, TLI = .79, CFI = .83, RMSEA = .10, SRMR = .06 and AIC = 569.99. These indices fell short of the standard limits of acceptance and thus indicate that the model does not represent the data well.

We then tested the situational model with the same first subsample. Figure 2.4.2 shows the standardized estimates, as well as the squared multiple correlations. All the weights ( $\lambda$ ) were significant ( $p < .05$ ). Regarding fit statistics, chi-square statistic was significant, probably due to the sample size (Hair et al., 2010), but the ratio  $\chi^2/df$  ( $\chi^2/df = 1.75 < 3$ ) and the remaining adjustment indexes (IFI = .94; TLI = .92; CFI = .94; RMSEA = .06; SRMR = .05) were well inside the limits of acceptance. The AIC = 360.88 was better for this model than for the

previous one. This model, thus, is shown to fit data well and is in any case preferable to the baseline model shown in Figure 2.4.1.

Figure 2.4.1. Situated Subjective Resilience Questionnaire for Adults: Baseline confirmatory standardized solution.

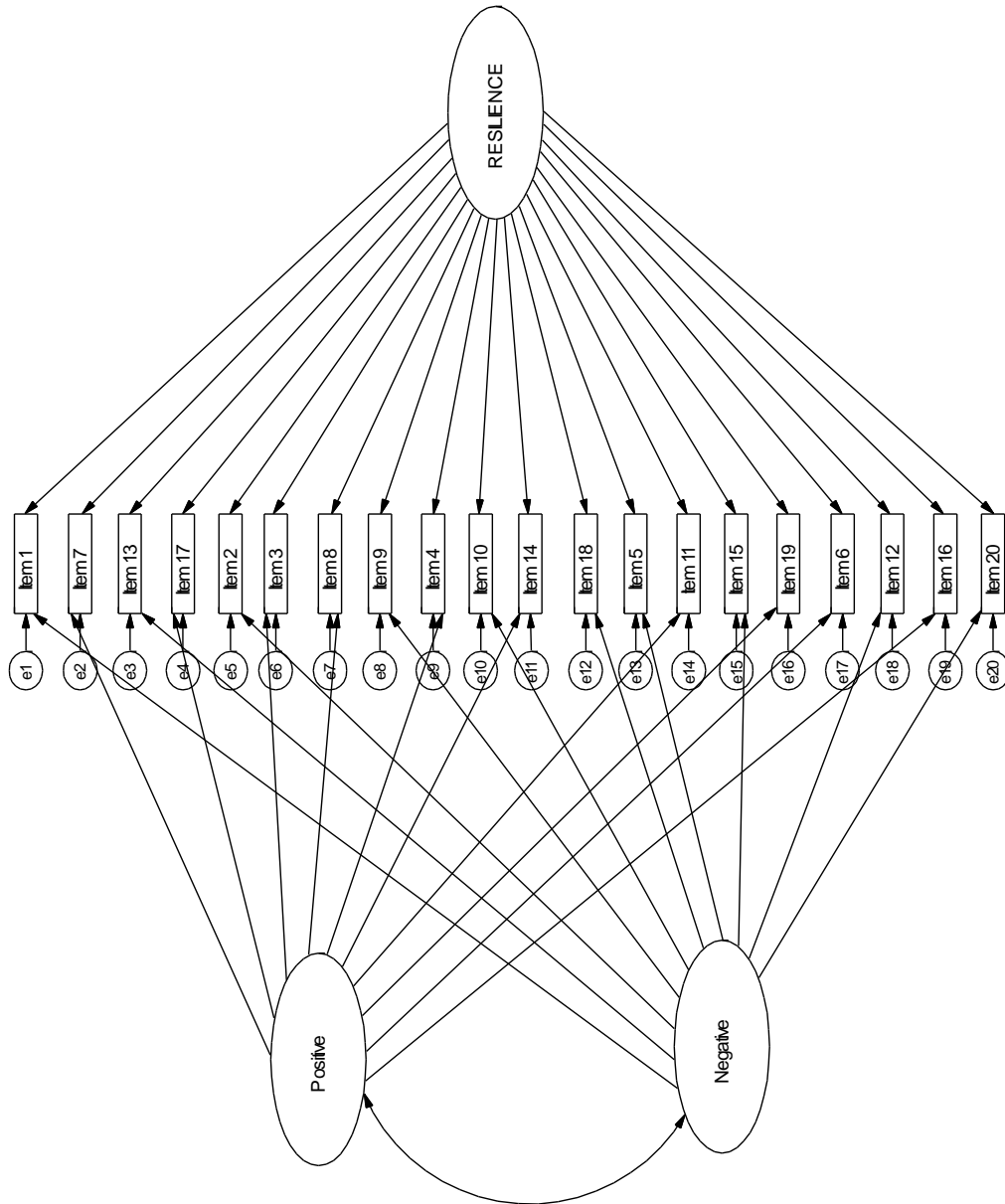
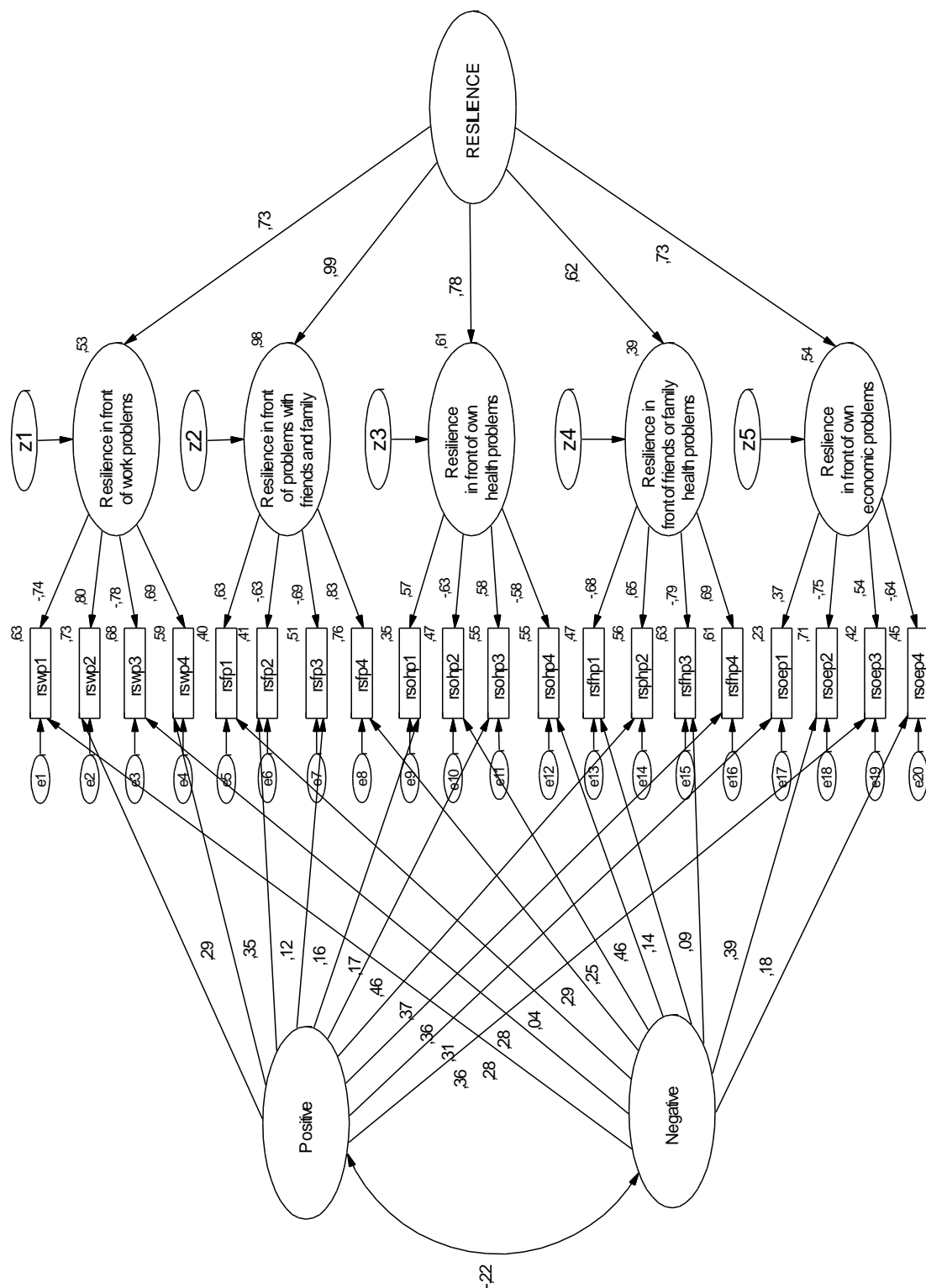


Figure 2.4.2. Situated Subjective Resilience Questionnaire for Adults: Situational confirmatory standardized solution.





At this point, we tested the situational model in both the first and the second subsamples with a cross-validation analysis. Chi-square statistic was again significant probably due to the sample size, but the ratio  $\chi^2/df = 1.71 < 3$  and the remaining fit indexes (IFI = .94; TLI = .92; CFI = .94; RMSEA = .04; SRMR = .05) were again well inside the limits of acceptance. Moreover, the model comparison statistics show that fit is not significantly reduced for the measurement weights ( $\Delta\chi^2 = 29.52, p = .64$ ), the structural weights ( $\Delta\chi^2 = 33.47, p = .64$ ), the structural covariances ( $\Delta\chi^2 = 42.45, p = .41$ ) and the structural residuals ( $\Delta\chi^2 = 55.22, p = .14$ ) models in relation to the model without restrictions. This means that the tested model fits the data similarly in both randomized subsamples, which would support the sample invariance of the model.

### ***Reliability***

Regarding reliability, Cronbach's alpha of the scores of the general resilience scale was very satisfactory ( $\alpha = .90$ ), and those for the situated resilience scale's scores were acceptable to good: work-related problems,  $\alpha = .84$ ; problems with close persons,  $\alpha = .82$ , own health problems,  $\alpha = .73$ , close person's health problems,  $\alpha = .80$ , and economic problems,  $\alpha = .71$ .

### ***Convergent and discriminant validity***

Correlations among the scores of the general SSRQA scale, the situated subscales, the BRS and the 10-item CD-RISC are shown in Table 2.4.1. All correlations were positive and significant ( $p < .01$ ), so we can conclude that the questionnaire has adequate convergent evidence of validity. It is noteworthy that the scores of the general SSRQA scale and its subscales had higher correlations with the scores of the BRS than with the scores of the 10-item CD-RISC, as we expected. Moreover, the lower correlations among the scores of the SSRQA subscales are indicative of the fact that, although related, they are measuring somehow different constructs.

Table 2.4.1.

*Correlations among the general SSRQA scale, the SSRQA's subscales, the BRS and the 10-item CD-RISC.*

	CD-RISC	SSRQA	SSRQA-W	SSRQA-CPR	SSRQA-OH	SSRQA-CPH	SSRQA-E
BRS	.58***	.72***	.60***	.56***	.54***	.39***	.48***
CD-RISC		.45***	.37***	.34***	.37***	.27***	.29***
SSRQA			.80***	.79***	.74***	.55***	.72***
SSRQA-W				.60***	.46***	.29***	.48***
SSRQA-CPR					.46***	.35***	.38***
SSRQA-OH						.23***	.49***
SSRQA-CPH							.26***

*Note.* BRS = Brief Resilience Scale. CD-RISC = 10-item CD-RISC. SSRQA = Situated Subjective Resilience Questionnaire for Adults. SSRQA-W = Work Resilience Subscale. SSRQA-CPR = Close Person Relationship Resilience Subscale. SSRQA-OH = Own Health Resilience Subscale. SSRQA-CPH = Close Person's Health Resilience Subscale. SSRQA-E = Economy Resilience Subscale.

\*\*\* $p < .001$ .

***Relation between experienced adversity and resilience.***

Table 2.4.2 shows the correlations between the situated resilience scale score and the degree in which the different types of adverse situations have been experienced. All the correlations between corresponding elements (e.g., resilience in front of work-related problems and degree in which work-related problems have been experienced) were inverse and significant, and higher than those between non-corresponding elements (e.g., resilience in front of work-related problems and degree in which own health problems have been experienced), which mostly were non-significant or very low.

Table 2.4.2

*Correlations between the degree of experience for each adversity and the SSRQA subscales.*

		Degree of resilience in front of problems related to:				
		Work	Close people	Own health	Close person's health	Economy
Degree of experienced adversity related to:	Work	-.26***	-.16**	-.06	-.03	-.15**
	Close people	-.18***	-.21***	-.10*	-.05	-.15**
	Own health	-.09	-.08	-.20***	-.07	-.04
	Close person's health	-.09	-.15**	-.12*	-.30***	-.07*
	Economy	-.10*	-.04	-.04	-.05	-.26***

*Note.* \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

In order to study the possible nonlinear relation between the degree of exposure to each situation and resilience in each of these situations, we calculated the quadratic and lineal associations between degree of exposure to each of the five situations and resilience in front of each situation. These results are shown in Table 2.4.3 and Figure 2.4.3. Only in two of the five cases the quadratic relation explained the association better than the linear association, and even in these cases, the difference is negligible. Additionally, as Figure 2.4.3 shows, only in one of these two cases, the curvilinear association has an inverse U shape. Thus, our data do not support the idea of a U-shaped inverse relation between stress exposure and adaptation.

Table 2.4.3.

*Lineal and quadratic relations between the degree of experienced adversity related to each situation (IV) and resilience on each situation (DV).*

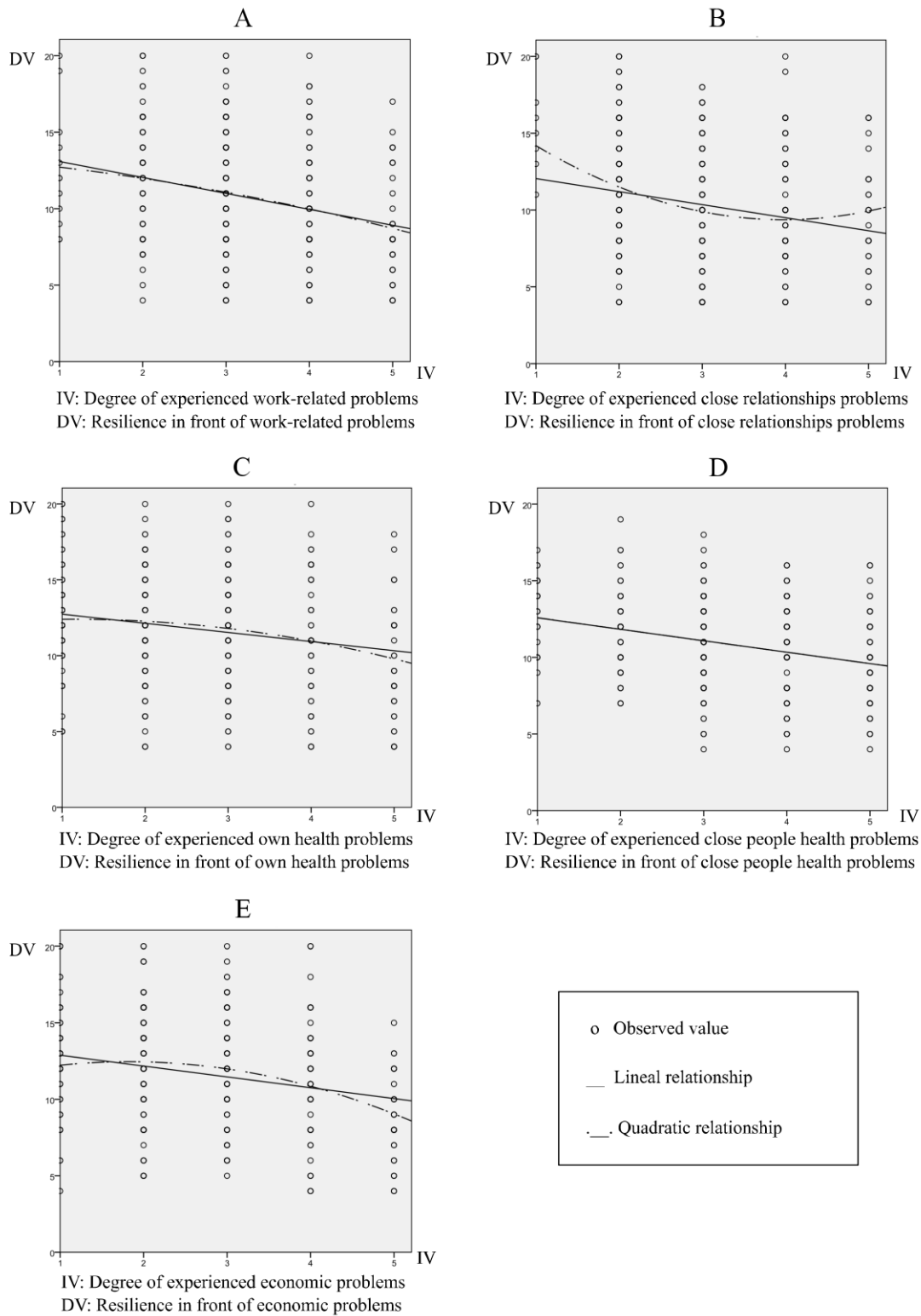
	Model	R <sup>2</sup>	
DV: Resilience in front of work problems			
IV: Degree of experienced adversity related to	Work	Linear	.066***
		Quadratic	.067***
	DV: Resilience in front of problems with close people		
	Close people	Linear	.042***
		Quadratic	.065***
	DV: Resilience in front of own health problems		
	Own health	Linear	.039***
		Quadratic	.045***
	DV: Resilience in front of close person's health problems		
	Close person's health	Linear	.090***
		Quadratic	.090***
	DV: Resilience in front of economic problems		
	Economy	Linear	.065***
		Quadratic	.089***

Note. IV = Independent variable. DV = Dependent variable

## 2.4.5. Discussion

Our results have provided evidence that supports our initial expectations about the structure of the SSRQA. The confirmatory factor analyses showed that a baseline, non-situational model is unable to explain data which refers to different situations, while the situational model fitted the data of the two randomized samples that were used. Moreover, the cross-validation analysis showed that both fits can be considered similar. All these results provide support to our hypothesis of a situational model.

Figure 2.4.3. Lineal and quadratic relations between degree of experienced adversity related to each situation (IV) and resilience on each situation (DV).



Note. IV= Independent variable; DV= Dependent variable.

Thus, situations play an important role in determining the degree in which individuals show resilience in the aftermath of an adversity. Accordingly, coherently with literature, resilience cannot be considered a relatively general tendency, as it depends on the specific demands which may change across situations (Luthar, 2006, *Reaching in... Reaching out*, 2010). However, resilience also tends to generalize across contexts to some extent. This may be due to the fact that strategies for dealing with a kind of problem may be first learned in a specific context, and then transferred to other situations over time. The lack of total generalization across situations may be due to the fact that not all kinds of adversity can be successfully dealt with in the same way.

As for reliability, it was acceptable to good for the subscales scores, and very good for the general scale's scores. Convergent and discriminant validity of the scale's and subscale's scores was supported by their correlations with the scores of the BRS and the 10-item CD-RISC. The correlations with the BRS scores were higher, as was expected based on the fact that they have a similar understanding of resilience as the ability to bounce back (Smith et al., 2008). The 10-item CD-RISC, on the other hand, was designed to measure personal qualities that enable one to thrive in the face of adversity (Windle et al., 2011), and thus it is congruous that the correlations of its scores with BRS' and SSRQA's were lower. Furthermore, degree of exposure to each of the adverse situations was negatively correlated with resilience in front of that situation, but generally did not correlate with resilience in front of other situations. This fact implies that the SSRQA is a questionnaire that measures multiple, context-specific resilience constructs, and speaks in favor of the scales' ability to discriminate different degrees of resilience in different adverse situations.

It is also important to consider the fact that the degree in which people have experienced a particular kind of adversity correlates negatively with their degree of subjective resilience. These correlations, though low, were significant. Even though Seery et al. (2010) suggested

that a curvilinear inverse U-shaped model would explain the relation between stress exposure and adaptation better, our data did not support this idea. Our results suggested that repeated exposure to adversity could undermine resilience, which would be congruous with the sensitization model (Bonanno et al., 2010). Nevertheless, we must keep in mind an important shortcoming of this analysis that limit the reach of the finding: our data are retrospective, and thus very susceptible of being biased (Masten & Narayan, 2012).

Our work has important implications, both for research and clinical practice. First, since resilience depends on both the difficult situation and the individual, measures that include different situations should be used to accurately assess the degree in which an individual shows resilience in different contexts, as well as the degree in which shown resilience generalizes across situations. Moreover, these instruments might be useful to better predict adaptation after a specific threat. Second, this situated questionnaire constitutes an innovation in resilience measurement, since it takes into account both the general tendency of the individuals and their situational specificity. Hence, paths for future research are derived, such as the development of questionnaires that address different or more specific threatening situations that a specific population typically face (e.g., people with health conditions, individuals with economic difficulties). This would generate both a general indicator of resilience for that threat and specific indicators of resilience towards different aspects of that threatening event. This could allow the improvement of adaptation prediction, which could guide the implementation of preventive psychological interventions that modify the maladaptive recovery path and foster resilience.

This study presents some limitations. First, the convenience sampling may have resulted in questionnaire completion of only those highly motivated. Second, online recruitment and participation limited access to the study to those individuals with access and knowledge about computers, emails and web-browsing. Third, our exploration of the relation between degree of

experienced adversity and resilience was retrospective. Fourth, our measure is not comprehensive of all possible adverse situations, as it only includes five. Further research should address these limitations.

In conclusion, we believe that the Subjective Situated Resilience Questionnaire for Adults is a reliable measure with a well-defined structure that is valid for measurement purposes in Spanish populations.



## **2.5. Prediction of subjective resilience from coping strategies and protective personality factors.**

Jesús Alonso-Tapia<sup>1</sup>, Rocío Rodríguez-Rey<sup>1</sup>, Helena Hernansaiz-Garrido<sup>1</sup>, Miguel Ruiz<sup>2</sup> & Carmen Nieto<sup>3</sup>.

1. Department of Biological and Health Psychology, Psychology Faculty, Universidad Autónoma de Madrid.
2. Department of Social Psychology and Methodology, Psychology Faculty, Universidad Autónoma de Madrid.
3. Department of Basic Psychology, Psychology Faculty, Universidad Autónoma de Madrid.

### Acknowledgements

The second and the third authors would like to acknowledge the financial support given, respectively, by the Universidad Autónoma de Madrid through a FPI fellowship and by the Spanish Ministerio de Educación, Cultura y Deporte through a FPU fellowship.

### **2.5.1. Abstract**

This study aims to explore in which degree resilience can be predicted from coping strategies (problem-focused coping and emotion-focused coping), and protective personality characteristics (sense of mastery, sense of relatedness and emotional reactivity). The sample consisted of 430 adults (256 general population, 77 adults suffering from VIH or cancer and 97 parents of children with cancer or developmental problems). Correlation analysis, regression analysis and a cross-validated path analysis with latent variables were conducted. Results showed that coping strategies affected resilience through resiliency. Individuals reporting higher problem-focused coping and lower emotion-focused coping scored higher in sense of mastery and sense of relatedness, and lower in emotional reactivity. While sense of mastery predicted higher resilience, emotional reactivity and sense of relatedness predicted lower resilience. Our results suggest that, to improve resilience, emotion-focused coping should be avoided and problem-focused coping promoted, avoiding that people exclusively rely on external support to face difficulties.

*Keywords:* resilience; resiliency; coping strategies; coping styles; protective personality factors.

### **2.5.2. Introduction**

During the normal course of their lives, most adults face difficult or potentially traumatic events. Following such experiences, many people is unable to function normally, in some instances even long time afterward. These maladaptive reactions are so damaging for the individual's health that it should come as no surprise that the study of psychopathology (mainly posttraumatic stress disorder) has dominated the trauma literature. Some people, however, show a resilient reaction, defined as the maintenance of a relative stable trajectory of healthy functioning following exposure to a potential trauma (Bonanno, 2005; Luthar, 2006). Given this fact, a question arises: why some people show resilience while others do not? Answering this question is important because it would give professionals (e.g., counsellors, psychologists) the possibility of helping people to act in a more resilient way.

Multiple definitions of resilience have been proposed. Agreeing with Smith et al., (2008), and Luthar (2006), we understand resilience as the ability to bounce back from stress. Consequently, resilience is a phenomenon –the result of acting in an adaptive way in front of adverse situations– (Masten, 2001; Luthar, 2006). As such, it needs to be explained on the basis of processes underlying it (Leipold & Greve, 2009).

Researchers have tried to identify the environmental and personal factors that are responsible for resilience (Luthar, Cicchetti & Becker, 2000; Prince-Embury & Saklofske, 2013, 2014), and agree that one of these factors may be the coping strategies that people use to face difficult situations (Folkman & Moscovitz, 2004; Skinner & Zimmer-Gembeck, 2007; Villasana, Alonso-Tapia, & Ruiz, 2016). Therefore, we decided to analyze the degree in which coping strategies contributed to resilience.

A difficulty that occurs when trying to study coping is that, according to Skinner, Edge, Altman and Sherwood (2003) coping responses are virtually infinite. Thus, it can be difficult to assess them in an operative way. In an attempt to organize these numerous responses,

different hierarchical models have been proposed. One of the most commonly used is the one developed by Lazarus and Folkman, (1984), which groups some of the most frequent coping strategies in two styles: problem-focused coping (PFC) and emotion-focused coping (EFC). The PFC style aims to eliminate the stressor, and includes, as main coping strategies: thinking avoidance (trying not to think about the problem), help seeking (looking for help to solve the problem), problem-solving (trying to solve the problem by oneself) and positive thinking (trying to learn from the adversity). On the other hand, EFC pursues minimizing the distress produced by the situation, and includes, as main coping strategies: rumination (thinking repetitively about the problem), self-isolation (avoiding social contact when having a problem), emotional expression (acting guided by the emotions) and self-blaming (blaming oneself for the situation).

Considering now the hypothesized relations between coping and resilience, we expect that the utilization of the PFC style will be related to higher resilience, as it include strategies aimed at actively finding a solution and learning from difficulties. Thus, people using the PFC style might be likely to find the best possible solution and to face difficulties as challenges. Regarding the EFC style, it takes place when, instead of trying to solve the problem, the person tries to avoid or minimize the negative emotions generated by the adverse situation. Such strategy will probably produce worst outcomes, and, thus, we expect it to be related to a lower level of resilience.

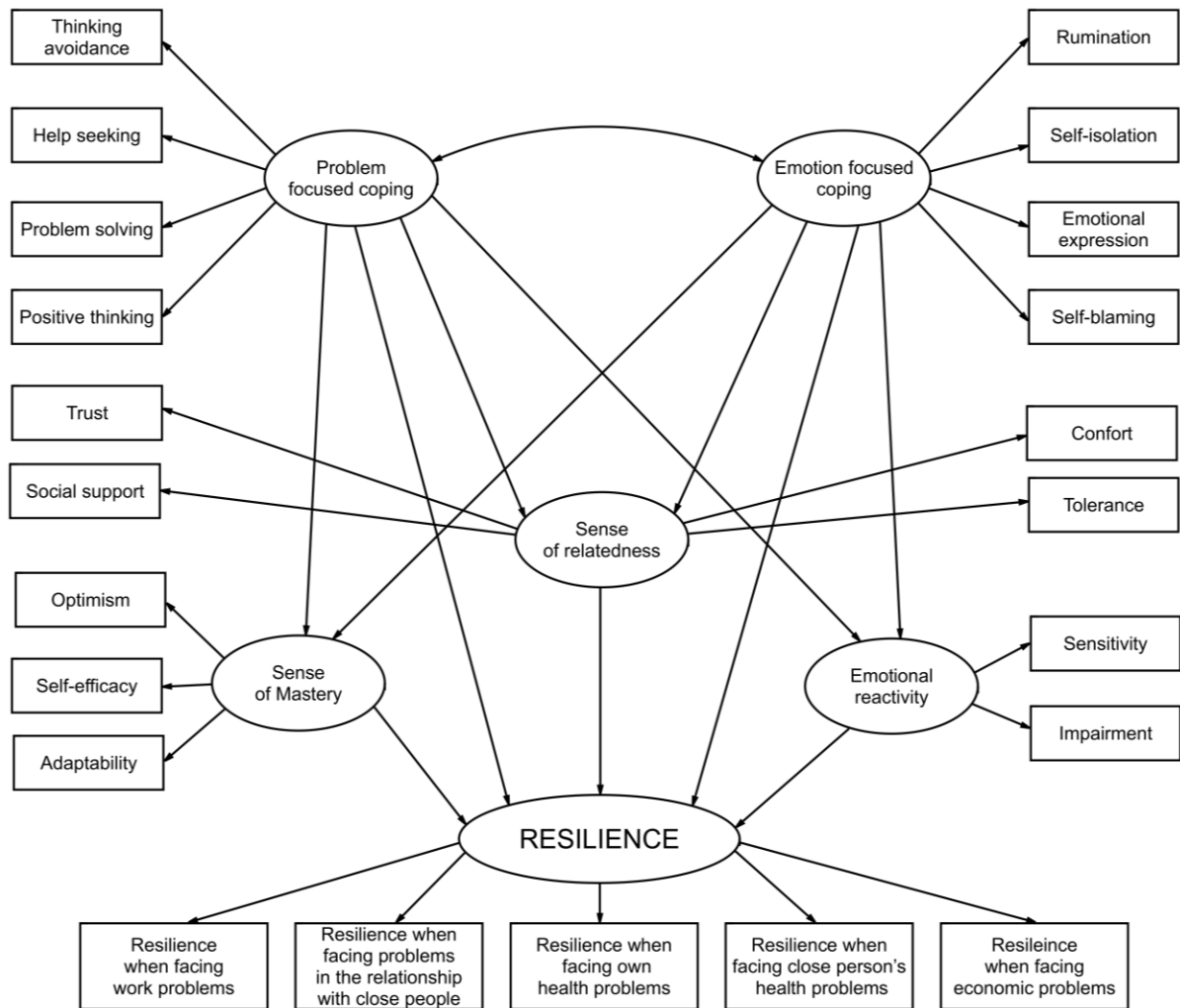
According to literature, resilience might not only depend on coping strategies, but also on different personal factors that, at the same time, might depend on coping strategies, as a consistent utilization of certain coping strategies can crystallize in stable traits. The personal characteristics that predispose to a resilient response have been termed *resiliency* (Prince-Embury, 2007; Prince-Embury & Saklofske, 2013, 2014). The work by these authors suggests that the different personal characteristics that contribute to resilience are grouped in the

following three factors: sense of mastery (SM), sense of relatedness (SR) and emotional reactivity (ER). SM refers to personal internal resources to face problems, and is expressed in the indicators optimism, self-efficacy and adaptability. SR refers to perceived support from the environment and adequate social skills, and is manifested in the indicators trust, support, comfort and tolerance. Finally, ER implies a lack of emotional self-regulation abilities, and comprises the indicators sensitivity, impairment and slow recovery. As, according to the conceptualization of resilience as the ability to bounce back, slow recovery is equivalent to low resilience, we consider that, contradicting the idea of Prince Embury (2007), it is not a trait, but an indicator of lack of resilience. Consequently, in the model that we are using in this work, we are only including sensitivity and impairment as indicators of ER. In this work we decided to analyze how these personal characteristics, along with coping styles, contribute to resilience.

Considering now the expected relations between resiliency factors and resilience, we expect that SM will contribute positively to resilience, as people high in this variable tend to have more internal resources such as optimism, which has been found to be related to higher resilience (Segovia, Moore, Linnville, Hoyt & Hain, 2012). ER and its indicators will probably contribute negatively to resilience, as it implies that attention is focused on the negative emotions aroused by adversity. More difficulty is found regarding predictions about the role of SR and its indicators. According to Prince-Embury (2014), the relation should be positive, especially as this variable correlates positively with SM. However, a previous work of Villasana et al. (2016) with adolescents found that SR is unrelated to resilience. The reason may be that having high SR may contribute to establish positive relations with people, but doing so without being mastery-oriented does not necessarily warrant that, when confronted with adversity, people will show resilience. So, after deducting the degree in which SR relates to SM, it is possible that SR does not relate to resilience or even that it relates to it negatively.

As said above, coping may materialize in different behaviors that can have different short and long-term effects. One of these effects might be the development of resiliency factors that, in turn, can be seen as the personal basis of resilience. In order to test whether this is the case, we have developed the path model of the hypothesized relationships between coping, resiliency factors and resilience shown in Figure 2.5.1.

Figure 2.5.1. Path model of the hypothesized relationships between coping styles, resiliency factors and resilience.



The main characteristic of the model relies in two points: the direct effect of coping styles in predicting resilience and resiliency, as they describe the ‘processes’ of dealing with adversity, and the mediating role of resiliency factors between coping and resilience, as they

represent ‘generalized’ dispositions of which people are more or less aware due to the repeated experience of acting in a particular way. Testing the model will allow finding the answer to three questions: 1) Do coping styles and resiliency factors relate as could be expected (PFC and EFC, negatively; PFC, SM and SR, positively; EFC, SM and SR, negatively; PFC and ER, negatively; EFC and ER, positively)?; 2) In which degree do copying styles and resiliency factors predict subjective resilience?; 3) Is the effect of PFC and EFC on resilience mainly direct or indirect?

The objective of this study, thus, is to ascertain the degree in which resilience can be predicted by resiliency and coping. Since these variables are probably related to one another, and an additional objective of this study is to test such relation. A last important consideration for this study is that resilience is situational-dependent, so people can be resilient when facing a kind of adversity, but not when facing others (Luthar, 2006; Reaching in... Reaching out, 2010). Thus, the effect of the situation in which the adverse experience occurs may impact the relation between coping, resiliency and resilience. Consequently, we will study these relations towards different adverse situations in our study.

### **2.5.3. Methods**

#### ***Participants***

A sample of 430 adults conformed the study. Three different groups of participants were recruited through the Internet in order to gather a sample with enough variability in relation to the degree of stress they had confronted. The first subsample (N = 256), termed ‘general population’, was composed by people who might have experienced stress, but that as a group could not be assigned to a particular category of people at risk. The second subsample (N = 77) were adults who were suffering from an illness (i.e. VIH, cancer, others), and the third (N = 97) were parents of children with serious problems: either cancer or developmental or sensorial problems (i.e. intellectual disability, autism, deafness). We included these clinical samples

because it is well-known that facing health problems or being a parent of a child with a health-related condition or a disability may be an important source of stress (e.g., Perry et al., 1990; Vrijmoet-Wiersma et al., 2008). Of the total sample, 69.8% were women. Regarding age, 33.3% of the sample was in the age interval between 20 and 30 years, 22.8% between 31 and 40 years, 26.3% between 41 and 50 years, 14.9% between 51 and 60 years, and 2.8% were above 60 years old. As for educational level, 70.46% had a university degree and 29.53% had primary, secondary or professional education.

The sample was randomly divided into two subgroups, one for the initial analyses and the other for cross-validation analyses.

### ***Instruments***

- *Situated Subjective Resilience Questionnaire for Adults (SSRQA; Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz, & Nieto, 2016b)*. This questionnaire comprises 20 items to assess resilience as the ability to bounce back from stress in five different situations (work-related problems, problems with close relationships, own health problems, health problems of a close person and economic problems). Half of the items for each situation are negatively worded (e.g., ‘When I’ve had an economic difficulty that was a real problem for me, it was difficult to stop feeling bad’) and the other half positively worded (e.g., ‘When I myself have had a health issue that afflicted me very much, I easily recovered from that uneasiness’). The items are answered on a 5-point Likert scale, in which the respondents determine the degree of agreement with each statement (1 = I totally disagree to 5 = I totally agree). Cronbach's alpha of the general resilience scale in our sample was  $\alpha = .90$ . Coefficients for the situated resilience scales were  $\alpha = .83$  for work-related problems,  $\alpha = .82$  for problems with close persons,  $\alpha = .72$  for own health problems,  $\alpha = .80$  for close person’s health problems, and  $\alpha = .70$  for economic problems.



- *Situated Coping Questionnaire for Adults (SCQA;* Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz, & Nieto, 2016a). This questionnaire comprises 40 items, which take into account eight different coping strategies grouped in the two general copying styles PFC and EFC. The PFC style ( $\alpha = .85$  in our sample) includes the following coping strategies: Problem solving ( $\alpha = .77$ ), Help seeking ( $\alpha = .83$ ), Positive thinking ( $\alpha = .85$ ) and Thinking avoidance ( $\alpha = .81$ ). The EFC style ( $\alpha = .82$  in our sample), comprises the following strategies: Rumination ( $\alpha = .71$ ), Emotional expression ( $\alpha = .78$ ), Self-isolation ( $\alpha = .82$ ) and Self-blaming ( $\alpha = .81$ ). It considers the same five situations as the SSRQA. The items are answered on a 5-point Likert scale, in which the respondents express the degree of agreement with each statement (1 = I totally disagree to 5 = I totally agree).

- *Resiliency Questionnaire for Adults (RQA;* Alonso-Tapia, Hernansaiz-Garrido, Rodríguez-Rey, Ruiz, & Nieto, 2016). This questionnaire is partially inspired in the Resiliency Scales for Adolescents developed by Prince-Embury (2007). It is composed of 36 items, half of them positively worded (e.g., ‘In general, I tend to think that things will turn out well’), and the other half negatively worded (e.g., ‘If anything bad can happen to me, it probably will’). They allow assessing nine personal characteristics grouped in three general factors: 1) SM ( $\alpha = .87$  in our sample), that includes Optimism ( $\alpha = .77$ ), Self-efficacy ( $\alpha = .70$ ) and Adaptability ( $\alpha = .81$ ); 2) SR ( $\alpha = .85$  in our sample), that includes Trust ( $\alpha = .54$ ), Support ( $\alpha = .88$ ), Comfort ( $\alpha = .75$ ) and Tolerance ( $\alpha = .55$ ); and 3) ER ( $\alpha = .71$  in our sample), that includes Sensitivity ( $\alpha = .53$ ) and Impairment ( $\alpha = .71$ ). The items are answered on a 5-point Likert scale that measures the degree of agreement with each statement (1 = I totally disagree to 5 = I totally agree).

### ***Procedure***

Ethics approval for this study was granted by the Research Ethics Committee at the Universidad Autónoma of Madrid, Spain.

To gather the participants from the clinical samples, several NGOs were contacted (for HIV-positive individuals, for adult cancer patients, for children with cancer and their families and for parents for children with disabilities or developmental disorders and their families) and were asked to send the potential participants an e-mail containing information about the study, along with a link to the informed consent and the questionnaires. The sample of general population was recruited by email using a snowball approach in which students and University colleagues were asked for collaboration to spread out the questionnaire. Those potential participants who received the email and decided to collaborate completed the questionnaires online.

### ***Data analysis***

*Correlation analyses.* In order to test the initial expectancies on the relationship between resilience and coping strategies, and between resilience and protective personality factors, correlation analyses were carried out.

*Regression analyses.* Six regression analyses were performed using the direct method with the objective of showing the degree in which each predictor contributed to resilience after partialing out its association with the remaining ones. The first analysis used as criterion the general measure of resilience, and the remaining five used the five situational resilience subscales included in the SSRQA to explore whether the relations between resiliency factors, coping and resilience varied across situations.

*Path Analyses with Latent Variables (PALV).* Finally, a PALV was conducted using the first randomized subsample in order to explore the relations between the SSRQA, the SCQA and the RQA in a single model (PALV-1). Then, a multi-group analysis (PALV-2) was carried out using the two randomized subsamples to cross-validate the results of the first analysis. Estimates were obtained using the maximum likelihood method. Absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ , GFI), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA) were used to assess

model fit, as well as criteria for acceptance or rejection based on the degree of adjustment described by Hair, Black, Babin, and Anderson (2010).

#### **2.5.4. Results**

##### *Correlation analyses*

Table 2.5.1 shows the results of the correlation analyses between coping, resiliency and resilience (general resilience, and resilience on each of the five situations included on the SSRQA). Starting with the resiliency factors, SM and all the predictors conforming it were positively associated to higher resilience in all situations. SR and all its indicators were related to higher resilience with the exception of access to support (which was practically uncorrelated to resilience), and ER and all the factors conforming it were significantly and inversely associated to resilience.

Regarding the coping styles and the strategies conforming them, the PFC style was associated to higher resilience in every situation. The coping strategies problem solving, positive thinking and, in lower degree, thinking avoidance were also positively related to resilience in most of the situations. However, help seeking was practically uncorrelated with resilience. Finally, as expected, the EFC style and all the coping strategies conforming it were inversely associated to resilience, but self-isolation was more weakly correlated to resilience than rumination, emotional expression and self-blame.

If data are examined focusing on the kind of adverse situations, data show that ‘Resilience in front of health problems of a relative’ presents a pattern of relations with predictors quite different from the other situations. SR and two of the variables conforming it (comfort and tolerance), PFC and two of the variables conforming it (problem solving and thinking avoidance), and the EFC indicator self-isolation do not correlate at all with resilience in front of this situation, while these factors correlate with resilience for the rest of situations.

Table 2.5.1.

Correlations between resilience, resiliency and coping variables.

	Resilience in front of problems of:					
	General resilience	Work	Relation- ship with a close person	Own health	Close person's health	Economy
<i>Sense of Mastery</i>	.481***	.367***	.359***	.390***	.228***	.425***
Optimism	.455***	.350***	.344***	.375***	.189***	.398***
Self-efficacy	.313***	.213***	.252***	.235***	.207***	.289***
Adaptability	.428***	.345***	.301***	.356***	.184***	.372***
<i>Sense of Relatedness</i>	.276***	.226***	.204***	.222***	.009	.283***
Trust	.334***	.267***	.262***	.238***	.143**	.294***
Support	.095*	.071	.050	.070	-.048	.177***
Comfort	.164**	.122*	.101*	.161**	-.012	.204***
Tolerance	.301***	.274***	.255***	.246***	-.032	.217***
<i>Emotional Reactivity</i>	-.497***	-.394***	-.390***	-.368***	-.236***	-.491***
Sensitivity	-.426***	-.363***	-.333***	-.296***	-.184***	-.340***
Impairment	-.414***	-.303***	-.325***	-.324***	-.214***	-.369***
<i>Problem focused Coping</i>	.286***	.232***	.211***	.238***	.104*	.239***
Problem solving	.184***	.169***	.129***	.159***	.059	.121*
Help-seeking	.035	-.028	.053	.039	-.018	.104*
Positive Thinking	.385***	.331***	.308***	.317***	.165***	.235***
Thinking Avoidance	.169***	.159**	.078	.130**	.075	.178***
<i>Emotion focused coping</i>	-.439***	-.294***	-.355***	-.374***	-.222***	-.401***
Rumination	-.547***	-.427***	-.416***	-.438***	-.298***	-.441***
Isolation	-.156***	-.064	-.165***	-.139**	-.007	-.190***
Emotional exp.	-.259***	-.152**	-.188***	-.262***	-.181***	-.242***
Self-guilt	-.377***	-.259***	-.309***	-.302***	-.198***	-.342***
	<i>Sense of Mastery</i>		<i>Sense of Relatedness</i>		<i>Emotional Reactivity</i>	
<i>Problem focused Coping</i>	.479***		.474***		-.342***	
<i>Emotion focused coping</i>	-.493***		-.402***		.515***	

Note. \*\*\* Correlation significant at level  $p < .001$ . \*\* Correlation significant at level  $p < .01$ . \* Correlation significant at level  $p < .05$

Correlations between coping strategies and resiliency factors showed that PFC was positively correlated with SM and SR, and negatively correlated with ER, while the pattern of correlations between EFC with the resiliency factors was just the opposite (negative with SM and SR and positive with ER).

### **Regression analyses**

As the variables used as predictors were significantly correlated, regression analyses were performed to find out the degree and direction in which coping styles and resiliency factors contribute to explain resilience. Results are shown in Table 2.5.2.

Table 2.5.2.

*Prediction of resilience from coping styles and resiliency factors. Regression analyses: R<sup>2</sup> values and standardized regression coefficients.*

<i>Criteria</i>	Total resilience	Resilience in front of problems related to:				
		Work	Relationship with a close person	Own health	Close person's health	Economy
<i>R<sup>2</sup></i>	.336***	.215***	.210***	.230***	.190***	.273***
<i>Predictors</i>	<i>Standardized regression coefficients</i>					
SM	.283***	.205***	.191**	.243***	.232***	.237***
SR	-.158**	-.101	-.127*	-.134*	-.292***	-.080
ER	-.258***	-.224***	-.198***	-.126*	-.127*	-.173*
PFC	.084	.072	.062	.084	.054	.050
EFC	-.209***	-.054	-.173***	-.203***	-.115*	-.175**

*Note.* SM = Sense of Mastery; SR = Sense of Relatedness; ER = Emotional Reactivity; PFC = Problem-Focused Coping; EFC = Emotion-Focused Coping,  
 \*\*\* Correlation significant at level  $p < .001$ . \*\* Correlation significant at level  $p < .01$ . \* Correlation significant at level  $p < .05$ .

As expected, the explained variance in all analyses was quite high and significant (from 19% to 33.6%), so a high percentage of resilience can be predicted. Examining the weight of each predictor in the different analyses, SM was always positive and significant, and ER was

always negative and significant, as expected, contributing more significantly to predict resilience in front of problems related to work and relationships with a close person. EFC was negative and significant (as expected) in all situations except resilience in front of work-related problems. Contrary to our expectations and to the results of the correlation analyses, the weight of SR was always negative and was significant in all situations except for problems related to work and economy. It contributes to predict resilience in front of problems related to a close person's health more than in the rest of the situations. Also contrary to our expectations, the weight of PFC was always non-significant.

### ***Path analysis with latent variables (PALV)***

Figure 2.5.2 shows the standardized estimates of the confirmatory model, as well as the squared multiple correlations. Table 2.5.3 shows the fit statistics of the proposed model (PALV). Chi-square statistic was significant, probably due to the sample size (Hair et al., 2010), but the ratio  $\chi^2/df = 2.89 < 5$  was well inside the limits that allowed the model to be accepted. The remaining adjustment indexes fell short of the standard limits of acceptance. So, in order to test the validity of the model, a cross-validation analysis was carried-out (CVA). The fit statistics (see Table 2.5.3) are very similar to those of the PALV. However, the model comparison statistics carried out against the unrestricted model, establishing equality restrictions between groups for measurement weights ( $\Delta\chi^2 = 12.23, p = .73$ ), structural weights ( $\Delta\chi^2 = 29.04, p = .36$ ), structural covariances ( $\Delta\chi^2 = 31.44, p = .39$ ), structural residuals ( $\Delta\chi^2 = 33.30, p = .50$ ) and measurement residuals ( $\Delta\chi^2 = 53.62, p = .57$ ), show that fit is not significantly reduced in relation to the model without restrictions, which means that the tested model works similarly in both samples.

Figure 2.5.2. Prediction of resilience from coping styles and resiliency factors. Path analysis with latent variables: Initial standardized solution.

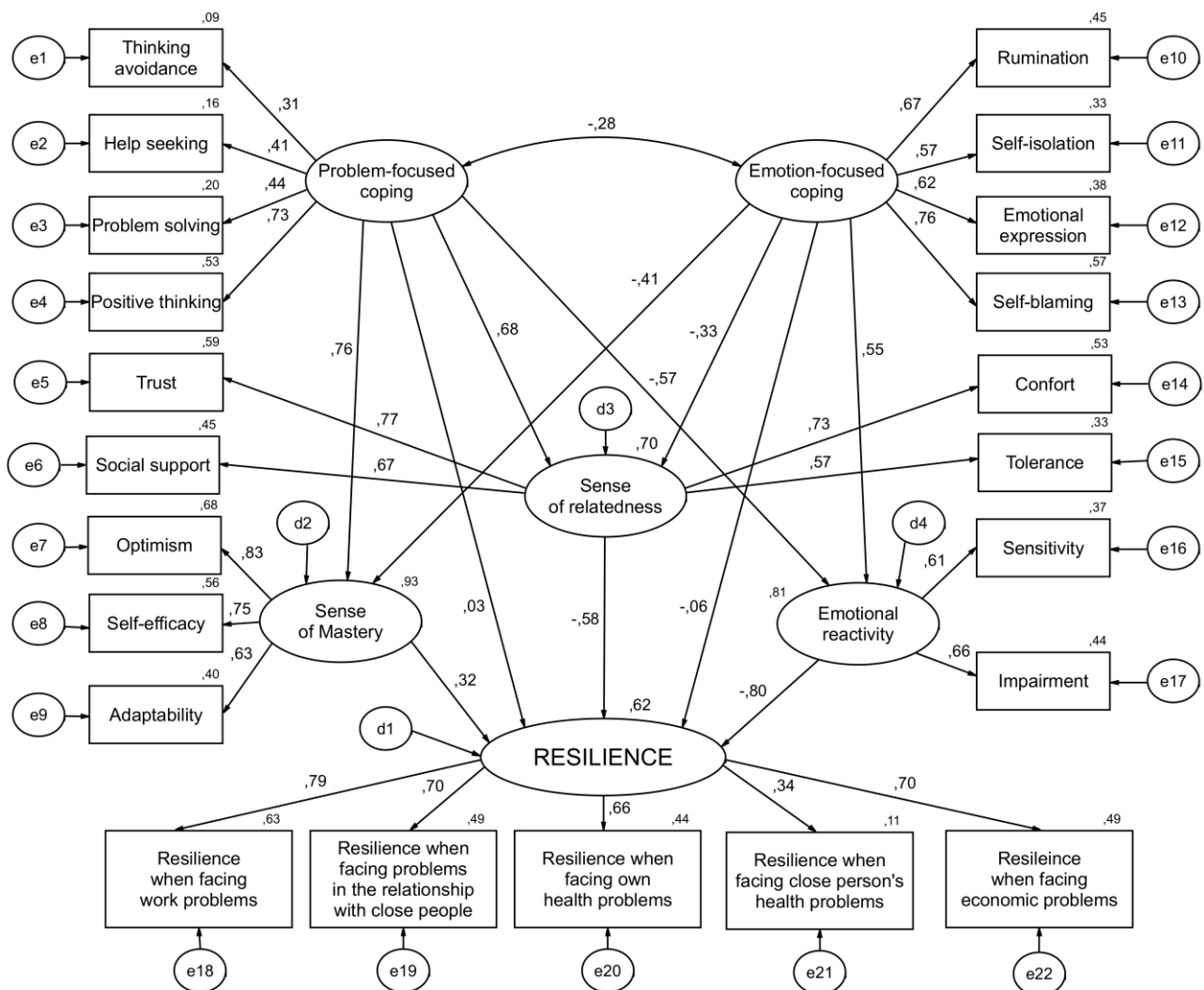


Table 2.5.3.

Prediction of resilience from coping styles and resiliency factors. Goodness of fit statistics for the baseline path analysis with latent variables (PALV) and for cross validation analysis (CVA).

	$\chi^2$	df	p	$\chi^2/df$	GFI	IFI	CFI	RMSEA
PALV								
N=213	570,91	197	<.001	2.89	.81	.80	th	.09
CVA								
(N=213/217)	1184.52	394	<.001	3.01	.80	.79	.79	.06

Note. GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual.

Considering now the three questions that the PALV was to answer, results in Table 2.5.4 along with Figure 2.5.2 show that: 1) the relationships between PFC, EFC, SM, SR and ER were significant ( $p < .001$ ) and in the initially expected direction; 2) predictors explain the 62% of variance of resilience, being ER and SR the main contributors; and 3) direct effects of coping styles (PFC and EFC) on resilience are null, though indirect effect through resiliency factors reach .33 for PFC and -.38 for EFC.

Table 2.5.4.

*PALV: prediction of resilience from coping styles and resiliency factors. Direct and indirect effects.*

Predictors		Criteria			
		Sense of Mastery	Sense of Relatedness	Emotional Reactivity	Resilience
Problem focused coping	Total effect	.76	.68	-.57	.33
	<i>Direct effect</i>				.03
	<i>Indirect effect</i>				.31
Emotion focused coping	Total effect	-.41	-.33	.55	-.44
	<i>Direct effect</i>				-.06
	<i>Indirect effect</i>				-.38
Sense of Mastery	Total effect				.32
Sense of Relatedness	Total effect				-.57
Emotional Reactivity	Total effect				-.80

### 2.5.5. Discussion

This study casts some light on the factors that may contribute to an individual's resilience, understanding resilience as the ability to bounce back or recover from stress. Based on previous literature, we hypothesized that an individual's level of resilience would depend on the coping styles and strategies used by individuals (Leipold & Greeve, 2009) and on



protective personality factors (Prince-Embury & Courville, 2008), which is confirmed by our results, as more than 60% of the variance of resilience could be predicted by these factors.

Starting with coping strategies, correlation and regression analyses have shown that, as expected, the emotion focused coping style (EFC) is negatively related to resilience. Contrary to our expectations, the problem focused coping style (PFC) does not show a direct effect on resilience. However, the path analysis showed that it affects resilience indirectly, through the resiliency factors sense of mastery (SM), sense of relatedness (SR) and emotional reactivity (ER). The direction of this relation is as follows: on the one hand, the higher people score on PFC, the higher they tend to score on SM and the lower on ER, both tendencies positively associated to resilience. On the other hand, the higher people score on PFC the higher they tend to score on SR, tendency negatively related to resilience. The fact that SM acts as a protective factor for resilience and ER as a risk factor is coherent with Prince-Embury's theory of resiliency (Prince-Embury & Saklofske, 2013, 2014); nevertheless, the fact that SR predicts lower resilience contradicts her theory, and adds controversy to the matter, as did the study conducted by Villasana et al. (2016) in adolescent population.

Thus, as our data have shown, the relation between PFC and resilience exists, but is quite complex. Scoring high in PFC style might favor resilience when it implies using strategies to confront the adversity (such as searching for a solution) which may lead to higher SM, that is, the perception of having better personal resources. However, the preferred utilization of the PFC style may also imply that the person tends to look for support when confronted with adversity. This tendency may be an index of resilience if the person has previously tried to cope with adversity without finding a way to overcome it, and then considers that asking for help is the only adequate strategy left. However, if the person seeks help as a first strategy because he/she has much support and social skills and perception of support (SR), it may lead to lower resilience. Thus, we consider that, in order to foster resilience, people should be taught to ask

for help mainly after trying to cope with adversity by themselves. Not to act in this way might contribute to the negative weight that SR has on resilience, according to our data.

Our results also show that the degree in which coping and resiliency contribute to predict resilience varies across situations. Regarding the resiliency factors, while SM contributes positively and ER negatively to predict resilience in the five situations included, SR does not contribute to predict resilience towards work and economy problems, while contributes negatively in the remaining situations. Regarding the coping styles, while PFC does not directly contribute to predict resilience in any of the situations included in the resilience questionnaire, EFC is inversely associated to resilience in every situation, with the exception of work-related problems. As there are some differences in the degree in which coping and resiliency contribute to resilience across situations, it seems that, in order to assess resilience to help people increase it, it is necessary to take into account the implications of the kind of specific situation the person has to deal with. For example, psychologists should identify the kinds of coping strategies that are potentially more applicable to the kind of situation.

### ***Implications***

Our results have some practical and theoretical implications and provide directions for future interventions. First, as our path analysis has shown, the relation between coping and resilience is mediated by resiliency. Therefore, in order to improve resilience, professionals such as psychologists, educators and therapists should focus in modifying the coping strategies that the individuals use to face their problems. By doing that, they might change their self-perception of their personal characteristics, which could affect their resilience.

Regarding the direction of this intervention, our results showed that the more PFC and less EFC are used, the higher SM and lower ER are, which contributes positively to resilience. This seems to indicate that, in order to increase resilience, EFC should be avoided, and PFC promoted. However, by doing that we could also increase SR, which –unexpectedly– predicts

lower resilience. Consequently, we should avoid the usage of strategies (e.g., asking for help) that may favor that people exclusively rely on external support to face their difficulties. Moreover, some coping strategies are adaptive for some contexts but not for others, so flexibility in the use of the most adaptive coping strategies across contexts should be promoted.

Second, the fact that PFC is negatively correlated with EFC and has an indirect effect on resilience through ER may be due to the use of positive strategies for self-regulating emotions, a kind of strategies that would tend to inhibit the use of the emotion focused strategies included in our model. This hypothesis should be tested because, if it were true, it would imply the need to favor the acquisition and use of such strategies.

### ***Limitations***

This study also has some limitations that, hopefully, open paths for future research. First, our results are based on correlations. So, the causal link is a hypothesis that still needs to be tested. Second, since the recruitment and participation were made online, only those with access and knowledge about computers, emails and web-browsing were able to enter the study, which implies that our sample could be biased and, thus, limits the generalizability of our results. Additionally, we used a coping questionnaire that only included eight strategies. Agreeing with Lazarus (2006), we believe that a questionnaire should be considered only as a first step in the exploration of the coping process, as many other strategies can affect the resilient response, and these should be explored in future studies. Finally, this study showed that the kind of situation influences the relation between coping styles, resiliency and resilience. However, this effect was considered only in the five situations included in the SSRQA. Thus, the effect of adverse experiences different from those included in our questionnaire remains to be studied.



---

**3. PART II:**

**THE ROLE OF SUBJECTIVE RESILIENCE IN  
PREDICTING ADAPTATION IN PARENTS  
OF CRITICALLY ILL CHILDREN.**

---

### **3.1. Development of a Screening Measure of Stress for Parents of Children Hospitalized in a Pediatric Intensive Care Unit**

Rocío Rodríguez-Rey, & Jesús Alonso-Tapia

Universidad Autónoma de Madrid. Psychology Faculty.  
Department of Biological and Health Psychology.

Paper currently in press in the journal *Australian Critical Care*. Reference:

Rodríguez-Rey, R. & Alonso-Tapia, J. (in press) Development of a screening measure of stress for parents of children hospitalised in a Paediatric Intensive Care Unit. *Australian Critical Care*. doi:10.1016/j.aucc.2015.11.002

#### Acknowledgments

The authors would like to acknowledge Lidia Casanueva, Victoria Ramos, Alba Palacios, Ana Llorente and Silvia Belda for their help with the data collection and Helena Hernansaiz Garrido for reviewing the writing style of this article.

### 3.1.1. Abstract

*Background:* Having a child admitted to intensive care is a highly stressful experience for parents; however there is a lack of screening instruments of parental stress in that context, which would be useful for both, research and clinical purposes.

*Objectives:* (1) To validate a brief measure of parental stress based on the Parental Stressor Scale: Pediatric Intensive Care Unit (PSS:PICU), (2) to study which environmental factors of the PICU are more stressful in a sample of Spanish parents, and (3) to study which variables are related to higher levels of stress among this group.

*Method:* 196 Spanish parents completed the Abbreviated PSS: PICU (A-PSS:PICU) and a general stress scale (the *Perceived Stress Scale*) upon their child's discharge to test the convergent validity of the tool. Three months later, they were assessed anxiety and depression using the *Hospital Anxiety and Depression Scale*, and posttraumatic stress with the *Davidson Trauma Scale* in order to test the predictive validity of the A-PSS:PICU.

*Results:* Two factors emerged from Confirmatory Factor Analyses, 1) stress due to child's condition and 2) stress related to PICU's staff. The A-PSS:PICU showed adequate reliability and convergent and predictive validity. The most stressful aspects were the behaviors and emotional responses of their child and the loss of their parental role. Age, gender, child's condition, length of admission, spiritual beliefs, and mechanical ventilation were associated to parental stress scores.

*Conclusion:* The A-PSS: PICU is a reliable and valid measure. Parental stress should be screened during a child's PICU admission to identify parents at risk of post-discharge distress.

*Keywords:* parental stress; assessment of stress; pediatric intensive care unit; PICU; psychometric properties.

### 3.1.2. Introduction

Having a child admitted to a Pediatric Intensive Care Unit (PICU) has long been recognized as a highly stressful experience for parents (Balluffi et al., 2003; Casanueva-Mateos et al., 2007; Berenbaum & Hatcher, 2003). This is understandable if we take into account that children under intensive care are usually acutely ill or injured, and consequently they are at increased risk of death. Furthermore, the PICU's environment itself, with its rapid pace, noises, bright lights, and crisis-focused interventions presents a great challenge for parents who are already stressed.

Some previous studies have explored what are the sources of parental stress during their child's hospitalization in the PICU. Commonly identified parental stressors included the loss of the parenting role, uncertainty over the child's outcome, being separated from their child, a feeling that the quality of care the child was receiving was poor, (Hayes & Knox, 1984; LaMontagne & Pawlak, 1990; Haines, Perger & Nagy, 1995) not being able to understand medical information or having communication problems with the medical staff (Colville et al., 2009), feelings of uncertainty and helplessness (Jee, et al., 2012), and seeing their child in pain and discomfort (Haines, Perger & Nagy, 1995). Also, parents can become distressed as a result of their exposure to other pediatric patients' life threatening conditions, traumatic procedures, and death (Ward-Begnoche, 2007).

Some studies have used interviews to detect parental sources of stress (Hayes & Knox, 1984; LaMontagne & Pawlak, 1990); however most of them have used questionnaires. The best known measure to assess parents' responses to stress in the PICU is the Parental Stressor Scale: Pediatric Intensive Care Unit. (PSS:PICU) (Carter & Miles, 1989). The original 79-item scale was developed by Carter, Miles, Buford, and Hassanein (1985). Following factor and item analysis, Carter and Miles (1989) revised the scale, reducing it to 37 items measuring the following seven dimensions in the ICU environment: Child's appearance, Sights and sounds,



Painful procedures conducted on the child, Alteration in parenting role, Behaviors and emotional responses, Staff's behavior and Staff's communication.

The PSS:PICU was based Selye's theory on stress (1956), Lazarus's cognitive-phenomenological theory on stress (Lazarus & Launier, 1978), Roy's adaptation model of nursing (Roy, 1976) and Moos's theory on coping with illness (Moos & Billings, 1982). These authors support the idea that the stress response is the result of a complex interaction between multiple variables such as environmental stimuli, characteristics of the situation, personal factors and the perception of the individual of the power of the stressors. So, while a child is hospitalized in a PICU, a multiplicity of environmental stimuli could be sources of parental stress. Some personal/family variables (such as age of the parent) and situational factors (such as child's illness) can also interact with these stimuli to affect their overall stress response (Miles & Carter, 1983; Miles, Carter, Hennessey, Eberly & Riddle, 1989). Based on that idea, the PSS:PICU was developed to measure the environmental stressors of the PICU.

The PSS:PICU has shown reliability, validity, and stability in numerous research studies (Carter et al., 1985; Carter & Miles, 1989; Miles, Carter, Riddle, Hennessey & Eberly; 1989) and has proved its efficacy to measure the effect of interventions to reduce parental stress in the PICU (Curley, 1988; Curley & Wallace, 1992). It has shown adequate psychometric properties when used in a variety of populations, such as Indian (Pooni, Singh, Bains, Misra & Soni, 2013), Spanish (Rei & Fong, 1996), Malay (Nizan & Norzila, 2001) and Chinese (Yam, Lopez & Thompson, 2004).

In spite of the fact that the PSS:PICU is a reliable and valid measure, it is not free of limitations. First, although a total stress score can be calculated in addition to seven subscale scores, no confirmatory factor analysis has been conducted to test the adjustment of a model with a second order factor. Second, with regard to the Spanish validation, the small sample size (N= 20) is an important limitation, as it should have been five times larger as the power

analysis revealed. Third, and most important, it takes around 30 minutes to complete the PSS:PICU, which makes it not practical to use on a daily basis (Aldridge, 2005). If we consider the difficulty of the situation that these parents are experiencing, and the high burden of work -and consequently the lack of time- of staff working in critical care. Instead, in the context of the PICU, professionals need to have effective and fast screening tools to measure parental stress, which are not available currently. If we had these shorter measures, parents with a high level of disturbance could be detected for an early intervention. A shorter measure would be useful for research purposes too, as a way of reducing the demand on participants' time.

In previous studies, stress assessed through the PSS:PICU has been found to be related to several psychological variables, such as general stress (Agazio & Buckley, 2012), anxiety (Carter & Miles, 1989; Yam, Lopez & Thompson, 2004; Miles, Funk & Kasper, 1991; Busse, Stromgren & Thorngate, 2013), depression (Busse et al., 2013) and posttraumatic stress (Colville et al., 2009; Colville & Gracey, 2006). Thus, these variables could be used as external criterion to test the validity of the new tool. PSS:PICU scores have also found to be related with some medical and sociodemographic variables, such as child's mechanical ventilation (Haines et al., 1995; Nizan & Norzila, 2001; Eberly, Miles, Carter, Hennessey & Riddle, 1985; Aamir, Mittal, Kaushik, Kashyap & Kaur, 2014), unexpected admission (Bronner et al., 2010), higher severity of the child's condition (Pooni et al., 2013; Nizan & Norzila, 2001), lack of previous PICU's experience (Nizan & Norzila, 2001), prior parental psychological problems (Bronner et al., 2010) or parental socioeconomic difficulties (Franck, Mcquillan, Wray, Grocott & Goldman, 2010) which are associated with higher stress.

Even though, as it has just been described, there is a wide body of using the PSS:PICU, this measure has some problems, mainly its length. Therefore, the purposes of this study were the following: (1) to develop a short questionnaire based on the PSS:PICU that could be used with parents of critically ill children as a screening measure of the degree and sources of stress

produced by PICU's experience, (2) to study which are the most stressful aspects of the PICU's context in our sample of Spanish parents, and (3) to study which variables are related to higher levels of stress in our Spanish sample.

### **3.1.3. Method**

#### ***Sample***

Participants were parents whose child had been discharged in the last 48 hours from a PICU in Madrid, Spain. The PICU is located in a tertiary level hospital and has 16 beds, 8 physicians and a total of 49 nursing staff. The nurse-to-patient ratio is 2:1. Regarding psychosocial services provided at the PICU, there is a Social Worker who attends families at request for the entire pediatric ward where the PICU is located. A psychologist from an NGO provides psychological support to the children with heart conditions and their families two times a week.

The parents were excluded from eligibility in the study if they did not speak sufficient Spanish to complete a questionnaire, if they were admitted for less than 12 hours in the PICU or if child abuse or neglect was suspected as a precipitant to the admission. A total of 196 parents of 130 children agreed to participate, 61.2% women and 38.8% men. Their average age was 37.80 years ( $SD= 6.58$ ) for the parents and 56.58 months ( $SD= 61.92$ ) for the children. The primary reasons for admission were planned surgery (65.3%), emergency medical treatment (16.8%), accidental injury and emergency surgery (11.1%) and relapse of a chronic disease (6.6%). The more prevalent diagnoses were heart conditions (26.2%), cancer (16.2%) and respiratory conditions (12.3%). The average length of admission was 6.12 days. Three months after the child's discharge 158 parents completed the following-up assessment.

## *Instruments*

### *- Abbreviated Parental Stressor Scale for Pediatric Intensive Care Unit (A-PSS:PICU).*

In order to develop this scale, two psychologists summarized the content of each of the seven subscales of the Spanish version of the Spanish PSS:PICU (Rei & Fong, 1996) in one item for each subscale. To do so, for example, instead of asking how stressful were 6 different medical procedures, with an item for each procedure, we asked in one item how stressful were medical procedures conducted on the child in general, and we gave them some examples of such procedures, so six items were reduced to one. Thus, the brief scale designed contains 7 items (one for each of the seven subscales of the PSS:PICU). The response format is a 5 point Likert scale ranging from 1 “Not stressful” till 5 “Extremely stressful”, or 0 “Not experienced”. It was developed in Spanish language and it is included on the Annex of this dissertation (p. 432) along with its English translation (p. 431). To translate it to English, two native Spanish-speaking bilingual psychologists translated it independently and agreed on a final common translation. The Spanish version was first administered to 4 parents (2 mothers and 2 fathers) in order to test whether understanding difficulties emerged. With this purpose, we asked these 4 parents to complete the measure and also to indicate whether they had had any difficulty in understanding each of the items. As none of them reported any difficulty in understanding any of the items, we administered the scale to the 196-parents sample above described with the aim of assessing its psychometric properties.

*- Perceived Stress Scale (PSS; Cohen, Kamarck & Mermelstein, 1983).* The PSS is a global measure of perceived stress that was developed with the aim of measuring the degree to which situations in one’s life are appraised as stressful. We used the European Spanish version (Remor, 2006). This is a 14-item questionnaire that demonstrated adequate reliability (internal consistency,  $\alpha = .81$ , and test-retest,  $r = .73$ ), concurrent validity, and sensitivity.

- *Davidson Trauma Scale (DTS; Davidson et al., 1997)*. It is a 17-item measure that assesses the 17 DSM-IV symptoms of PTSD. It was adapted to Spanish language (Bobes et al., 2000) showing high internal consistency ( $\alpha = .90$ ) and test-retest reliability (ICC =.87).

- *Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)*. It is a 14-item scale that contains two 7-item Likert scales, one for anxiety and one for depression. We used the Spanish version (Quintana et al., 2003) that showed test–retest reliability (presented correlation coefficients above .85), high internal consistency ( $\alpha = .86$ ), and high concurrent validity.

- *Medical variables*. The physician responsible for every child responded the *Paediatric Index of Mortality II (PIM 2; Slater et al., 2003)* a rating index developed to predict mortality risk in the PICU during the first 24h of admission which discriminated between death and survival well [area under the receiver operating characteristic (ROC) plot .90 (.89–.91)]. We also registered the length of the admission, mechanical ventilation on the child, being the admission elective or urgent, previous admissions on PICU and previous health status of the child.

- *Subjective perception of the severity of the child's condition*. We asked every parent the following two questions: 1) *How severe do you think that your child's condition has been during his/her hospitalization in the PICU?* (0-7) and 2) *Did you think that your child could die at any point of his/her PICU's admission?* (Yes/No).

- *Socio-demographic and cultural variables*: We assessed age and sex of the parents and the child, marital status, number of children, work status, perception of financial trouble, education level, nationality, and spiritual or religious beliefs.

### ***Procedures***

The study was approved by the Institutional Review Board of the hospital. The parents of every child that had been admitted to the PICU for more than 12 hours and survived the

admission were asked to participate in the first 48 hours after the child's discharge from the PICU. Data collection was made by an external researcher in psychology. Parents were given an informed consent form that described the study and its purposes, potential risk and benefits, and confidentiality. Then, those who agreed to participate and signed the written consent completed the A-PSS:PICU, the PSS and a socio-demographic and medical questionnaire. We also asked them to provide us with a preferred way to be contacted in the follow-up (telephone or email). Three months later we contacted them again by telephone or email and we asked them to complete the HADS and the DTS, which they could complete by email, telephone or post.

### *Data analysis*

First, two models were tested through confirmatory factor analyses (CFA) to test the A-PSS:PICU factor structure. An inter-category correlation matrix was used in computation of the factor matrix to help compensate for "Not experienced" responses. Estimates were obtained using the maximum likelihood method after examining whether data were adequate for the analysis. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA) were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, Anderson, & Tathan (2010).

Second, the reliability –internal consistency– of the subscales and the general scale was calculated.

Third, to get information on the concurrent validity, Pearson correlation coefficients were computed between the A-PSS:PICU scores and general stress assessed through the Perceived Stress Scale (PSS). To explore the predictive validity, we calculated its correlation with PTSD, anxiety and depression.

Fourth, to examine the level of stress produced by each stressor and the scores in the total scale and each subscale, the means, ranges and standard deviations were calculated.

Fifth, with the aim of testing which socio-demographic and medical variables were associated with parental stress in the PICU, we calculated Pearson correlations with the continuous variables assessed, and the point-biserial correlation coefficient (*rpb*) with the dichotomized variables assessed.

### 3.1.4. Results

#### *Confirmatory Factor Analyses*

The fit indexes of the two models tested through CFA are shown in Table 3.1.1. Within the first model tested we attempted to prove whether the A-PSS:PICU has a mono-factorial structure. As we can see in Table 3.1.1, this model is not well adjusted.

Table 3.1.1

*Confirmatory Factor Analysis of the Abbreviated Perceived stress scale for PICU. Fit indexes of the two models tested.*

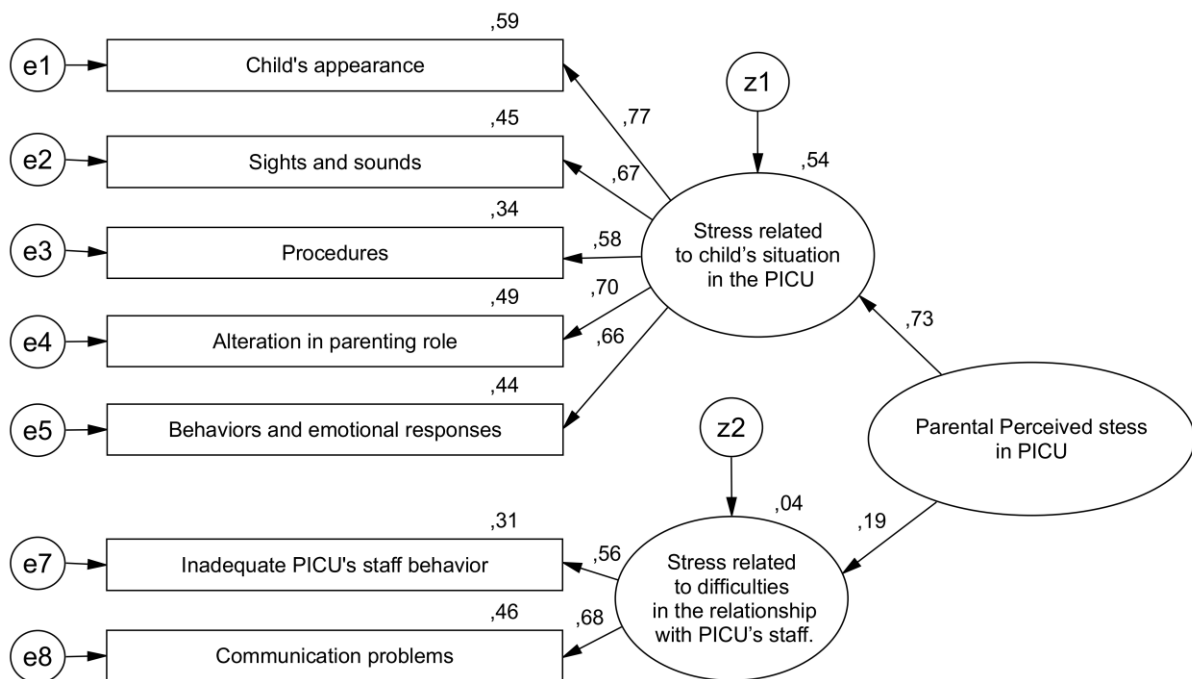
	$\chi^2$	<i>df</i>	<i>p</i>	$\chi^2/df$	IFI	CFI	RMSEA	SRMR
Model 1	51.294	14	.000	4.235	.863	.860	.129	.083
Model 2	29.907	19	.005	2.301	.949	.948	.082	.045

*Note.* GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual.

Initial confirmatory standardized solution this model showed that the items that assessed how stressful were the “inadequate PICU’s staff behavior” and the “communication problems” have a lower relation to the general total score than the rest of items, so they could be assessing a different factor. Thus, in the second model we attempted to prove whether the questionnaire has a bi-factorial structure, in which one factor contains items related to stressors produced by the child’s situation in the PICU (child’s appearance, procedures, etc.) and the other items related to difficulties in the relation with PICU’s staff. This model also contains a second order factor to explain all covariance between the two first order factors. This model is presented in Figure 3.1.1. As we can see in Table 3.1.1 all the fit indexes are acceptable, so the A-PSS:PICU

has a 2-factor structure. The first factor has five items to assess how stressful are for parents the following stimuli: child's appearance, sight and sounds, procedures, parental roles, and behaviors and emotional responses of the child. The second factor has two items, to assess how stressful are aspects related to PICU's staff. This model also allows calculating a total score in the questionnaire.

*Figure 3.1.1.* Initial confirmatory standardized solution for the two-factor model of the Abbreviated Parental Stressor Scale Pediatric Intensive Care Unit (A-PSS:PICU)



### **Internal Consistency**

Internal consistency of the A-PSS:PICU was .76. Internal consistency of the factor "Stress related to child's situation in the PICU" was .81, and that of the factor "Stress related to difficulties in the relationship with PICU's staff" was .77. Internal consistencies of the remaining questionnaires used for validation purposes (the PSS, the DTS and the HADS) were all over .80.



### ***Concurrent and Predictive Validity***

As it is shown in Table 3.1.2, correlations of the total scale and the factor “Stress related to child’s situation in the PICU” with perceived stress, anxiety, depression and PTSD are in the direction that we had expected. This fact provides evidence of the concurrent and predictive validity of this tool. However all correlations of the factor “Stress related to difficulties in the relationship with PICU’s staff” with the criterion are not significant.

Table 3.1.2

*Correlations between the A-PSS:PICU scores and the criterion variables selected.*

	Total score A- PSS:PICU	“Stress related to child’s situation on PICU”	“Stress related to difficulties in the relationship with PICU’s staff”
Perceived Stress (PSS) (N=196)	.25**	.29**	.02
Anxiety (HADS) at 3 months (N=158)	.17*	.24**	-.03
Depression (HADS) at 3 months (N=158)	.15	.19*	.00
PTSD at 3 months (DTS) (N=158)	.22**	.27**	.02

*Note.* A-PSS:PICU= Abbreviated Perceived Stress Scale for Pediatric Intensive Care Unit. PSS= Perceived Stress Scale, HADS= Hospital Anxiety and Depression Scale; PTSD= Posttraumatic Stress Disorder.

\*Sig at  $p \leq .05$  \*\*Sig at  $p \leq 0.01$

### ***Stressors for Parents of Children Admitted to Intensive Care***

To determine the greatest sources of stress among our sample, first we calculated the percentage of parents who experienced each of the seven stressful situation which are included in the A-PSS:PICU. Around 95% of parents experienced situations assessed by Item 1 [*Physical appearance of the child (wounds, changes in skin color, appearance to be cold, etc.)*], Item 2 [*Sounds of monitors, seeing the heart rate on monitors or hearing sudden alarm sounds.*] and Item 3 [*Medical procedures conducted on my child (needles, tubes, incisions, etc.)*], while around 50% of parents experienced situations assessed by Item 4 [*Not being able to see my*

child, being with my child and taking care of him and hold him whenever I wish.), Item 5 (Seeing my child crying confused, in pain, unable to speak, sad or angry.), Item 6 [Seeing the staff from PICU behaving in a way that I consider inadequate (e.g., Laughing, speaking too loud, not telling me their names, etc.)] and Item 7 [Communication problems with the doctors (explaining me the things in a way that I do not understand, expressing contradictory opinions, talking too little to me, etc.)]. Secondly, group means were calculated for the items, the subscales and the total scale. The mean score was computed by dividing the sum of the total scores on every item by the number of items rated "1" or above, so, we do not consider difficulties that have not been experienced by parents to calculate the means. The most stressful aspects when considering only those parents who have experienced each situation were the Child's behavior and emotions, the loss of their parental role and the Child's appearance. These data are presented in Table 3.1.3.

Table 3.1.3

*Average scores, ranges, and standard deviations of the A-PSS:PICU and its subscales.*

	<i>n</i>	% of parents who experienced that stressor	Range	Mean	<i>SD</i>
Item 1 - Child's appearance in the PICU	185	94.38	1-5	3.19	1.14
Item 2 - PICU's sights and sounds	187	95.41	1-5	2.74	1.17
Item 3 - Procedures conducted on the child	188	95.92	1-5	2.59	1.21
Item 4 - Loss of parental role in the PICU	106	54.08	1-5	3.45	1.28
Item 5 – Child's Behaviors & emotional responses	107	54.59	1-5	3.98	1.10
Item 6 – Inadequate behavior of PICU's staff	106	54.08	1-5	2.82	.95
Item 7 - Communication problems with physicians in the PICU	96	48.97	1-5	2.73	.86
Factor 1- Stress related to child's situation on PICU (items, 1, 2, 3, 4 and 5)	196	___	1-5	3.14	.96
Factor 2- Stress related to difficulties in the relationship with PICU's staff (Items 6 and 7)	120	___	1-5	2.58	1.17
A-PSS:PICU Total	196	___	1-5	3.05	.87

*Note.* *SD*= Standard deviation; PICU= Paediatric Intensive Care Unit; PSS:PICU= Abbreviated Perceived Stress Scale for Pediatric Intensive Care Unit.

***Correlations between the A-PSS:PICU and Socio-demographic and Cultural Variables***

As it's shown in Table 3.1.4, higher stress scores are negatively related to age of the parent and the child. Women and those who have spiritual or religious beliefs are more prone to have higher level of stress. The number of children is negatively correlated with the subscale "Stress related to PICU's staff". No correlation has been found between parental stress and the economic and education level, child's gender, nationality and marital and work status.

Table 3.1.4

*Pearson and point-biserial correlations between the A-PSS:PICU punctuations and socio-demographic, cultural and medical variables chosen.*

	Total score A-PSS:PICU	Stress related to child's situation on PICU subscale	Stress related to difficulties in the relationship with PICU's staff subscale
Age	-.31**	-.30**	-.19*
Child's age	-.20**	-.22**	-.11
Gender	.24**	.24**	.02
Child's gender	.09	.10	.02
Number of children	-.10	-.13	.06
Economic difficulties	.12	.11	.09
Education level	.03	.07	-.12
Spiritual beliefs	.24*	.26**	-.03
Marital status	.06	.07	.04
Work status	-.05	-.06	.01
Living in Madrid	-.13	-.15*	-.00
Objective child's severity	.14*	.16*	-.01
Subjective child's severity	.42**	.45**	.09
Belief child could die	.26**	.28**	-.03
Lenght of admission	.23**	.23**	.13
Previous health status	.08	.11	-.17
Previous admissions	-.04	-.07	.10
Elective vs urgent	-.09	-.11	.08
Intubated or not	.23**	.21**	.16

*Note.* A-PSS:PICU= Abbreviated Perceived Stress Scale for Pediatric Intensive Care Unit.

\*Sig at  $p \leq .05$  \*\*Sig at  $p \leq 0.01$

### *Correlations between the A-PSS:PICU and Medical Variables*

Higher stress scores are associated to higher objective severity of the child's medical condition assessed through the PIM2, with the subjective child's severity as perceived by the parents, with the belief that the child could die during the admission to PICU, with length of the admission, and with mechanical ventilation of the child. Previous health status of the child, previous admission and being the admission unexpected were not related to stress. These correlations are also shown in Table 3.1.4.

#### **3.1.5. Discussion**

First, we can conclude that the A-PSS:PICU is an adequate screening measure to assess parental sources of stress while their child is admitted to the PICU. Starting with its psychometric properties, two factors emerged through factor analysis, "Stress related to child's situation in the PICU", and "Stress related to difficulties in the relationship with PICU's staff". As they are significantly correlated, a score for the whole scale can also be obtained. The scale and its two factors showed good internal consistency. The total scale and the first factor showed good concurrent and predictive validity. However, the second factor didn't show significant correlations with any of the criteria that we assessed. We hypothesize that this may be because, even though the difficulties in the relationship with PICU's staff can be a source of stress, it is a temporary one, as disappears once the child has been discharged from intensive care. However, the factor related to a child's situation in the PICU comprises stimuli (such as medical procedures) that may have a longer-term impact on the child's health and, consequently, in parental mental health. In any case, a note of caution is needed on the fact that the second factor has only two items. This fact limits the variability of scores, what might affect the manifestation of its relation with others variables.

Second, regarding more prevalent stressors for parents at PICU, Child's appearance in the PICU, PICU's sight and sounds and Procedures conducted on the child were the most

frequently experienced aspects by parents, as around of 95% of them reported having experienced these situations. Regarding most stressful aspects when only parents who had experienced each situation were considered, child's behavior and emotions and the loss of their parental role were found to be the most stressful aspects, even though only around 50% of parents experienced that situation. This means that, when experienced, these situations can be extremely stressful for parents, so efforts should be made by PICU's staff in order to decrease the degree in which the parents perceive that their child is suffering, and in order to maintain their parental role by involving them in the child's care. The fact that the more stressful aspects when experienced are the child's behavior and emotions and the loss of their parental role is consistent with data from English-speaking North American parents (Carter et al., 1985; Miles et al., 1989), but not with results from Hispanic North American parents (Rei & Fong, 1996) and Indian parents (Aamir et al., 2014) for whom the Sights and Sounds and Procedures subscales were the most stressful aspects. This suggests that there are cultural differences in what parents consider to be the most stressful factors of the PICU environment. Like North American English-speaking parents, Spanish parents found physical aspects of the PICU less stressful than Hispanic North American parents and Indian parents possibly because of their previous exposure to components of the ICU through the media, or the hospitalization of a relative (Miles et al., 1989).

Third, with regard to variables associated with stress in our study, the fact that the parental stress was positively and significantly correlated with anxiety, depression and PTSD assessed three months post-discharge is relevant, as it shows that the A-PSS:PICU, which takes a few minutes to be completed, can contribute to predict psychopathology months after the child's admission has ended. Regarding socio-economic and medical variables, younger parents, women, those with spiritual beliefs, and those whose child is intubated, admitted for longer and whose medical condition was more severe reported higher stress. Thus, special

attention should be paid to this group, as they have a high-risk profile to experience high stress related to PICU environment. The fact that higher severity, mechanical ventilation, younger age and feminine gender was related to stress was an expected result to us, as these data are consistent with literature (Pooni et al.,2013; Rei & Fong, 1996; Nizan & Norzila, 2001). However, even though previous studies found that parents feel that prayer is helpful in reducing their stress (Pooni et al., 2013; Miles & Carter, 1985), our results showed that parents with spiritual or religious beliefs have higher rates of stress. Also, although previous studies found that having previous PICU's experiences was associated to lower stress (Nizam & Norzila, 2001) we found that the occurrence of previous admissions to PICU was unrelated to the parental stress score. Finally, even though previous studies found that parental socioeconomic difficulties were related to higher stress (Franck et al., 2010), we found that economic difficulties and work status were unrelated to stress. These unexpected results should be further explored.

Regarding limitations of this work, we are aware that reducing the number of items of the PSS:PICU may cause a loss of detail in the information collected. However, both scales are not incompatible: the A-PSS:PICU could work as an screening tool that could be complemented by the PSS:PICU when more precise information is required. In any case, further research is needed using the new abbreviated scale. First, it would be interesting to administer our scale along with the PSS:PICU, in order to explore to what extent the abbreviated version is assessing the same groups of stressors as the longer one. Second, it would be convenient to test the psychometric properties of the English version of this scale.

In spite of its limitations, the A-PSS:PICU is a new instrument to effectively assess parental sources and degree of stress during a child's critical hospitalization. Its main strength is that it takes a few minutes to complete it, which makes this scale practical to be used in a routine way by nursing staff. It can also be used to detect parents with a high level of stress

for an early preventive intervention, because, as we mentioned, the scores on this scale contribute to predict psychopathology months post-discharge. Also, this instrument could be used to detect which improvements would be necessary to make in a particular PICU, and to test the effectiveness of interventions to reduce parental stress in that context. Consequently, the A-PSS:PICU could become an addition to the inventory of questionnaires useful in pediatric critical care nursing.

## **3.2. The Factor Structure of the Posttraumatic Growth Inventory in Parents of Critically Ill Children**

Rocío Rodríguez-Rey<sup>1</sup>, Jesús Alonso-Tapia<sup>1</sup> & Nancy Kassam-Adams<sup>2</sup>.

<sup>1</sup>Department of Biological and Health Psychology, Universidad Autónoma de Madrid. Spain.

<sup>2</sup>Centre for Injury Research and Prevention. The Children's Hospital of Philadelphia.  
Pennsylvania, USA.

### Acknowledgements:

Thanks to Drs. Tedeschi and Calhoun for developing the PTGI and making it available for further study, and to Carmelo Vázquez and Dario Páez for sending us their Spanish translation of the PTGI. Thanks to all physicians and nurses from the PICU of Hospital 12 de Octubre (Madrid) for their help with the data collection. This work was supported by Universidad Autónoma de Madrid through a FPI-UAM fellowship



### **3.2.1. Abstract**

*Objective:* Posttraumatic growth (PTG) was conceptualized as consisting of changes in three broad dimensions: Self, interpersonal relationships, and philosophy of life. The aim of this study is to analyze the factor structure of the Posttraumatic Growth Inventory (PTGI) in a sample of parents whose children were hospitalized in intensive care in order to consider the construct validity of the PTGI measure for this population and to inform our understanding of PTG as a construct.

*Methods:* 143 parents completed the PTGI 6 months after their child's discharge from intensive care. The PTGI factor structure was studied through confirmatory factor analyses (CFA) of different models supported in prior research, followed by an exploratory principal component analysis (PCA).

*Results:* Prior models tested through CFA did not provide an acceptable fit for our data. Through exploratory PCA three components emerged that explained 73.41% of the variance: personal growth, interpersonal growth and transpersonal growth. Posterior CFAs on this three-factor model showed that a bifactor model had the best adjustment.

*Conclusion:* The PTGI has shown slightly different factor structures among different populations, but the three dimensions theorized by Tedeschi and Calhoun appear to be robust. Our data in a new population are consistent with this pattern, which speaks in favor of the construct validity of this measure.

*Keywords:* posttraumatic growth inventory, pediatric intensive care, parents, factor structure, structural validity

### **3.2.2. Introduction**

The hospitalization of a child in a Pediatric Intensive Care Unit (PICU) is a potentially traumatic experience for parents, which may result in negative psychological outcomes such as posttraumatic stress disorder (Balluffi et al., 2004; Bronner et al., 2010; Colville & Pierce, 2012). Very little research has been conducted to explore the occurrence of positive outcomes after a child's admission to intensive care, such as posttraumatic growth (PTG), which is defined as a positive psychological change that occurs as the result of one's struggle with a potentially traumatic event (Tedeschi & Calhoun, 1995).

A recent review identified 19 studies that explored PTG in parents of children with serious pediatric illness (Picoraro, Womer, Kazak & Feudtner, 2014), but only one of them (Colville & Cream, 2009) focused specifically on parents of critically ill children. This study found moderate levels of PTG in a sample of 50 parents four months after the child's discharge from intensive care. Picoraro et al. (2014) concluded that parents might experience PTG following medical trauma through a combination of cognitive and affective processing of their subjective experience. Examining the dimensions of PTG in this group of parents will enrich our theoretical understanding of the validity and utility of this construct and its domains, and will also have clinical implications, as it may help us to understand which aspects must be taken into account when trying to foster growth among these families.

#### ***Nature of Posttraumatic Growth***

What changes in a person after dealing with a traumatic life event that may lead to PTG? Tedeschi and Calhoun (1995, 1996), based on a very extensive review of the literature, suggested that the perceived positive changes experienced in the aftermath of trauma fall into three categories: 1) positive changes in the perception of self, 2) positive changes in interpersonal relationships and 3) positive changes in philosophy of life (Tedeschi & Calhoun,

1995, 1996). In each of these three dimensions, changes may occur at an affective, cognitive and behavioral level.

Regarding *changes in self*, living through life's adverse experiences provides individuals with information about their own strengths, as they realize that they can overcome difficulties and use abilities that may have been unknown to them (Thomas, DiGiulio, & Sheehan, 1991). These capacities may generalize to other situations, including future traumas. Regarding *changes in interpersonal relationships*, after living through a traumatic event persons frequently report a deepening of their relationships with others as they realize how important these relations are and how quickly they can be lost (Affleck, Tennen & Gershman, 1985). Recognition of one's vulnerability can lead to more willingness to accept help, more expressiveness, increased self-disclosure, and a better utilization of social supports (Tedeschi & Calhoun, 1996). Regarding *changes in philosophy of life*, this dimension is related with the process of "meaning-making" in the midst of trauma, which may lead to positive changes in one's basic assumptions about life (Janoff-Bulman, 1992).

### ***Assessment of PTG: the Posttraumatic Growth Inventory (PTGI)***

Although seven measures assessing PTG have been published (Linley, Andrews & Joseph, 2007), the most widely-used instrument is the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The PTGI comprises 21 items assessing positive changes reported by persons who have experienced traumatic events, each rated on a 6-point-Likert scale regarding how much this change was experienced "as a result of my crisis". It is scored with five subscales and an overall total score. Internal consistency was high in the original version ( $\alpha = .90$ ) (Tedeschi & Calhoun, 1996), the Latino-Spanish version ( $\alpha = .92$ ) (Weiss & Berger, 2006); and the European-Spanish version ( $\alpha = .95$ ) (Costa-Requena & Gil Moncayo, 2007).

Although the PTGI was originally developed to account for three dimensions (self, interpersonal relationships and philosophy of life), an initial PCA analysis on data from 604

college students showed five factors, which were interpreted and named a posteriori. These five factors were: New Possibilities, Relating to Others, Personal Strength, Spiritual Change and Appreciation for Life. The PTGI authors used this structure to guide subscales and scoring for the measure. From a theoretical perspective, these five dimensions could be considered as a re-grouping of the three hypothesized dimensions as initially defined by Tedeschi & Calhoun (1995), such that “personal strength” and “new possibilities” reflect changes in self, “relating to others” reflects changes in interpersonal relationships, and “appreciation of life” and “spiritual change” reflect changes in philosophy of life.

The construct validity of this five-dimensional structure has implications for research on PTG. Because these five components undergird the scoring of the PTGI and its subscales, they are often used to guide interpretation of PTGI scores in the context of research hypotheses about PTG without conducting further analyses on factor structure (Morris, Shakespeare-Finch, Rieck, and Newbery, 2005). Thus, given the wide use of the PTGI in PTG research, it is important to establish whether this five-dimensional structure is optimal and can be replicated across different populations of trauma-exposed individuals.

### ***Prior Research on the Structure and Construct Validity of the PTGI***

Prior studies of the factor structure of the PTGI have found three basic variants on the construct of PTG that either: (1) indicate that growth is a unitary construct (one single factor), (2) indicate that growth has one personal, one interpersonal and one transpersonal dimension, which is consistent with the initial theory of three elements of PTG, or (3) support the five-factor structure of the PTGI which can be seen as a variation on (2) above. Table 3.2.1 summarizes studies of the factor structure of the PTGI, noting the sample, method of analysis, and the number of factors that emerged (or were tested in a confirmatory analysis).

Table 3.2.1.

*Factor Structure, sample and language of the PTGI in previous studies*

	Authors	Population	N	Language	Analysis Method
One factor	Joseph, Linley & Harris (2005)	University students, and family and friends	176	English	EFA
	Sheikh & Marotta (2005)	Adults with cardiovascular disease	124	English	PCA
	Costa-Requena & Gil Moncayo (2007)	Cancer outpatients	130	Spanish	PCA
Three factors	Powell, Rosner, Butollo, Tedeschi & Calhoun (2003)	Refugees and displaced people	136	Bosnian	PCA
	Weiss and Berger (2006)	Latino immigrants	100	Spanish	PCA
	Anderson & Lopez-Baez (2008)	University students	345	English	PCA
Four factors	Ho, Chan & Ho (2004)	Cancer survivors	188	Chinese	EFA
	Taku et al. (2007)	University students	312	Japanese	EFA
	da Silva, Moreira, Pinto, & Canavarro, 2009	Women with breast cancer	202	Portuguese	PCA
Five factors	Tedeschi & Calhoun (1996)	Undergraduate students	604	English	PCA
	Morris et al. (2005)	Undergraduate students	219	English	EFA
	Jaarsma, Pool, Sanderman & Ranchor (2006).	Cancer patients	309	Dutch	SCA
	Linley et al. (2007)	Adults who had experienced adverse life events	372	English	CFA
	Taku, Cann, Calhoun & Tedeschi (2008)	Adults experiencing traumatic events	926	English	CFA
	Lee, Luxton, Reger & Gahm (2010)	Active duty soldiers	3537	English	CFA
	Teixeira & Pereira (2013)	Adult children of cancer patients	214	Portuguese	EFA
	Palmer, Graca & Occhieti (2012)	Veterans with PTSD	221	English	CFA
Konkolý Thege, Kovács & Balog (2014)*	People who had experienced a trauma or loss	691	Hungarian	CFA	

*Note.* \* Bifactor model with a 5 + 1 factor structure

Table 3.2.2 lists the 21 items of the PTGI and shows, for the different factor models that have emerged from literature, to which factor or component each PTGI item belongs.

Table 3.2.2.

*Items of the PTGI and its belonging to different dimensions among different factor structures..*

	Factor Models							
	1-factor (e.g., Sheikh & Marotta, 2005)	5- factor (Tedeschi & Calhoun, 1996)	3- factor (Powell et al., 2003)	3- factor (Weiss & Berger, 2005)	3-factor (Anderson & Lopez- Baez, 2008)	4- factor (Ho et al., 2004)	4- factor (Taku et al., 2007)	4-factor (da Silva et al., 2009)
4. I have a greater feeling of self-reliance	PTG	PS	CS	SPA	SP	SC	PS	PRC
10. I know better that I can handle difficulties	PTG	PS	CS	SPA	SP	CS	PS	PRC
12. I am better able to accept the way things work out	PTG	PS	CS		SP	CS	PS	PRC
19. I discovered that I'm stronger than I thought I was	PTG	PS	CS	PL	SP		PS	PRC
3. I developed new interests	PTG	NP	PL	SPA	SP	CS	NP	NP
7. I established a new path for my life	PTG	NP	CS	SPA	SP	CS	NP	NP
11 I am able to do better things with my life	PTG	NP	CS	SPA	SP	CS	NP	PRC
14. I have new opportunities which wouldn't have been available otherwise	PTG	NP	CS	SPA	SP		NP	NP
17. I am more likely to try to change things which need changing	PTG	NP	PL		SP	LO	NP	NP
6. I more clearly see that I can count on people in times of trouble	PTG	RO	PL	RO	RO	RO	RO	RO

8. I have a greater sense of closeness with others	PTG	RO	RO		RO	RO	RO	RO
9. I am more willing to express my emotions	PTG	RO	CS	RO	RO	CS	RO	RO
15 I have more compassion for others	PTG	RO	PL		RO	RO	RO	SC
16. I put more effort into my relationships	PTG	RO	PL	PL	RO		RO	RO
20. I learned a great deal about how wonderful people are	PTG	RO	RO		RO		SC/ AL	RO
21. I better accept needing others	PTG	RO	RO		RO		RO	RO
1. I changed my priorities about what is important in life	PTG	AL		PL	SP	LO	NP	NP
2. I have a greater appreciation for the value of my own life	PTG	AL	PL		SP		SC/ AL	NP
13. I can better appreciate each day	PTG	AL	PL	PL	SP	CS	SC/ AL	PRC
5. I have a better understanding of spiritual matters	PTG	SC	CS		SC	SC	SC/ AL	SC
18. I have a stronger religious faith	PTG	SC	RO	PL	SC	SC	SC/ AL	SC

*Note.* AL = appreciation of life, CS= Changes in self, LO= Life Orientation, NP = new possibilities, PL= Philosophy of Life, PS = personal strength, PRC= Personal Resources And Competences; PTG = Posttraumatic Growth, RO = relating to others, and SC = spiritual change, SPA= Self/ positive attitude, SP= Self perception.

As can be seen in Table 3.2.1, the idea that PTG is best understood as a unitary construct was supported in several studies, including one (Joseph et al., 2005) which also suggested the possibility of three second- order components: interpersonal relationships, self-perception, and spirituality. Three factor solutions have been also common. Although specific items may load on slightly different dimensions (see Table 3.2.2), all of the three-factor solutions are consistent

with the three elements of growth theorized by Tedeschi and Calhoun. However, as Table 3.2.2 shows these factors have received slightly different names from different authors, even though they seem to refer to the same underlying construct. Similarly, four-factor models are generally consistent with the three original elements of growth, but with slight variations, and are very similar to the 5-factor model as Table 3.2.2 shows. Finally, the 5-factor structure suggested in the first psychometric analyses of the PTGI has been replicated in several samples through exploratory and confirmatory approaches. Konkoly et al. (2014) found the best fit in a bifactor model, in which all items load onto a general dimension and onto one of the five factors of PTG at the same time.

Most studies have used exploratory techniques (EFA or PCA), which may lead to slight variations in findings when analyses optimize a solution for each particular sample. However, even CFAs have varied in whether they are able to confirm the fit of the PTGI's five-factor structure (Taku et al., 2008; Linley et al., 2007; Lee et al., 2010; Palmer et al., 2012; Ho et al., 2004). Therefore, it does not seem justifiable to assume the five-factor structure of the PTGI when it is used in a new population such as parents of critically ill children.

### ***Objective and Hypothesis***

Because studies to date do not provide clear evidence regarding the components or dimensions of PTG in parents with a critically ill child, our aim was to examine the factor structure of the PTGI in a sample of parents after their child's discharge from a PICU. We tested factor structures supported in prior studies that may shed light on the optimal way to understand PTG (and administer/score the PTGI) in this new population. We hypothesized that either a five or a three-factor solution would demonstrate a good fit to the data from this sample of parents. By comparing the fit of single and multiple factor solutions, this study also examines the idea that PTG would be best understood as a multi-factorial construct in this population.



### **3.2.3. Method**

#### ***Sample***

A total of 158 parents whose children had been admitted to a 16-bed PICU in a tertiary hospital in Madrid, Spain were asked to complete the PTGI, 6 months after their child's discharge. Of them, 143 parents (90.5%) of 100 children participated. Their mean age was 38.24 years ( $SD= 6.31$ ); 63.6% were women. The primary reasons for admission were planned surgery (70.6%), emergency medical treatment (15.4%), accidental injury/emergency surgery (11.2%) and relapse of a chronic disease (2.8%). Regarding diagnosis, 28% suffered from heart conditions, 20.3% from cancer, and 8.9% from respiratory conditions. The remaining 50.5% suffered from a variety of conditions.

#### ***Procedure***

This study was part of a series of studies that attempted to assess psychological outcomes of having a child admitted to intensive care. The IRB of the hospital approved the study. The parents of every child that had been admitted to the PICU for more than 12 hours were contacted by email, post or telephone 6 months after the child's discharge from intensive care and asked to complete and return the PTGI. We have used the European Spanish translation by Vázquez and Páez (2010). In order to make sure that the PTG that parents reported was a consequence to the experience of their child's PICU admission, instead of asking about responses "as a result of my crisis", we asked about responses "as a result of my child's admission to the PICU". All parents were given an informed consent form that described the study and its purposes, potential risk and benefits, and confidentiality.

#### ***Statistical Analyses***

In order to study the factor structure of the PTGI, seven models of the underlying structure of the PTGI were tested via confirmatory factor analysis (CFA) using AMOS version

22. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA, SRMR) were used, as well as criteria for acceptable fit based on the degree of adjustment described by Hair, Black, Babin, Anderson, & Tathan (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ). In each model, it was expected that each observable variable would load only on the factor it was intended to measure and would not load on the other factors, that measurement error associated with these variables would be uncorrelated, and that all covariance between each of the first order factors would be explained either by a higher-order factor (hierarchical model), or by a general dimension which load on all items at the same as the factors (bifactor model) as suggested by Konkoly Thege et al. (2014). Subsequently, based on the results of previous analyses, we conducted a PCA to explore the factor structure of the PTGI in our sample. The model that emerged from the PCA was tested through two CFAs, one to test a hierarchical model with three first-order factors and one second-order factor, and another to test a bifactor model.

Once we found the best factor solution for the PTGI in our sample, we calculated the internal consistency of the whole scale and of each one of its factors by Cronbach's alpha coefficients.

### **3.2.4 Results**

#### ***PTGI Structural Validity***

We first tested the monofactorial model, and secondly, the original five-factor model. Next we examined a three-factor model with a factor named "Self" (including items 1, 2, 3, 4, 7, 10, 11, 12, 13, 14, 17, and 19) a factor named "Relationship with others" (items 6, 8, 9, 15, 16, 20 and 21) and a factor called "Spiritual change" (items 5 and 18). That model was created from the conjunction of the three three-factor models that appear in Table 3.2.2. We assigned each item to each of the three dimensions when it belonged to that dimension in at least two of the three-factor models presented in Table 3.2.2, and also when the content of the item was

coherent with this assignment. Finally we examined a four-factor model, in which we added the dimension “New possibilities/Life orientation”, which included items 1, 2, 3, 7, 14 and 17. This four-factor model was based on the same criteria described for the three-factor model. Two models were tested for the three, the four and the five-factor models, first a hierarchical model with three, four, or five first-order factors and one second-order factor, and second a bifactor model as suggested by Konkoly Thege et al. (2014).

Model fits for all the structures tested through CFA are presented in Table 3.2.3.

Table 3.2.3.

*Goodness of fit statistics for CFA of the factor structures found in previous studies and of the factor structures that emerged in the PCA.*

Model	$\chi^2$	df	p	$\chi^2/df$	GFI	CFI	IFI	RMSEA	SRMR
Of the factor structures found in previous studies									
One-factor	360.44	189	.000	1.907	.758	.217	.286	.080	.177
Three-factor (hierarchical model)	325.59	186	.000	1.750	.782	.363	.426	.073	.148
Three-factor (bifactor model)	361.40	172	.000	2.101	.758	.135	.263	.088	.140
Four-factor (hierarchical model)	322.17	185	.000	1.741	.628	.784	.438	.072	.145
Four-factor (bifactor model)	319.97	172	.000	1.860	.785	.324	.424	.078	.102
Five-factor (hierarchical model)	314.17	184	.000	1.707	.789	.406	.469	.071	.142
Five factor (bifactor model)	281.96	172	.000	1.639	.811	.498	.572	.067	.134
Of the Factor structure that emerged in the EFA.									
Three-factor (hierarchical model)	91.59	51	.000	1.796	.836	.720	.746	.075	.076
Three-factor (bifactor model)	69.35	42	.005	1.651	.919	.811	.838	.068	.058

*Note.* GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual.

As this table shows none of the models tested provided an acceptable fit to our data. RMSEA was acceptable, but CFI and IFI were under the level of acceptance and SRMR above the limit of acceptance in all of them.

### ***Principal Component Analysis (PCA)***

As none of previous factor structures showed an acceptable fit to our data, a PCA was conducted in order to identify (in an exploratory approach) which factor structure emerged from our data. We used the term “factor” to refer to the results of the rotation of the extracted principal components, following conventional practice (Cooley & Lohnes, 1971) as well as the practice of Tedeschi and Calhoun (1996). We used PCA in order to replicate the original study of Tedeschi and Calhoun (1996), as well as the Spanish adaptation of the PTGI (Weiss & Berger, 2006). As in previous studies, we used PCA with criterion for extraction = eigenvalue >1, followed by a Varimax rotation. Three components emerged that accounted for 68.95% of the total variance. For the sake of interpretation, congruent with criteria used in previous studies above cited, an item was allocated to a factor only if its loading was greater than .5 and if it loaded less than .4 on other factors. The items that failed to load differentially were removed from the questionnaire with the objective to assess the different components of posttraumatic growth as clearly as possible. After removing these items, 12 items stayed in the questionnaire, which accounted for 73.41% of the total variance. This level is comparable to the percentage of variance explained in previous studies using PCA (e.g., Powell et al., 2003; Tedeschi & Calhoun, 1996; Weiss & Berger, 2006), and the number of items retained is the same of the 12 items retained in the Bosnian translation (Powell et al., 2003), and similar to the 15 items in the Chinese translation (Ho et al., 2004) and the 13 items in the Spanish translation (Weiss & Berger, 2006). Table 3.2.4 presents the resulting solution.

Table 3.2.4.

*Loadings on the Three New Factors of the Spanish PTGI*

Item Number, Text, and New Factor PTGI	Factor in Original PTGI	New Factor Loadings		
		I	II	III
<b>New Factor I: <i>Personal growth</i> (32.64% of variance)</b>				
2. I have a greater appreciation for the value of my own life.	AL	.816		
3. I developed new interests	NP	.786		
4. I have a greater feeling of self-reliance	PS	.782		.380
10. I know better that I can handle difficulties	PS	.757		.332
12. I am better able to accept the way things work out.	PS	.687	.321	.334
19. I discovered that I'm stronger than I thought I was	PS	.634	.337	
<b>New Factor II: <i>Interpersonal growth</i> (20.68% of variance)</b>				
6. I more clearly see that I can count on people in times of trouble.	RO	.353	.659	
20. I learned a great deal about how wonderful people are.	RO		.800	
21. I better accept needing others.	RO	.311	.734	.346
<b>New Factor III: <i>Transpersonal growth</i> (20.10% of variance)</b>				
5. I have a better understanding of spiritual matters.	SC	.307		.798
14. I have new opportunities which wouldn't have been available otherwise.	NP			.690
18. I have a stronger religious faith	SC			.825
<b>Items failing to load differentially</b>				
1. I changed my priorities about what is important in life.	AL	.628	.470	
7. I established a new path for my life.	NP	.567		.466
8. I have a greater sense of closeness with others.	RO	.596	.380	.493
9. I am more willing to express my emotions.	RO	.472	.387	.565
11 I am able to do better things with my life.	NP	.714		.410
13. I can better appreciate each day.	AL	.661	.413	
15 I have more compassion for others.	RO		.711	.418
16. I put more effort into my relationships.	RO	.442	.539	.415
17. I am more likely to try to change things which need changing.	NP	.464	.500	.469

*Note.* AL = appreciation of life, NP = new possibilities, PS = personal strength, PTGI = Posttraumatic Growth Inventory, RO = relating to others, and SC = spiritual change. Only loadings greater than .30 are shown. Bolded values indicate inclusion in factor.

Items included in the first factor, named “*Personal growth*”, stemmed from three different original factors. The item with the highest loading comes from the original *appreciation for life* and indicates a greater appreciation for the value of one’s own life (item 2). This factor also included one item from the scale *new possibilities*, indicating the development of new interests (item 3). The rest of items in this dimension refer to the original factor *personal strength* and captures changes in self-reliance (item 4), coping self-efficacy (items 10 and 19), and acceptance (item 12).

The second factor, labeled “*Interpersonal growth*” included three items from the original *relating to others* scale, and denotes changes in learning about how wonderful people are (item 20), better accepting needing others (item 21) and counting on others (item 6).

Items in the third factor, titled “*Transpersonal growth*” came from two original factors, *spiritual change* and *new possibilities*. It captures a strengthening in religious faith (item 5), a better understanding of spiritual matters (item 18) and the occurrence of new possibilities after trauma (item 14).

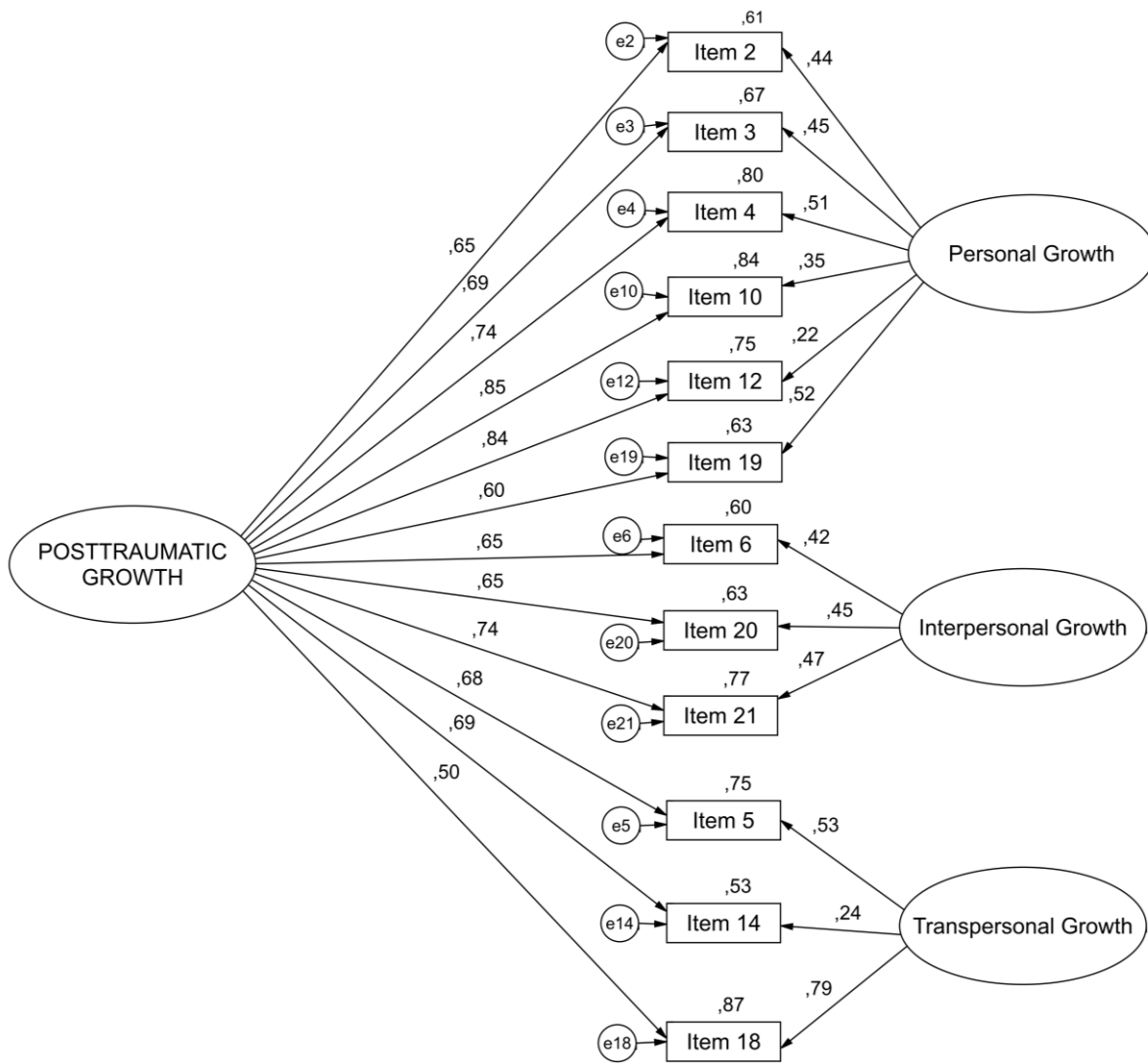
As Pearson correlation between total score based on the 21-item version of the PTGI and the total score based on the 12 items version was .98, no significant loss of information was produced by reducing the number of items in the scale.

### ***CFA of the Three-factor Structure that Emerged from the PCA***

To better understand the factor structure of the PTGI in our sample, the solution that emerged from the PCA was further examined through CFA. As in our earlier CFAs, two models were tested, a hierarchical model that included three first-order factors and one second-order general PTG factor and a bifactor model, which included the three factors that emerged from the PCA and the general factor “posttraumatic growth”. Model fit statistics for these two models are included on Table 3.2.3. The bifactor model demonstrated the best fit, as most indices were inside the limits which allow the model to be accepted, or fell only slightly short

of these limits. Figure 3.2.1 shows the initial confirmatory standardized solution for the bifactor model

Figure 3.2.1. Initial confirmatory standardized solution for the bi-factor model of the 12-item PTGI that emerged after removing the items that failed to load differentially.



**Internal Consistency of the PTGI, and its Factors in our Sample**

The internal consistency of the 21-item PTGI was .96. The internal consistency of the scale considering only the 12 items that stayed in the questionnaire after factor analyses was .92. The Cronbach’s alphas of the Personal Growth factor (= .91), the Interpersonal growth factor (= .83) and the Transpersonal Growth factor (= .82) were also adequate.

### 3.2.5. Discussion

Although posttraumatic growth is a common phenomenon after highly challenging life crises, psychometric analyses of the most widely used instrument –the Posttraumatic Growth Inventory- have revealed relevant differences across samples concerning its factor structure. This is the first study to report the dimensionality of the PTGI in a sample of parents after their child’s critical illness and medical treatment. In confirmatory analyses, factor models suggested in previous studies failed to fit our data. However, the three dimensions of PTG that emerged through exploratory PCA are congruent with the three broad categories of PTG originally identified by Tedeschi and Calhoun (1995). The first dimension refers to *personal growth* (self-perceived growth), the second refers to *interpersonal growth* (relationships with others), and the third refers to *transpersonal growth* and is related to transcendental and spiritual beliefs and life-priorities.

This factor structure is consistent with literature in this area, and supports the idea that a common underlying theoretical model may explain posttraumatic growth in different populations (Powell et al., 2003; Weiss & Berger, 2006). Based on these findings, we propose that a reduced 12-item version of the questionnaire may be useful. As the three main dimensions of growth hypothesized by Tedeschi & Calhoun are well represented in the reduced version of the questionnaire, we consider that no clinically significant content has been removed. The removed items appear to measure growth in a non-specific way, and thus load on multiple factors. For example, the (eliminated) item “I established a new path for my life” loaded on factors for both personal and transpersonal levels of growth.

The fact that a bifactor model –including a general PTG factor and three specific factors- as the one proposed by Konkolý Thege et al. (2014) fitted our data better than a hierarchical model has some implications about the ways in which the components of PTG relate to each other. It implies that a person who grows after trauma at the personal level, tends to grow also



at the interpersonal and transpersonal level –the three facets of the PTG construct - and also supports the idea of calculating a single overall PTG score on the PTGI, in addition to subscales for each of the dimensions of growth.

The main strengths of this work are that it is the first study to explore the factor structure of the PTGI with parents after the potentially traumatic experience of having had a child in intensive care, and that it provides a theoretically-grounded evaluation of previous factor models through CFA before exploring the factor structure through PCA. Heterogeneity of samples in prior studies may have adversely affected the consistency of factor structures observed for the PTGI. However, the fact that many studies (including this one) find a structure that is congruent with the original three dimensions proposed by Tedeschi and Calhoun supports the basic construct validity of this three-dimensional model of PTG.

In terms of understanding the construct of PTG in this population of parents, a limitation of this study is that we are not able to explore dimensions of PTG that are not currently reflected in the PTGI. Future studies –preferably using mixed quantitative and qualitative methods– might explore whether other dimensions of growth may emerge after parents’ experience of a child’s critical illness. Also, the possibility of cultural differences in reporting PTG after having a child admitted to the PICU is an unexplored possibility for further investigation. Finally, our suggested 12 item version resulted from modifications after an exploratory PCA, and should be examined in new samples via a confirmatory approach.

Regarding implications for the parents of critically ill children, the relative lack of literature on PTG among children and their caregivers after medical trauma makes it difficult to make specific recommendations to pediatric health and mental health professionals seeking to promote PTG (Picoraro et al. 2014). However, our study suggests that it may be useful to foster PTG in this group along the three dimensions proposed by Tedeschi and Calhoun (1995): *personal* (i.e., how dealing with a child’s critical illness may have provided parents with

information about their own strengths), *interpersonal* (e.g., how this experience may have helped to deepen parents' relationships with others) and *transpersonal* (e.g., how it may have altered their view of the meaning or purpose of life). With this as context, health and mental health professionals who work in pediatric health care settings may be able to help parents notice and reflect on ways in which their family's difficult experience of critical illness could lead not only to distress, but also to opportunities for growth.

### **3.3. The role of resilience in the prediction of parental distress after a child's hospitalization in intensive care: a longitudinal study**

Rocío Rodríguez-Rey<sup>1</sup>, Jesús Alonso-Tapia<sup>1</sup>, Gillian Colville<sup>2</sup>

<sup>1</sup>Universidad Autónoma de Madrid.

<sup>2</sup>St George's University Hospital, London.

#### Funding:

This work was supported by Universidad Autónoma de Madrid under a FPI-UAM fellowship.

#### Acknowledgments:

The authors would like to acknowledge all physicians and nursing staff of the PICU of Hospital 12 de Octubre, and specially Lidia Casanueva, Victoria Ramos, Alba Palacios, Ana Llorente, Silvia Belda, Raquel Vinagre and Eva Val for their help with the data collection.

### 3.3.1. Abstract

*Purpose:* To study the role of parental resilience, emotions, perceived stress and perception of child's severity assessed during admission in predicting the degree of parental psychopathology after a child's treatment in intensive care. Additionally we will explore the influence of socio-demographic and medical variables on parental psychopathology.

*Methods:* This was a prospective longitudinal cohort study. A total of N=196 parents completed questionnaires assessing resilience, perceived stress, and positive and negative emotions experienced during admission, 48h after their child's discharge (T0). They then completed questionnaires on resilience, anxiety, depression and post-traumatic stress disorder (PTSD), three (T1) and six months later (T2).

*Results:* At T2 23.1% of parents reported clinically significant levels of symptoms of PTSD, 21% reported moderate-severe anxiety, and 9.1% reported moderate-severe depression. These rates were not statistically different at T1. Path analyses indicated that 48% of the total variance in psychopathology at T2 could be predicted from the psychological variables assessed at T0. Resilience had a strong and negative total effect on psychopathology (-.57) but such effect was mostly indirect (-.42), mainly through the stress that parents experience during their child's critical hospitalization. Parents who perceived economic difficulties, who had been in previous psychological/psychiatric treatment and whose child had been previously admitted to PICU showed the highest distress.

*Conclusions:* Interventions directed at promoting resilience, by fostering the use of positive emotions at the time of admission, and decreasing their perceived stress could improve parents' mental health outcomes following their child's intensive care treatment

*Keywords:* Post-traumatic stress, anxiety, depression, pediatric intensive care, longitudinal, parents.

### 3.3.2. Introduction

In keeping with the principles of family-centered care, it is increasingly acknowledged that multidisciplinary teams in pediatric intensive care units (PICU) should include attention to the needs of parents and caretakers (Colville, *in press*; Nelson & Gold, 2012). Having a child admitted to intensive care has long been recognized as an extremely difficult experience for parents, as these children are, by definition, at increased risk of death. The overall picture that emerges from the research examining the psychological impact on parents of having a child on PICU, is that psychopathological reactions are common, with rates of posttraumatic stress disorder (PTSD) around 20-30%, rates of anxiety around 20% and rates of depression around 15% (Balluffi et al., 2004; Bronner, Knoester, Bos, Last & Grootenhuis, 2008; Bronner et al., 2010; Colville & Gracey, 2006; Colville & Pierce, 2012; Fauman et al., 2011). This impairment in parental mental health can have devastating consequences for family structure and functioning, patient and sibling quality of life, and family survivorship as a whole (Rosenberg, Baker, Syrjala, Back & Wolfe, 2013), which underlines the importance of finding ways to prevent and treat distress in this population.

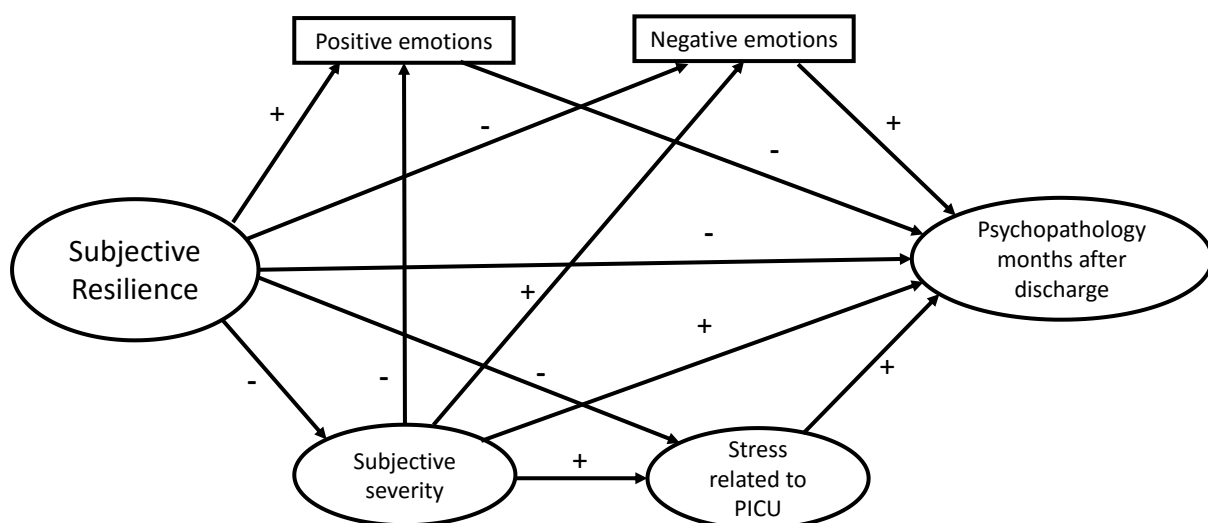
However, as Bronner et al. (2008) have pointed out, although many parents experience psychopathological reactions, most of them do not; the majority of parents are resilient and recover without any significant stress symptoms in the long term. As not every individual who is exposed to this potentially traumatic event will develop significant distress, it is important to identify associated risk factors at the time of the child's admission (Bronner et al., 2010). Furthermore, in order to develop a predictive model of factors predicting parental mental health following the admission of a child to PICU, it could be argued that relevant protective factors should also be taken into account.

The main objective of this study was to develop a comprehensive predictive model of parental psychopathology after having a child admitted to intensive care, from psychological

variables assessed at the time of child’s discharge. It was hoped that such a model would facilitate the detection of high-risk parents and also potentially suggest elements that might be useful to include in early preventive psychological interventions in the future.

On the basis of relevant findings in the literature, the main study hypotheses were that, as has been found in the parents of children with cancer (Rosenberg et al., 2014) parental resilience (understood as the perceived own’s ability to bounce back from stress) would be associated with lower levels of subsequent psychopathology, both directly and indirectly. The indirect relation between resilience and psychopathology is expected to be mediated through the positive emotions (Fredrickson, Tugade, Waugh & Larkin, 2003) and negative emotions (Fredrickson et al., 2003; Ozer, Best, Lipsey & Weiss, 2003) that parents experience in the peri-trauma period, their perceived stress during the child’s admission (Colville and Gracey, 2006), and their perception of severity of the child’s condition (Balluffi et al., 2004; Colville & Pierce, 2012; Kazak et al., 2006). Figure 3.3.1 represents the relations expected in the model that is going to be tested.

Figure 3.3.1. Hypothesized Predictive model of parental psychopathology from resilience, perceived stress, and subjective severity of the child’s condition.



Finally, there are some contextual variables (such as parental demographics or the medical characteristics of the child) which can be related to parental adaptation after having a child admitted to a PICU (Franck et al., 2015; Nelson & Gold, 2012). Even though these variables are usually not susceptible to be modified, it is important to know their relation with mental health in order to detect parents at higher risk. Consequently, in this study we will also explore such relations.

### **3.3.3. Method**

Ethical permission for this prospective longitudinal cohort study was granted by the Hospital 12 de Octubre Research Ethics Comitee, and written informed consent was obtained.

#### ***Participants***

Participants were parents whose child had been discharged, in the previous 48 hours, from a 16-bed PICU, located in a tertiary hospital in Madrid, Spain. Exclusion criteria were being admitted for less than 12 hours and not speaking Spanish well enough to complete the questionnaires.

#### ***Procedure***

Parents were asked to complete questionnaires at three time-points: within 48h of the child's discharge from PICU (T0), three months after discharge (T1) and six months after discharge (T2). Parents were asked how they would prefer to be re-contacted (email or post). If the follow-up questionnaires were not returned after a second mailing or letter, they were given the opportunity either to complete the questionnaires over the telephone or, if they preferred, in person at a time when the child was being reviewed in the outpatient clinic.

At baseline (T0), parents completed a demographic questionnaire and a couple of questions about their beliefs about the severity of their child's condition, as well as the Brief Resilience Scale (Smith et al., 2008), the modified Differential Emotions Scale (Fredrickson,

Tugade, Waugh & Larkin, 2003) and the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983).

At follow up (T1 and T2) they repeated the Brief Resilience Scale and completed two outcome measures: the Davidson Trauma Scale (Davidson et al., 1997) and the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) (see a more detailed description of the protocol used for data collection on Annex B, page 450).

### ***Baseline Measures***

- *Demographic questionnaire.* This assessed background characteristics including sex, age, marital status, ethnicity (born in Spain vs. outside Spain), employment status, education level, perceived economic difficulties, and whether the parent lived in a different city from where the PICU is located.

- *Medical variables* were obtained from patient records and included length of stay in the PICU, whether the child had been mechanically ventilated during admission, and severity of illness as measured by the Paediatric Index of Mortality 2 (PIM2; Slater, Shann, & Pearson, 2003).

- *Parental perceived severity of the child's condition.* Parents were asked two questions relating to their beliefs about how ill their child was: 1) *How severe did you think your child's condition was during the PICU's admission?* (scored 0 = not serious to 7 = extremely serious), and 2) *Did you think that your child could die at any point in their admission?* (Yes/No) and, if so, *How frequently did that idea come into your mind during your child's admission?* (scored 0= never to 7= constantly).

- *Brief Resilience Scale (BRS)* The Brief Resilience Scale is a 6-item self-report scale with a 5-point Likert response scale which assesses a person's self-report of their resilience, defined by the authors as the ability to recover from stress (Smith et al., 2008). The scores may range from 0 to 30, with higher scores indicating higher resilience. It has shown adequate



internal consistency ( $\alpha$  ranging from .80 to .90) and test-retest reliability ( $r=0.62 - 0.69$ ) in a number of different samples, and has been recommended on the basis of its psychometric properties in a recent review of 15 measures of resilience (Windle, Bennett & Noyes, 2011). In this study the Spanish version developed by Rodríguez-Rey, Alonso-Tapia & Hernansaiz-Garrido (2015) was used. The Spanish BRS scores showed adequate internal consistency ( $\alpha=.83$ ) and test-retest reliability (ICC=.69).

- *Perceived Stress Scale* (PSS). This scale is a 14-item questionnaire with a 5-point response scale designed to evaluate the current level of stress experienced by the subject (Cohen, Kamarck, & Mermelstein, 1983). Scores may range from 12 to 70, with higher scores indicating higher perceived stress. A review of the psychometric evidence of the PSS (Lee, 2012) has shown that it has adequate internal consistency ( $\alpha$  was  $>.70$  in 11 of the 12 studies included in the review) and test-retest reliability when its first and second administrations were separated by between 2 days and 4 weeks ( $r$  ranging from .73 to .85). The Spanish translation used in this study has demonstrated adequate reliability (internal consistency,  $\alpha = .81$ , and test-retest,  $r = .73$ ), concurrent validity and sensitivity (Remor, 2006).

- *Modified Differential Emotions Scale* (mDES) The mDES (Fredrickson, Tugade, Waugh & Larkin, 2003) measures the degree to which people report using positive and negative emotions in relation to coping with a particular situation. It is made up of two scales, each of 10 items, scored in a 6-point Likert response format assessing positive and negative emotions. In this study respondents were asked about the frequency of experience of each emotion during their child's hospitalization in the PICU (response options: 0, not at all; 1, a little bit; 2, moderately; 3, quite a bit; and 4, extremely). The scores on each subscale may range from 0 to 40, with higher scores indicating greater frequency of positive or negative emotions. These scales yielded high internal reliability, ranging from 0.82 to 0.94 (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). The Spanish

version of the mDES used in this study was translated by Páez, Bobowik, Carrera, and Bosco (2011).

### ***Outcome measures***

- *Davidson Trauma Scale (DTS)* The Davidson Trauma Scale is a 17-item self-report measure that assesses the 17 DSM-IV-TR symptoms of PTSD included under criteria B: re-experiencing; C: avoidance/numbing and D: hyperarousal (American Psychiatric Association., 2011). The DTS yields a total score ranging from 0 to 136. A cut-off of 40 is recommended by the authors (Davidson et al., 1997) for classification of those with PTSD, with a diagnostic accuracy of 83%. A more recent study in military veterans (McDonald, Beckham, Morey & Calhoun, 2009) has shown that the DTS has adequate internal consistency ( $\alpha = .97$ ) and concurrent, convergent and discriminant validity. Its Spanish version has demonstrated adequate psychometric properties including internal consistency ( $\alpha = .90$ ) and test-retest reliability (ICC= .87) (Bobes et al., 2000),

- *Hospital Anxiety and Depression Scale (HADS)* It is a 14-item, self-report screening scale that contains two 7-item Likert subscales, one for anxiety (HADS-A) and one for depression (HADS-D). For each item, symptoms are rated in intensity from 0 to 3, so total scores for each subscale range from 0 to 21 (Zigmond & Snaith, 1983). For both subscales, a score of 8 to 10 indicates a mild case, with a score of  $\geq 11$  considered to indicate moderate/severe case status. A literature review (Bjelland, Dahl, Haug & Neckelmann, 2002) showed that Cronbach's alpha for HADS-A varied from .68 to .93 (mean .83) and for HADS-D from .67 to .90 (mean .82). This review supported that an optimal balance between sensitivity and specificity was achieved when caseness was defined by a score of 8 or above on both HADS-A and HADS-D. Both subscales also showed adequate concurrent validity. In this study the Spanish version (Quintana et al, 2003) was used. It has been found to have adequate internal consistency ( $\alpha=.86$  for both anxiety and depression), and concurrent validity. A recent review

aimed at exploring the psychometric properties of the Spanish HADS (Terol-Cantero & Cabrera-Perona, 2015) has shown that both subscales have adequate internal consistency ( $\alpha$  ranging from .80 to .87). This study also confirm the two factor structure of this scale.

### ***Statistical analyses***

Descriptive statistics were used to characterize the sample of parents and children who completed the full study, in terms of medical and demographic variables; to report the prevalence of symptoms of stress and the use of positive and negative emotions at baseline, and to establish prevalence of PTSD, anxiety, and depression at follow up T1 and T2. In addition repeated measures ANOVAs and Pearson correlations were conducted to examine the association of categorical demographic and medical variables with parental mental health outcomes.

Finally path analyses with latent variables (PALV) were conducted in order to assess the conjoint effect of the resilience, emotions, perceived stress and perceived severity of the child's condition on parental outcomes. In order to assess model fit, absolute fit indexes - $\chi^2$ ,  $\chi^2/df$ , Goodness of Fit Index (GFI)-, relative fit indexes -Incremental Fit Index (IFI)- and non-centrality fit indexes -Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR)- were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, Anderson, & Tathan (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ).

### **3.3.4. Results**

#### ***Sample Characteristics***

In total  $N=273$  parents who met the inclusion criteria were approached. Of these,  $N=196$  (71.79%) parents of  $N=130$  children gave their consent and completed baseline measures (T0). No differences were found between participants and non-participants regarding age or sex of

the child, length of the admission, or illness severity score (PIM2) at the time of admission (see Table 3.3.1, *supplementary*).

Table 3.3.1 (*Supplementary*).

*Differences between parents who completed the T0 assessment and parents who did not completed it. (Student's t-test for continuous variables and Chi Square test for categorical variables)*

	Parents who completed T0 (N=196)	Parents who did not complete T0 (N=77)	p of the difference
Age of the child	54.82	48.99	.48
Sex of the child			
Boys	89	19	.30
Girls	69	19	
Length of admission (hours)	152.19	168.18	.65
PIM2 score	5.61	8.80	.24

*Note.* PIM 2= Paediatric Index of Mortality II.

At three months (T1) and six months (T2) after PICU discharge, n=158 parents (80.61%) and n=143 parents (72.96%) respectively, completed the outcome questionnaires. Parents were more likely to complete the full study if they had higher education levels ( $p=.003$ ), Spanish nationality ( $p=.006$ ), higher resilience ( $p=.011$ ), less perceived stress ( $p=.021$ ) and less negative emotions during admission ( $p=.037$ ) (see Table 3.3.2, *supplementary*).

Dropping of reasons from T0 to T1 were not sending back the completed questionnaires ( $n=25$ ), deciding not to continue in the study ( $n=8$ ), death of the child ( $n=4$ ) and death of one mother. From T1 to T2, the only reason for not continuing in the study was not sending the questionnaires back to the researchers ( $n=15$ ).

The sample characteristics of the participants with complete data at all three study, time-points ( $N=143$ ) and their children ( $N=99$ ), are summarized in Table 3.3.3.

Table 3.3.2 (Supplementary)

*Differences between parents who completed only the T0 assessment and parents who completed the whole study (Student's t-test for continuous variables and Chi Square test for categorical variables)*

	Parents who completed only T0 (N=53)	Parents who completed the whole study (N=143)	<i>p</i> of the difference
Age parent	36.60	38.24	.123
Sex of the parent			
Men	24	52	.322
Women	29	91	
Age child (months)	45.92	58.12	.217
Sex of the child			
Boy	23	85	.053
Girl	30	58	
Number of children	1.74	1.66	.519
<b>Education level (1-3)<sup>1</sup></b>	<b>1.89</b>	<b>2.22</b>	<b>.003</b>
Currently employed			
Yes	31	98	.235
No	22	45	
Living outside hospital city			
Yes	23	53	.509
No	30	90	
<b>Spanish nationality</b>			
<b>Yes</b>	<b>42</b>	<b>134</b>	<b>.006</b>
<b>No</b>	<b>11</b>	<b>9</b>	
Perceived economic problems (0-7) <sup>2</sup>	2.96	2.42	.166
Parent on previous psychological/ psychiatric treatment			
Yes	8	26	.677
No	45	117	
Length of PICU admission (hours)	154.49	151.34	.937
Perceived severity of child's condition (0-7) <sup>3</sup>	4.47	4.08	.223
Objective severity of child's condition (PIM2)	4.53	6.01	.223
Number of previous PICU admissions	1.00	1.01	.976
<b>Perceived stress (PSS)</b>	<b>26.77</b>	<b>23.63</b>	<b>.021</b>
Positive emotions (mDES)	22.43	23.63	.282
<b>Negative emotions (mDES)</b>	<b>12.04</b>	<b>9.88</b>	<b>.037</b>
<b>Resilience (BRS)</b>	<b>17.29</b>	<b>19.33</b>	<b>.011</b>

*Note.* <sup>1</sup>rated 1= primary education, 3= university education. <sup>2</sup> rated 0= none to 7 = a lot. <sup>3</sup> rated 0= not at all severe 7 = extremely severe. PIM2= Pediatric Index of Mortality; PSS= Perceived Stress Scale, mDES= modified Differential Emotions Scale, BRS= Brief Resilience Scale.

Table 3.3.3.

*Socio-demographic and medical characteristics for children and parents.*

	Mean(SD) or n /%
<b>Socio-demographic data</b>	
Child (N=99):	
Age child (months)	59.56 (61.77)
Gender child	
Male	59/ 59.6
Female	40 /40.4
Parent (N=143)	
Age parent (years )	38.24 (6.31)
Gender parent	
Male	52 /36.4
Female	91 /63.6
Spanish nationality	134/ 93.7
Relationship status	
Single	9/ 6.3
Married/Living with a partner	126 /88.1
Divorced	8/ 5.6
Perceived economic difficulties*	2.4(2.4)
Currently employed	98/ 68.5
Education level	
Primary	22/ 15.4
Secondary	68 /47.6
University	53/ 37.1
Living outside hospital city	53/ 37.1
<b>Medical data</b>	
Child:	
Child's Illness severity (PIM2)	5.69 (9.44)
Diagnosis	
Heart disease	29 /29.3
Oncological disease	18 /18.2
Respiratory condition	8/ 8.08
Others	44/ 44.44
Reasons for admission to PICU	
Recovery after planned surgery	68/ 68.7
Emergency medical treatment	15/ 15.2
Relapse of a chronic disease	4/ 4
Accidental injury/ emergency surgery	12/ 12.1
Healthy child prior to admission	26/ 26.3
Length of admission (days)	11.23 (13.89)
Mechanical ventilation during admission	62/ 62.6
Unexpected admission to PICU	23/ 23.2
With previous admission to PICU	43/ 43.4
Readmitted to PICU	12/ 12.1
Parent:	
Previous psychological/psychiatric treatment of parent	26/ 18.2

Note. SD = standard deviation. PICU = Pediatric Intensive Care Unit. PIM2 = Pediatric Index of Mortality II. \*rated 0= none to 7 = a lot

### ***Baseline psychological measures***

The mean for the PSS (general stress) was 23.65 ( $SD= 8.65$ , possible range 14-70). Regarding resilience, the mean was 19.28 ( $SD= 4.91$ , possible range 6-30). Overall, parents reported experiencing positive emotions, such as gratitude or love ( $M=23.63$ ;  $SD= 6.88$ , possible range 0-40) more than twice than negative ones such as anger or guilt ( $M=9.88$ ;  $SD= 6.14$ , possible range 0-40) during their child's admission ( $t= 15.74$ ;  $p=.000$ ).

Although the objective probability of the risk of death (as measured by the PIM2) was 6.01%, 37 parents (25.9%) believed their child could die during admission.

### ***Associations between socio-demographic/medical variables and psychological variables at baseline***

Table 3.3.4 shows the associations between categorical demographic and medical variables and the psychological variables assessed at T0: resilience, perceived stress, and degree of experience of positive and negative emotions. There were no differences between mothers and fathers in any of the variables assessed at T0. Parents who lived out of the city where the PICU is located reported lower stress and negative emotions. Parents whose child was unexpectedly admitted reported more negative emotions. Perception of economic difficulties was associated with lower resilience and higher perceived stress, while education level was associated with higher resilience.

The correlation between the child's PIM2 score and the parent's subjective rating of the severity of their condition was .36 ( $p<.001$ ) but was not associated with any of the other psychological variables measured at baseline. Length of admission was however related to greater experience of negative emotions.

Table 3.3.4.

*Associations between socio-demographic/medical variables and psychological variables measured at baseline (T0).*

	Resilience T0	Perceived stress	Positive emotions	Negative emotions
<i>ANOVAs for categorical variables</i>				
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Men	20.48(4.72)	22.23(7.81)	24.02(6.57)	9.02(5.39)
Women	19.68(4.80)	22.68(9.52)	24.39(7.11)	8.75(6.22)
Married/with a couple	19.51(4.91)	<b>23.13(8.31)*</b>	23.46(6.59)	9.87(6.16)
Single/Divorced	17.59(4.65)	<b>27.53(10.33)</b>	24.88(8.70)	10.00(6.17)
Unemployed	18.38(5.47)	24.00(9.11)	23.31(7.70)	10.29(6.58)
Employed	19.69(5.60)	23.49(8.47)	23.78(6.46)	9.69(5.96)
Living in Madrid	19.19(5.15)	<b>25.138.75**</b>	23.09(6.82)	<b>11.08(6.39)**</b>
Living in another city	19.43(4.51)	<b>21.13(7.93)</b>	24.55(6.88)	<b>7.85(5.15)</b>
Spanish	16.26(4.90)	23.64(8.46)	23.45(6.81)	9.77(6.17)
Non-Spanish	19.56(5.27)	23.78(11.70)	26.22(7.38)	11.56(5.83)
Not intubated	19.50(4.88)	23.63(7.87)	22.88(6.72)	9.21(5.54)
Intubated	19.15(4.94)	23.66(9.10)	24.05(6.93)	10.26(6.46)
Elective admission	19.43(4.95)	23.41(8.94)	23.76(7.01)	<b>9.09(5.90)**</b>
Unexpected admission	18.74(4.78)	24.48(7.58)	23.16(6.32)	<b>12.74(5.90)</b>
Never on psych. Treat.	19.46(4.46)	23.03(8.13)	23.26(6.85)	10.16(6.24)
On previous psych. Treat.	18.46(6.03)	26.46(10.37)	25.31(6.74)	8.61(5.61)
Healthy child before adm.	19.53(5.49)	23.28(8.49)	22.80(7.09)	10.93(6.29)
Not healthy ch before ad	19.18(4.69)	23.80(8.75)	23.95(6.77)	9.48(6.07)
First time in the PICU	19.44(4.88)	23.26(8.84)	23.28(6.92)	10.45(6.42)
Not first time in the PICU	19.07(4.98)	24.18(8.43)	24-10(6.79)	9.11(5.71)
<i>Correlations for continuous variables</i>				
Age parent	.113	<b>-.171*</b>	-.005	<b>-.246*</b>
Age child	-.022	.003	-.055	<b>-.169*</b>
Perceived economic difficulty	<b>-.299**</b>	<b>.237*</b>	-.003	.111
Education level	<b>.179*</b>	-.054	-.067	.157
Objective severity (PIM2)	-.019	.028	.057	.163
Length of admission	-.092	.147	-.041	<b>.273**</b>

*Note.* SD = standard deviation. PICU = Pediatric Intensive Care Unit; PIM2= Paediatric Index of Mortality II.

\* $p \leq 0.05$  \*\* $p \leq 0.01$  for ANOVAs and correlations. Significant associations are indicated in bold.

Analyses conducted for the sample who completed the whole study (N=143), with the exception of gender comparisons, which were restricted to those parents where both mother and father supplied data (n=88)



### ***Main psychological outcomes at three and six months***

#### *a) PTSD – Prevalence and evolution*

The sample average score on the DTS fell from 25.61 at T1 to 24.93 at T2 but this difference was not statistically significant ( $t=.48$ ,  $p=.63$ ). The same proportion of parents scored above the cut-off ( $\geq 40$ ) at T1 and T2- 33/143 (23.1% at both time-points). There were 10 examples of parents who had scored below the clinical range at T1 who later scored above cut-off at T2, and also 10 examples of parents who did score over the cut-off at T1 but not at T2.

#### *b) Anxiety– Prevalence and evolution*

The average score on the HADS for anxiety was 7.77 ( $SD= 3.86$ ) at T1 and 7.22 ( $SD= 4.26$ ) at T2. This difference was not statistically significant ( $t=1.68$ ;  $p=.094$ ). At T1, 58/143 parents (40.60%) reported at least mild anxiety (scores  $\geq 8$ ), with a similar proportion scoring in this range at T2 (37.8%). The percentage of parents reporting moderate-severe anxiety (scores  $\geq 11$ ) was 21% ( $n=30$ ) at T1 and T2, so it did not change at all.

#### *c) Depression – Prevalence and evolution*

The average score in depression at T1 was 4.50 ( $SD=3.61$ ) and at T2 it was 4.52 ( $SD= 4.05$ ) but this difference was not statistically significant ( $t=-.227$ ;  $p=.828$ ). A total of 27/143 (18.9%) parents and 33/ 143 (23.1%) parents reported at least mild depression at T1 and T2 respectively. The percentage of parents reporting moderate-severe depression rose from 7% ( $n=10$ ) at T1 to 9.1% ( $N=13$ ) at T2 but this was not a statistically significant difference ( $p= .368$ ).

### ***Associations between socio-demographic/medical variables and psychological outcomes***

Married parents experienced less PTSD at T1 and T2 and less anxiety at T1. Unemployed parents reported more depression at T1. Parents who lived out of the hospital city reported the lowest depression at T1 and the lowest anxiety at T2. Perception of economic difficulties was related to higher PTSD, anxiety and depression at T1 and T2. Higher education level was related to lower anxiety and depression at T1, and to lower PTSD and depression at T2 (see Table 3.3.5).

Table 3.3.5 also shows differences in PTSD, anxiety and depression by medical variables, showing that parents who have been in prior psychological or psychiatric treatment reported higher PTSD and anxiety at T1 and T2. Also, those whose child had been previously admitted to the PICU reported higher PTSD at T2. Mechanical ventilation, unexpected admission, previous health status of the child, child's probability to die at the point of the admission (PIM2) and the occurrence of readmission did not influence parental psychological outcomes. The length of the admission only correlated with anxiety at T1.

### ***Predictive model of psychopathology (PTSD, anxiety and depression)***

Figure 3.3.2 shows the standardized estimates and the squared multiple correlations for the predictive model of psychopathology (PTSD, anxiety and depression) from resilience, emotions, perceived stress and perceived severity of the child's condition.

As this figure shows, 48% of the total variance in psychopathology at T2 is predicted by the proposed model. Regarding the fit statistics of the model, chi-square statistic was significant ( $p=.000$ ), probably due to the sample size (Hair et al., 2010), but the ratio  $\chi^2/df$  ( $\chi^2/df = 1.65 < 5$ ) and the remaining adjustment indexes (GFI = .938; IFI = .968; CFI = .966 all of them  $>.90$ ; RMSEA = .066 and SRMR = .048 both  $<.08$ ) were well inside the limits of acceptance.

Table 3.3.5.

*Associations between socio-demographic/medical variables and main psychological outcomes at 3 months (T1) and 6 months (T2)*

	RESULTS FOR T1			RESULTS FOR T2		
	PTSD	Anxiety	Depression	PTSD	Anxiety	Depression
<i>ANOVAs for categorical variables</i>						
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Men	17.93 (17.27)	6.91(3.65)	3.70(2.94)	16.48(19.53)	6.07 (3.35)	3.70(3.17)
Women	22.68 (22.80)	7.18 (4.01)	3.84(3.54)	22.57(23.50)	7.32 (4.86)	4.39(4.46)
Married	<b>23.62(23.81)**</b>	<b>7.44(3.72)*</b>	4.25(3.55)	<b>22.78(24.35)**</b>	7.04(4.19)	4.44(4.09)
Single/Divorced	<b>40.35(27.74)</b>	<b>9.71(4.97)</b>	6.00(4.41)	<b>40.88(30.92)</b>	8.59(4.62)	5.35(3.76)
Employed	23.26(23.54)	7.33(3.67)	<b>3.97(3.14)*</b>	29.51(28.48)	7.40(4.29)	5.31(4.95)
Unemployed	30.73(26.92)	8.53(4.40)	<b>5.53(4.54)</b>	22.83(29.30)	7.14(4.26)	4.16(3.53)
Living in the hospital city	26.47(25.47)	8.18(4.17)	<b>5.02(3.80)*</b>	24.93(24.87)	<b>7.79(4.39)*</b>	4.86(3.82)
Living in another city	24.15(23.80)	6.91(3.39)	<b>3.51(3.33)</b>	24.92(27.49)	<b>6.26(3.87)</b>	3.96(3.39)
Spanish	25.16(24.78)	7.58(3.92)	<b>4.29(3.47)*</b>	32.67(29.84)	8.00(4.00)	6.11(4.26)
Non-Spanish	32.33(25.64)	9.56(4.00)	<b>7.00(5.87)</b>	24.41(25.52)	7.17(4.28)	4.42(4.03)
Intubated	26.16(24.62)	7.84 (3.92)	4.35(3.67)	26.04(29.30)	7.96(4.81)	5.08(4.62)
Not intubated	24.63(25.33)	7.49(4.00)	4.65(3.76)	24.30(23.68)	6.80(3.87)	4.21(3.67)
Elective admission	24.84(26.11)	7.46(3.82)	4.38(3.74)	29.81(23.73)	7.84(4.20)	4.45(3.26)
Unexpected admission	28.39(19.48)	8.58(4.30)	4.74(3.55)	23.58(26.75)	7.05(4.28)	4.54(4.26)

On previous psych. treatment	<b>42.08(35.49)**</b>	<b>9.69(4.76)**</b>	5.58(3.79)	<b>37.08(30.65)**</b>	<b>9.19(4.47)**</b>	5.65(3.33)
Not on previous psych. Treat.	<b>21.95(20.18)</b>	<b>7.26(3.61)</b>	4.21(3.64)	<b>22.23(23.88)</b>	<b>6.79(4.10)</b>	4.27(4.16)
Healthy child prior to admission	26.70(22.89)	7.64 (4.13)	4.48(3.95)	23.93(22.77)	7.38(4.11)	4.37(3.77)
Not healthy child prior to admission	25.18(25.60)	7.88(.3.46)	4.43(2.97)	25.32(26.95)	7.17(4.33)	4.58(4.17)
First time in PICU	22.23(19.57)	7.56(4.09)	4.21(3.35)	<b>19.94(20.86)**</b>	7.06(4.67)	4.14(3.85)
Not first time in PICU	30.15(30.04)	7.90(3.76)	4.80(4.11)	<b>31.64(30.09)</b>	7.44(3.65)	5.03(4.28)
Readmitted to PICU	21.38(16.60)	7.53(4.89)	4.00(4.67)	20.23(21.63)	5.88(4.01)	3.88(4.30)
Not readmitted to PICU	26.06(25.49)	7.72(3.83)	4.51(3.60)	25.56(26.29)	7.40(4.27)	4.61(4.03)
<i>Correlations for continuous variables</i>						
Age parent	-.112	-.078	-.106	-.116	-.080	-.045
Age child	<b>.182*</b>	.103	.053	.129	.092	.097
Perceived economic difficulty	<b>.249*</b>	<b>.303**</b>	<b>.307**</b>	<b>.344**</b>	<b>.267**</b>	<b>.397**</b>
Education level	-.118	<b>-.193*</b>	<b>-.191*</b>	<b>-.189*</b>	-.129	<b>-.269**</b>
Objective severity (PIM2)	-.017	.020	.014	-.050	-.091	-.084
Length of admission	.051	<b>.210*</b>	.072	-.019	.053	.016

Note. SD = standard deviation; PICU = Pediatric Intensive Care Unit; PTSD = Post-Traumatic Stress Disorder

\* $p \leq 0.05$ , \*\* $p \leq 0.01$  for ANOVAs and correlations. Significant associations are indicated in bold.

Analyses conducted for the sample who completed the whole study ( $N=143$ ), with the exception of gender comparisons, which were restricted to those parents where both mother and father supplied data ( $n=88$ ).

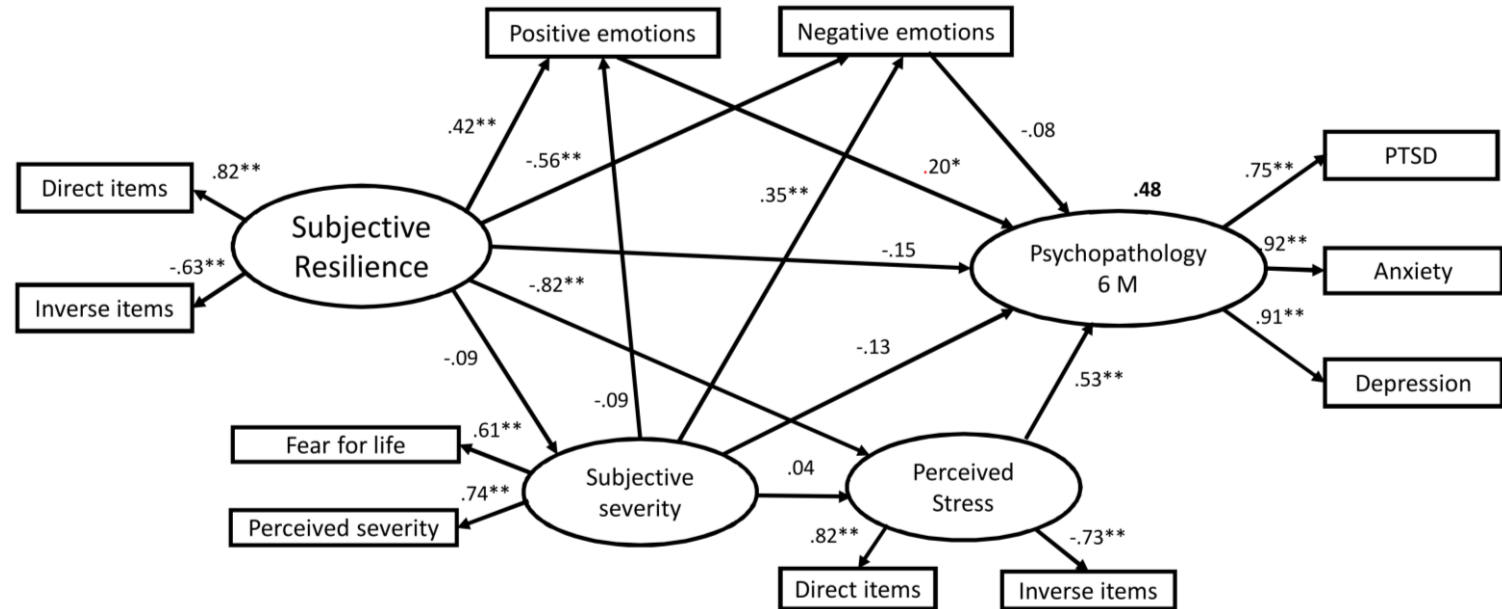
Most of the relations are close to what we had hypothesized. Resilience is significantly and negatively related with negative emotions and perceived stress, and positively related with positive emotions. However resilience is unrelated to perceived severity of the child's condition. The relation between general stress and psychopathology (positive) is also significant and strong, while the relation between positive emotions and psychopathology is weaker, but also significant and –contrary to our expectations– positive. Negative emotions and subjective severity, however, are unrelated to psychopathology. Even though the total standardized effect of resilience on psychopathology is very significant (-.57), the direct relation between resilience at T0 and psychopathology at T2 (-.15), doesn't reach the significance level. However, the indirect effect of resilience over psychopathology (through stress and positive emotions) is strong and significant (-.42).

Supplementary Figure 3.3.3 shows the predictive model of parental psychopathology for the three months assessment (T1). All the relations go in the same direction, being the only relevance difference with the T2 model that it predicts a higher percentage of the total variance in psychopathology (70% instead of 48%).

### **3.3.5. Discussion**

In life, few experiences can be considered more difficult than that of a parent facing the real possibility that their child could die or become severely disabled. The results of this study confirm that having a child hospitalized in intensive care can negatively affect parental mental health in the mid- to long-term, and are consistent with previous studies (Balluffi et al., 2004; Bronner et al., 2010; Colville & Pierce, 2012; Fauman et al., 2011).

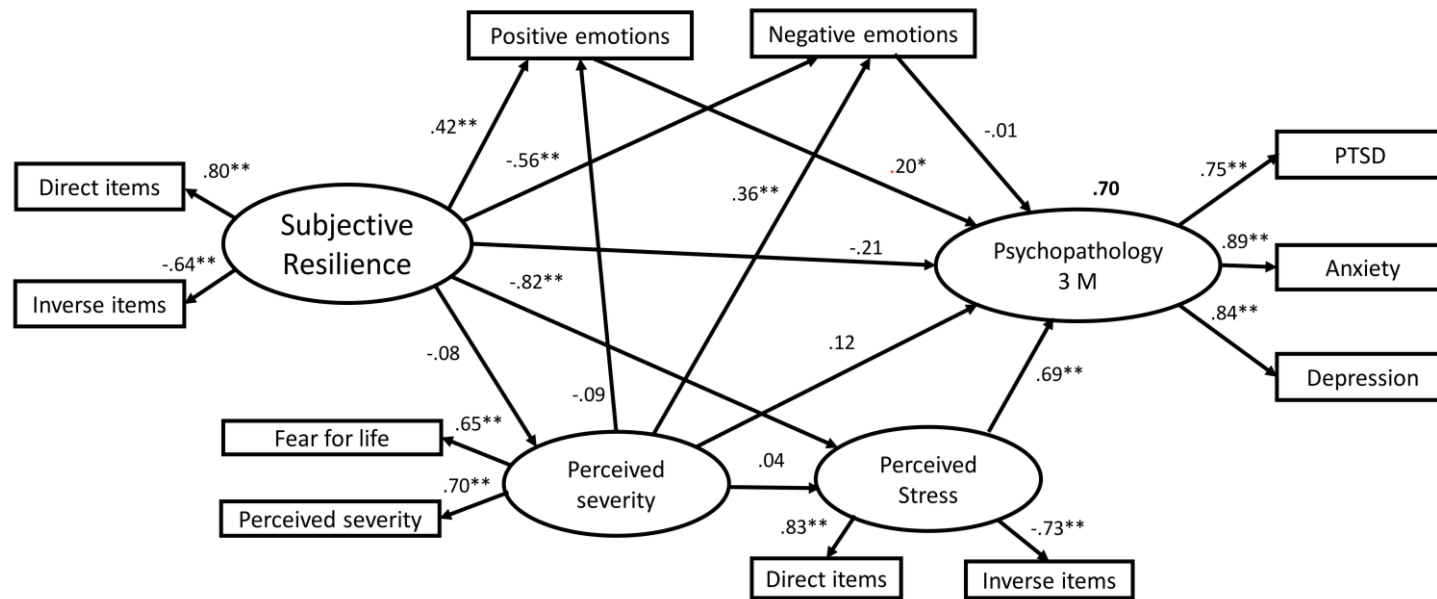
Figure 3.3.2. Predictive model of parental distress six months after the child's discharge from PICU (T2).



Note. PICU = Pediatric Intensive Care Unit. T2 = assessment conducted 6 months after first assessment. PTSD = Post-Traumatic Stress Disorder.  
 $*$  =  $p \leq .05$ ;  $**$  =  $p \leq .001$

Data on the evolution of parental psychopathology showed that rates of PTSD, anxiety and depression did not tend to decline over time, suggesting chronicity in those who develop

Figure 3.3.3 (Supplementary). Predictive model of parental distress three months after the child's discharge from PICU (T1).



Note. PICU = Pediatric Intensive Care Unit. T1 = assessment conducted 3 months after first assessment. PTSD = Post-Traumatic Stress Disorder.  
 \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$

psychopathology. These results are contrary to the findings of some previous longitudinal studies (Board & Ryan Wegner, 2002; Balluffi et al., 2004) but consistent with others (Colville & Pierce, 2012; Bronner et al., 2010). Furthermore, some parents who had not reported PTSD at T1, scored above the cutoff for PTSD at T2, which could be suggesting the occurrence of delayed PTSD reactions, coherently with the study conducted by Colville and Pierce (2012). However, this is just a hypothesis, as the appearance of PTSD symptoms should occur at least six months after the traumatic event (American Psychiatric Association, 2011). These late reactions might be explained by parents' delay in fully appreciating the psychological impact of this experience because of their initial need to focus on their child's physical recovery (Atkins, Colville & John, 2012; Carty, O'Donnell, Creamer, 2006). Alternatively it could be that they experienced further traumatic events (e.g., the occurrence of a relapse) in the interim.

In relation to the study hypotheses, the predictive models showed that a significant proportion of the variance in parental psychopathology at follow up could be predicted from protective and risk factors assessed at child's discharge from the PICU. Resilience was found to be a strong protective factor but, interestingly, its effect on parental psychopathology was indirect. It was mediated mainly by their decreased susceptibility to the stress inherent in this difficult situation, and in lower degree by the extent to which parents experience positive emotions during admission. However, contrary to our expectations, and to previous literature (Fredrickson et al., 2003) the association between positive emotions and psychopathology was positive. As the relation between positive emotions in the midst of trauma and subsequent psychopathology in this population has been explored for the first time in our study, we consider that it should be studied in future studies to determine whether this unexpected result is replicated in other samples of parents of critically ill children. In relation to the lower stress levels shown by resilient individuals, it may be that, as suggested in previous studies (Alonso-Tapia et al, 2016c), resilient parents use more adaptive coping strategies. This may have, as a



consequence that they face the situation more effectively and with lower stress which, according to the literature (Balluffi et al., 2004) results in lower levels of psychopathology.

The finding that those with a history of mental health problems reported more long term psychopathology, are consistent with meta-analyses in this field (Brewin, Andrews, & Valentine, 2000; Ozer et al., 2003), however the fact that fathers and mothers reported equivalent distress contradicts such meta-analyses. The elevated risk for single parents has been noted in another recent longitudinal study (Franck et al., 2015). The finding that those who lived out of the city were less distressed was unexpected, but given the associations found with unemployment and ethnicity it may reflect social deprivation, which is related to urban settings.

These results also provided further evidence that parent's perceptions of child's severity are more strongly associated with subsequent distress than objective aspects of the experience (Colville & Pierce, 2012; Balluffi et al., 2004; Bronner et al., 2010; Rees, Gledhill, Garralda & Nadel, 2004). It may therefore be helpful in some cases, where it is established that a parent has unrealistically pessimistic beliefs about prognosis, to challenge these gently. The fact that parents whose child has previous admissions to PICU experience higher PTSD is an interesting data, as PICU professionals tend to assume that parents who know the context will have a better adaptation. Coherently, a study conducted on parents of chronically ill children admitted to PICU suggest that they may have specific care needs (Graham, Pemstein & Curley, 2009).

The main strengths of this study are its longitudinal design and the examination of how resilience is related to parental mental health after a child's intensive care treatment, which to our knowledge has not been explored previously in this population, although it has been examined in relation to the parents of children of cancer (Rosenberg et al., 2013).

A number of limitations to this study should be acknowledged. Firstly, although the original recruitment rate was high, at 72%, there was a significant amount of attrition. As drop-outs differed significantly to those who remained in the study in that they had lower resilience,

higher negative emotions and higher perceived stress, it is possible that the rates of psychopathology found are an underestimate. Nevertheless, the percentage of participants retained was higher than rates reported in comparable studies (Balluffi et al., 2004; Bronner et al., 2010), indicating relatively good representation of a population that is difficult to recruit and retain. Also, even though special efforts were made to engage and keep fathers in our study, this group constitutes just one third of the sample. As there is a dearth of research on the experiences of fathers with critically ill children (Board, 2004), it is important to keep investing efforts in engaging fathers in future studies.

This study highlights the need for a trauma-informed care framework in the context of PICU and suggests that parental risk and protective factors could usefully be assessed at discharge in order to identify those most likely to require further support. Our study suggest that interventions to decrease parental psychopathology should be focused at boosting parental resilience and decreasing their stress levels during hospitalization. According to Alonso-Tapia, et al (2016c) resilience could be improved by promoting the utilization of adaptive coping strategies (e.g., trying to learn from adversities). These interventions could be complemented by others, such as anticipatory guidance about common parental experiences in PICU, which has proved to be useful in reducing stress acutely (Board and Ryab Wenger, 2002). All these interventions are coherent with Kazak's Pediatric Traumatic Stress model (Kazak, 2006) which emphasizes the importance of mobilizing coping in the acute peri-trauma period.

Finally, the possibility that a significant number of parents report chronic and/or delayed symptoms suggests that they should be monitored for some time after discharge. Parental stress has been shown to be a predictor of children's PTSD (Nelson & Gold, 2012; Rees et al., 2004). It follows therefore, that by gaining a better understanding of parental distress during and after a child's PICU admission health professionals will also be in a better position to positively affect children' mental health.

### **3.4. Resilience and Posttraumatic growth in mothers and fathers of critically ill children: a longitudinal study.**

Rocío Rodríguez-Rey & Jesús Alonso-Tapia

Department of Biological and Health Psychology, Psychology Faculty,  
Universidad Autónoma de Madrid.

#### Acknowledgments

The authors would like to acknowledge all physicians and nursing staff of the PICU of Hospital 12 de Octubre, and specially Lidia Casanueva, Victoria Ramos, Alba Palacios, Ana Llorente, Silvia Belda, Raquel Vinagre and Eva Val for their help with the data collection. This work was supported by Universidad Autónoma de Madrid under a FPI-UAM fellowship.

### 3.4.1. Abstract

*Objective:* Research on parental psychological effects related to a child's critical illness has focused on studying negative outcomes, while the possibility of psychological benefits has been overlooked. The aims of this research are to explore the degree of parental posttraumatic growth (PTG) after a child's hospitalization in a pediatric intensive care unit (PICU) as well as the role of parental subjective resilience, emotions, perceived severity of the child's condition and stress in predicting parental PTG after a child's treatment in intensive care.

*Methods:* In the first 48 h after their child's discharge from a PICU,  $N=196$  parents were assessed resilience (through the Brief Resilience Scale), positive and negative emotions (through the modified Differential Emotions Scale), stress produced by the PICU environment (through the Abbreviated Perceived Stress Scale for the PICU) and the degree in which they perceived their child's condition as severe during the PICU hospitalization. Six months later  $N=143$  parents completed the Posttraumatic Growth Inventory.

*Results:* Six months post-discharge 37.1% of parents reported PTG at least in a medium degree as a result of the experience of their child's hospitalization in the PICU. Path analyses indicated that 21% of the total variance in PTG six months post-discharge could be predicted from the psychological variables assessed at discharge. Resilience affected PTG, through the bias of positive emotions, but not directly.

*Conclusion:* PTG is a frequent and desirable outcome for these parents. As our predictive model has shown, future psychological interventions aimed at encouraging parental PTG after a child's critical admission should focus on fostering resilience and positive emotions while the child is hospitalized in the PICU

*Keywords:* resilience, posttraumatic growth, parents, critically ill children, parent stress, parent emotions.

### 3.4.2. Introduction

The hospitalization of a child with a potentially life-threatening condition in a Pediatric Intensive Care Unit (PICU) may be a very difficult experience for parents, susceptible to cause posttraumatic stress disorder (PTSD) (Nelson & Gold, 2012). However, it is broadly assumed that people exposed to traumatic situations may also realize psychological benefits. This phenomenon, termed posttraumatic growth (PTG), is defined as the perception of positive psychological changes that results from a struggle through a potentially traumatic experience (Tedeschi & Calhoun, 1996). These changes may occur in three domains: the perception of self (e.g., feeling better person), the interpersonal relationships (e.g., deepening of relationships) and the transcendental dimension (e.g., understanding better spiritual matters).

Even though PTG is a recognized phenomenon in the field of pediatric illness (Picoraro, Womer, Kazak & Feudtner, 2014), to our knowledge, only one study (Colville & Cream, 2009), has explored parental PTG after a child's critical hospitalization, finding that 88% of parents reported a positive change to a great degree. Thus, although more evidence is needed, results to date show that parental PTG in that context seems to be a reality.

Complete pediatric psychosocial care should not merely seek to control adverse effects, but also to help the patient and the families use their strengths and to realize benefits from their experiences, which evidences the importance of recognizing PTG in that context (Picoraro et al., 2014). However, in order to develop interventions to foster PTG in critical care settings, it is important first to study which psychological variables contribute to predict parental PTG.

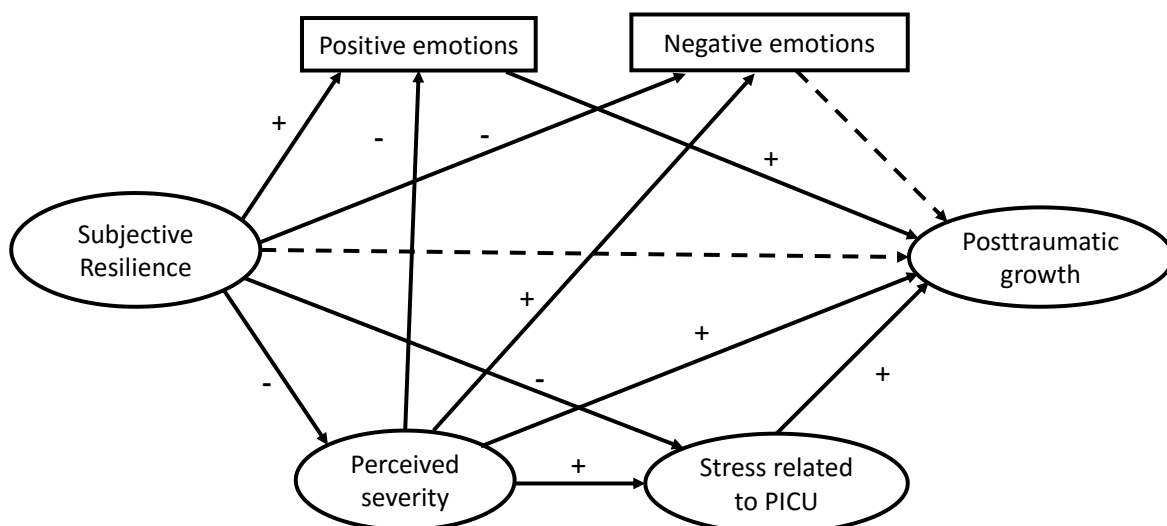
One of these variables is resilience, for which there are different definitions in the literature. One is the collection of protective traits that helps people cope with adversity (Prince-Embury, 2007; Connor & Davidson, 2003), another one is the absence of psychopathology after traumatic events (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009), and a third one is the perceived ability to recover after experiences of significant

adversity (Smith et al., 2008). This last definition is the one we are adopting in our study, because we intend to explore how the perceived own capacity to recover from difficulties can affect PTG. Regarding the relation between resilience and PTG, literature has yielded inconsistent results. Studies which have considered resilience as a trait find that these variables are positively related (Wu, Zhang, Liu, Zhou & Wei, 2015; Bensimon, 2012). In contrast, other studies posit that the relation between resilience and PTG is negative because resilient people may be able to protect themselves when facing negative events, and thus they not to struggle to the same extent as do more traumatized individuals (Westphal & Bonanno, 2007), which results in lower PTG (Janoff-Bulman, 2004). This idea is supported by Levine et al. (2009) who examined the relation between resilience understood as the absence of PTSD and PTG. Thus, it seems that resilience understood as protective factors is positively related to PTG, while resilience understood as the absence of PTSD is negatively related to PTG. Nevertheless, to our knowledge the relation between resilience assessed as the own perceived ability to bounce back, has not been previously addressed.

Furthermore, evidence from literature suggests that the relation between resilience and PTG following a traumatic experience might be mediated by their perceived emotions and stress during the peri-trauma period. Starting with the relation between resilience and emotions, resilience has found to be related to positive emotions during taxing events (Philippe, Lecours & Beaulieu-Pelletier, 2009; Fredrickson, Tugade, Waugh & Larkin, 2003). The effect of negative emotions has been less explored, but the available evidence shows that resilient individuals tend to experience less negative emotions (Fredrickson et al., 2003). Regarding the effect of emotions on PTG, some studies suggests that PTG is only significantly related to positive affect but not to negative affect (Schroevers, Kraaij & Garnefski, 2011; Yu et al., 2014), which is inconsistent with the findings of other studies which reported an inverse relationship between negative emotions and PTG (Ho, Chan & Ho, 2004; Salo, Qouta & Punamaki, 2005).

Concerning the relation between resilience and stress, more resilient people are supposed to face such situations with lower stress (Bonanno, Westphal & Mancini, 2011), which might be influenced because they are less likely to perceive an event as traumatic. With regards to the effect of stress in PTG, literature affirms that for PTG to occur, the event has to be perceived by the individual as to cause considerable disruption to his/her assumptions about how the world operates, and how they fit into this world (Janoff-Bulman, 2004), which suggest a positive relation between stress and PTG. Based on the literature above, the hypotheses of this study are as follows (Figure 3.4.1):

*Figure 3.4.1: Hypothetic predictive model of posttraumatic growth from resilience, negative emotions, positive emotions, subjective severity and stress related to the PICU stimuli.*



- (1) Parental subjective resilience will be positively related to the degree in which parents experience positive emotions during their child’s critical hospitalization, and negatively related to the degree in which they perceive their child’s condition as severe and experience negative emotions and stress during their child’s admission.
- (2) Parental perception of their child’s severity during the PICU admission will be positively related to the degree in which they feel positive emotions, and negatively related to their levels of negative emotions and stress during admission.

- (3) Positive emotions will be positively related to PTG.
- (4) The relation between negative emotions and PTG will be either negative or inexistent (represented with a dotted line in Figure 3.4.1).
- (5) Perceived severity of the child's condition and perceived stress related to the PICU admission will be positively associated to resilience.
- (6) Given the contradictory results that have emerged from literature, we do not formulate a hypothesis about the direct relation between resilience and PTG, but we are attempting to estimate such relation in our study (represented with a dotted line in Figure 3.4.1).

### **3.4.3. Methods**

Ethical permission for this prospective longitudinal cohort study was granted by the Hospital 12 de Octubre Research Ethics Committee, and written informed consent was obtained.

#### ***Participants***

Participants were parents whose child had been discharged in the last 48 hours from a 16-bed PICU located in a tertiary hospital in Madrid, Spain. Exclusion criteria were being admitted for less than 12 hours and not speaking Spanish well enough to complete the questionnaires.

#### ***Procedure***

This was part of a set of studies aimed at exploring parental adaptation following their child's admission to the PICU. The parents of every child admitted to the PICU for more than 12 hours were approached by a trained researcher in psychology in the first 48 hours after the child's discharge from the PICU. They were given an informed consent form that described the study and its purposes, potential risk and benefits, and confidentiality. Then, those who agreed to participate and signed the written consent were given the first set of questionnaires,



which included the Abbreviated Perceived Stress Scale for PICU (Rodríguez-Rey & Alonso-Tapia, 2015), the modified Differential Emotions Scale (Fredrickson et al., 2003), the Brief Resilience Scale (Smith et al., 2008) and some questions to assess subjective severity of the child's condition. Six months later, they were asked to complete the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) by post, e-mail or telephone.

### ***Instruments***

- *Brief Resilience Scale (BRS)* (Smith et al., 2008). It was designed to assess resilience as the ability to bounce back from stress. It is a 6-item self-report scale that has proved adequate reliability ( $\alpha$  ranging from .80 to .9) and validity. We have used the Spanish version of this scale (Rodríguez-Rey, Alonso-Tapia & Hernansaiz-Garrido, 2015).

- *Parental perceived severity of the child's condition*. Parents were asked two questions: 1) *How severe did you think your child's condition was during the PICU's admission?* (scored 0 = not serious to 7 = extremely serious), and 2) *Did you think that your child could die at any point in their admission?* (Yes/No) and, if so, *How frequently did that idea come into your mind during your child's admission?* (scored 0 = never to 7 = constantly).

- *Abbreviated Parental Stressor Scale for Pediatric Intensive Care Unit (A-PSS:PICU)* (Rodríguez-Rey & Alonso-Tapia, in press). This scale, based on the PSS:PICU (Carter & Miles, 1989), includes 7 items to assess parental stress caused by the PICU environment. It has two factors (stress due to child's condition and stress related to PICU's staff) and adequate internal consistency ( $\alpha=.80$ ).

- *Modified Differential Emotions Scale (mDES)* (Fredrickson et al., 2003). This scale assesses the frequency of ten positive and ten negative emotions. The internal consistency of both the Positive emotions subscale ( $\alpha=.79$ ) and the Negative emotions subscales ( $\alpha=.79$ ) is acceptable. We used the Spanish translation by Páez, Bobowik, Carrera and Bosco (2011).

- *Posttraumatic Growth Inventory (PTGI)* (Tedeschi & Calhoun, 1996). It is the best-known measure to assess PTG, and contains 21 items with a 6-point Likert response format ranging from 0 (“I did not experience this change as a result of my crisis”) to 5 (“I experienced this change to a very great degree as a result of my crisis”). Even though according to its authors it includes five domains (appreciation of life, interpersonal relationships, personal strength, new possibilities in one’s life course, and spiritual growth), a study also included in this dissertation found that a three factor model with a personal, an interpersonal and a transpersonal dimension fits better to that sample. Reliability was high in all, the original ( $\alpha = .90$ ) and the Spanish version ( $\alpha = .95$ ) (Weiss & Berger, 2006). We have used the European Spanish translation (Vázquez & Páez, 2010). In order to be sure that parents responses referred to the experience of their child’s critical hospitalization, instead of asking about responses “as a result of my crisis”, we asked about responses “as a result of my child’s admission to the PICU”.

### ***Statistical approach***

First, descriptive statistics were used to characterize the sample characteristics and their PTG levels. Second, to study which factors predicted PTG we conducted a Path Analyses with Latent Variables (PALV). In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ , GFI, SRMR), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA) were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, and Anderson (2010).

### **3.4.4. Results**

#### ***Sample descriptive data***

A total of  $N=273$  parents were approached. Of them,  $N=196$  (71.79%) parents of 130 children gave their consent. Of participants 61.2% were women. Their mean age was 37.80 years ( $SD= 6.58$ ) for the parents and 56.58 months ( $SD= 61.92$ ) for the children. The primary reasons for admission were planned surgery (65.3%), emergency medical treatment (16.8%),

accidental injury and emergency surgery (11.1%) and relapse of a chronic disease (6.6%). Regarding diagnosis, 26.2% suffered from heart conditions, 16.2% from cancer, and 12.3% from respiratory conditions. The remaining 45.3% suffered from a variety of conditions such as osseous or neuromuscular defects (10%) or peritonitis (6.9%). A total of  $N=143$  parents (73%) of 99 children agreed to complete the follow-up measure 6 months post-discharge.

### ***Descriptive data of PTG***

The mean (*SD*) of the PTGI total score was 47.40 (26.74). Mothers and father did not show significant differences in their PTG levels (mothers' mean= 49.39; *SD*=25.94; fathers' mean=39.59; *SD*=27.52;  $F= 2.95$ ;  $p= .089$ ). Gender comparisons were restricted to those parents where both mother and father supplied data ( $n=88$ ).

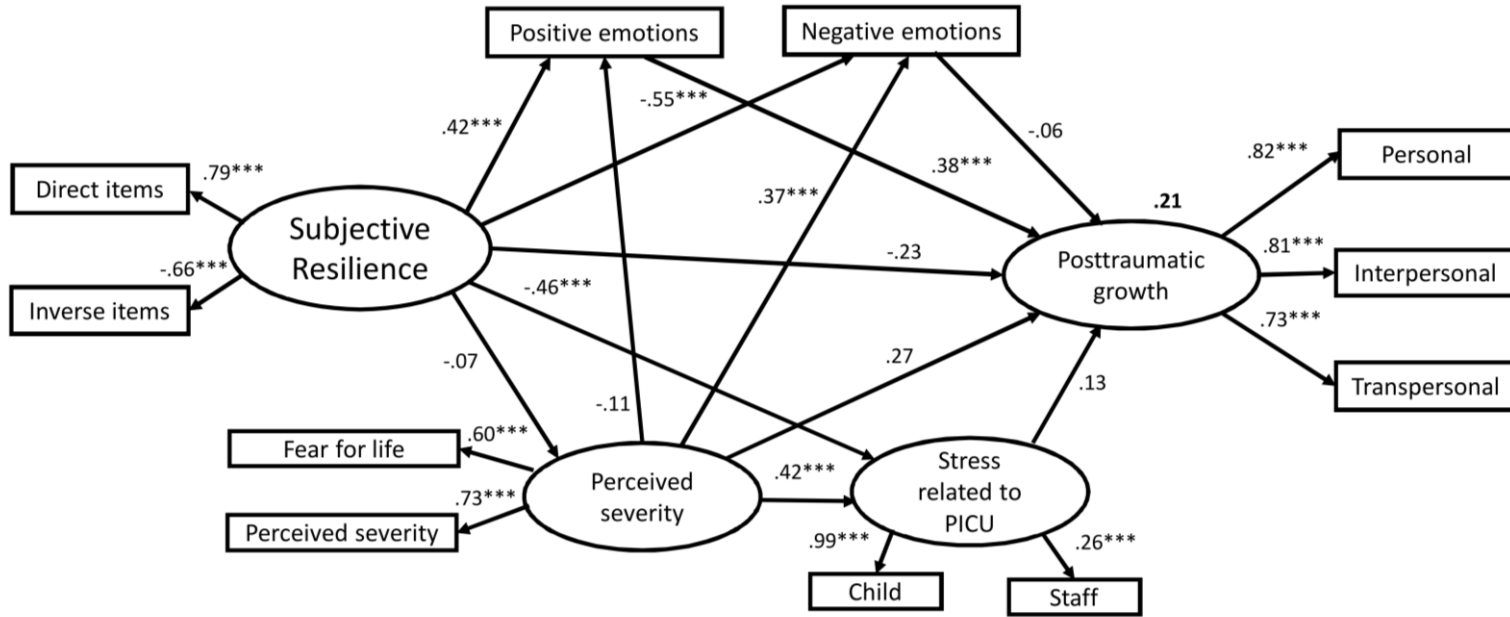
In order to know the percentage of the sample who experienced significant growth, we calculated the number of parents who obtained mean scores of at least 3 ("I have experienced this change in a medium degree") in the PTGI total score and in each of its three dimensions. According to this criterion, 53 parents (37.1%) indicated that they had experienced positive change at least to a medium degree. Regarding the three PTG dimensions, 78 parents (54.5%) perceived at least medium levels of "interpersonal growth", 64 parents (44.8%) perceived at least medium levels of "personal growth" and 30 parents (21%) perceived at least medium levels of "transpersonal growth". To make our data comparable to those of Colville and Cream (2009) we also calculated how many parents indicated that they had experienced positive change to a "great" or "very great" degree (scores  $\geq 4$ ) in at least one of the five original dimensions of the PTGI, and 56 parents (39.16%) indicated so.

### ***Prediction of PTG***

Figure 3.4.2 shows the standardized estimates of the model tested. All the fit statistics were well inside the limits for the model to be accepted, as the Chi-square statistic was not

Figure 3.4.2.

Predictive model of parental posttraumatic growth from resilience, subjective severity, positive emotions, negative emotions and stress related to the PICU stimuli.



Note. \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$

significant ( $p = .166$ ), the ratio  $\chi^2/df$  was 1.23 ( $< 5$ ), the SRMR was .04 ( $< .08$ ), the RMSEA was .04 ( $< .08$ ), and the GFI, the CFI and the IFI were .952, .980 and .981 respectively (all of them  $> .90$ ).

As Figure 3.4.2 shows, the model predicts 21% in the variance of PTG. Resilience is significantly and negatively related to negative emotions and stress, but unrelated to perceived severity of the child's condition. Its relation with positive emotions, also significant, is positive. Perceived severity is related to higher stress and negative emotions, but unrelated to positive emotions. Stress, negative emotions and perceived severity were not significantly related to PTG, while positive emotions were related to higher PTG. The direct relation between resilience and PTG is not significant, though it has a significant indirect effect (.110)

### **3.4.5. Discussion**

Our study sought to explore the level of posttraumatic growth (PTG) in parents following the admission of their child in a PICU, and to study in which degree resilience, but also emotions, perceived severity and stress contributed to predict PTG. According to our results, 37.1% of parents reported at least medium levels of PTG six months after their child's discharge from PICU. The mean in the PTGI (47.40) was very similar to the one found in the previous study conducted in intensive care (49.0) (Colville & Cream, 2009). Consequently, our results confirm the idea that PTG is a relevant outcome for parents after their child's admission to a PICU. Contrary to previous studies (Helgeson, Reynolds & Tomich, 2006), women and men reported equivalent PTG scores.

Our findings evidenced the protective effect of resilience assessed as the perceived own's ability to bounce back. Resilient individuals cope better with their child's critical illness, as they perceive the PICU stimuli as less stressful and experience less negative emotions, such as guilt or hate, and more positive emotions, such as love or gratitude, during admission. Contrary to our expectations, resilience did not influence parent's perceptions of their child's severity, so this variable might be dependent of any other factors, such as personality characteristics (e.g., optimism).

Even though a high level of resilience benefits parental outcomes during admission in terms of emotions and stress, resilience do not have a significant direct impact on the level of PTG that parents experience six months post-discharge. Also, neither parental perceived severity of the child's condition, stress nor negative emotions significantly contributed to predict PTG. Thus, our study shows that resilient individuals do not struggle to the same extent as do more traumatized individuals (Westphal & Bonanno, 2006), however, this fact do not directly impact their PTG levels.

Although resilience do not directly impact PTG, the most relevant finding of our study is the conjoint effect of parental resilience and positive emotions in predicting PTG. The degree of positive emotions experienced during admission was the only variable directly related to PTG. However, it was dependent on resilience, so resilience indirectly affected PTG through the bias of positive emotions. Thus, as expected parents whose subjective resilience was higher experienced more positive emotions (Philippe et al., 2009), which was related to higher PTG, supporting data that had emerged from literature (Fredrickson et al., 2003; Schroevers et al., 2011). According to Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz and Nieto, (2016c), the positive impact of resilience on positive emotions might be explained by the tendency of more resilient individuals to focus on the positive aspects of the situation that can rise positive emotions (e.g., "We were lucky for having good professionals helping us"). The influence of positive emotions on PTG might be explained by the broaden-and-build-theory (Fredrickson, 2001), which posits that positive emotions broaden habitual modes of thinking or acting, which can lead to a perceived growth that persists over time.

The possibility of growth after having a child hospitalized in intensive care has important clinical implications for intervention with these families. However, the dearth of previous research on positive responses to medical trauma along parents hampers our capacity to make specific recommendations to pediatric intensive care caregivers seeking to promote PTG.

Nevertheless, our model provide some clues. First, it evidences that, for parents, the experience of a child's critical admission is not fully negative, so the presence of positive post-trauma reactions should be recognized and normalized. Also, the present study suggests that parents could benefit from interventions that could enhance their positive emotions during the critical hospitalization, which led to the question of how to cultivate positive emotions in crises, knowing that they cannot be instilled directly (Fredrickson, 2000). As our study suggests, promoting parental resilience might be a path to increase the degree in which they experience positive emotions during admission. Coherently with previous research, resilience might be enhanced by promoting the use of certain adaptive coping strategies, such as learning from difficulties or looking for a solution (Alonso-Tapia et al., 2016c). This is consistent with findings from previous studies which have suggested that finding positive meaning may be the most powerful coping strategy for fostering positive emotions in crises (Fredrickson et al., 2003). Such interventions would led us moving from a pathogenic model, aimed at preventing and treating psychopathology, to a model in which the strength and resources of the individual are recognized and promoted.

We are aware that our study has several limitations, being the main one that it relies exclusively on self-report data to assess PTG, even though the validity of such method has been questioned (Sumalla, Ochoa & Blanco, 2009). Future research could overcome that limitation by incorporating objective behavioral changes, and confirmation of close persons (e.g., family) to the evaluation. Among its strengths, most of previous research have used cross-sectional designs, which couldn't determine the causality of the relations between PTG and its predictors (Wu et al., 2015). By using a longitudinal design, we have overcome that limitation. Furthermore, till the date, most of the studies that have integrated different measures in a predictive model of PTG had used regression analyses (Ho et al., 2004). Using a confirmatory

approach through structural equations modelling represents an advance in understanding the dependence of PTG on other psychological variables.

According to Picoraro et al (2014), PTG following pediatric medical trauma do not only depend on pre and peri-trauma variables, but also on cognitive and affective variables that come to play once the traumatic experience has ended. Thus, to better understand the mechanisms that lead to parental PTG after a child's critical illness, future research should incorporate into the predictive model of PTG the effect of variables that take place after the child's discharge from PICU. Finally, interventions to foster PTG by promoting resilience and positive emotions should be developed and tested, considering that, based on our results and on results from previous studies (Yu et al., 2013) increasing positive affect is the key for PTG promotion.



### **3.5. Relation between parental psychopathology and posttraumatic growth after a child's admission to intensive care: Two faces of the same coin?**

Rocío Rodríguez-Rey & Jesús Alonso-Tapia

Universidad Autónoma de Madrid. Department of Biological and Health Psychology.

#### **Acknowledgments**

The authors would like to acknowledge all physicians and nursing staff of the PICU of Hospital 12 de Octubre for their help with the data collection. This work was supported by Universidad Autónoma de Madrid under a FPI-UAM fellowship.

### 3.5.1. Abstract

*Objectives:* The aim of this study was to explore the relation between psychopathology –posttraumatic stress (PTSD), anxiety and depression– and posttraumatic growth (PTG) in parents six months after their child's critical treatment in a Pediatric Intensive Care Unit (PICU).

*Methods:* 143 parents were assessed PTG, posttraumatic stress, depression and anxiety six months after their child's discharge from a PICU.

*Results:* 23.1% of parents reported PTSD, 21% reported moderate-severe anxiety and 9.1% reported moderate-severe depression. A percentage of 37.1% of parents reported growth at least in a medium degree. There was a moderate, direct, association between PTSD, depression and anxiety with PTG. The highest are the scores in anxiety, depression and PTSD, the highest is the parental level of PTG, contradicting the idea of an inverted U-shaped relationship between psychopathology and growth.

*Discussion:* Positive and negative outcomes after a child's critical admission tend to co-occur, so parents who indicate growth do not tend to deny the difficulties. While not negating the negative impact on mental health of a child's medical treatment in intensive care, including the assessment of PTG as an outcome after this event has important implications for research and clinical practice.

*Keywords:* posttraumatic stress, anxiety, depression, posttraumatic growth, parents, pediatric intensive care.

### 3.5.2. Introduction

Literature aimed to study parental reactions after a child's admission to the pediatric intensive care unit (PICU) has focused on exploring the presence and severity of psychopathological reactions, mainly posttraumatic stress disorder (PTSD) and less frequently anxiety or depression (Bronner, Knoester, Bos, Last & Grootenhuis, 2008; Bronner et al., 2010; Colville & Pierce, 2012; Fauman et al., 2011). However, over the past two decades, there has been increasing acknowledgment that facing traumatic events can make the person function at a higher level than before, which has been termed as posttraumatic growth (PTG) (Tedeschi & Calhoun, 1996). This phenomenon has been scarcely explored among parents of critically ill children, but the only study that did it found moderate levels of PTG in this group (Colville & Cream, 2009).

Thus, evidence suggests that facing the experience of having a child in intensive care treatment may produce both, positive and negative consequences for parents. However, an intriguing question that has emerged in the trauma literature is whether PTG is related to better or worse mental health after a traumatic event. Understanding the relation between these apparently opposite consequences of traumatic events would provide clues for intervention with these individuals. To our knowledge, only one study (Colville & Cream, 2009) has explored both, positive and negative outcomes, in a sample of 50 parents four months after their child's discharge from PICU, finding that the relation between PTG and PTSD had an inverted U-shape, with higher levels of PTG corresponding to medium levels of PTSD symptoms. They also found that PTG was unrelated to anxiety and depression. Previous studies aimed at exploring the relation between PTSD and PTG with a variety of populations exposed to trauma, have yielded inconsistent results. Tedeschi (2011) reported that facilitating PTG may provide opportunities to reduce PTSD symptoms among combat veterans and their families. So, this author considered that by increasing PTG, PTSD reactions would decrease. In line with

this author, some studies suggest that PTG following a trauma is associated with lower levels of PTSD over time (Frazier, Tashiro, Berman, Steger & Long, 2004; Ullrich & Lutgendorf, 2002). On the contrary, other studies have found that PTSD symptoms are positively associated to PTG scores (Hegelson, Reynolds, & Tomich, 2006; Levine, Laufer, Stein, Hamama-Raz and Solomon, 2009; Morris, Shakespeare-Finch, Rieck, & Newbery, 2005; Taku et al., 2007; Jin, Xu & Liu, 2014), and some other studies found that these variables were uncorrelated (Powell, Rosner, Butollo, Tedeschi & Calhoun, 2003). Barakat et al (2006) found a positive relation between posttraumatic stress symptoms and PTG for adolescent survivors of cancer, while these variables were unrelated for their parents. Even though the relation between depression or anxiety and PTG has been much less studied, the meta-analytic review of Hegelson et al. (2006) concluded that PTG is significantly associated with lower depression, and unrelated to anxiety.

The overall picture that emerges from previous literature is that the relation between positive and negative outcomes after trauma is unclear. In addition, to our knowledge, only the study of Colville and Cream (2009) has explore both, positive and negative outcomes, in parents after a child's admission to the PICU. Thus, in this study we aim to gather some evidence about the relation between PTG and psychopathological reactions among parents of critically ill children.

### **3.5.3. Method**

#### ***Participants***

A total of 158 parents whose children had been admitted to a 16-bed PICU in a tertiary hospital in Madrid, Spain, were asked to participate in the study 6 months after their child's discharge. Of them, 143 parents (90.5%) of 100 children agreed to participate. Their mean age was 38.24 years ( $SD= 6.31$ ); 63.6% were women. The primary reasons for the child's

admission were planned surgery (70.6%), emergency medical treatment (15.4%), accidental injury and emergency surgery (11.2%) and relapse of a chronic disease (2.8%).

### ***Instruments***

- *Medical data:* Data to complete the Paediatric Index of Mortality II (PIM 2; Slater, Shann, & Pearson, 2003), which predicts mortality risk in the PICU during the first 24 hours of admission, were obtained from the child's medical record. To know the parental perceived severity of the child's condition, parents were asked in an 8-point Likert scale ranging from 0 to 7 the following question: *How severe you think that was your child's condition during the PICU's admission?*

- *Davidson Trauma Scale (DTS)* (Davidson et al., 1997): It is a 17-item self-report measure that assesses the 17 DSM-IV-TR symptoms of PTSD included under criteria B: re-experiencing; C: avoidance/numbing and D: hyperarousal (American Psychiatric Association., 2011). The DTS yields a total score ranging from 0 to 136. A cut-off of 40 is recommended for classification of those with PTSD, with a diagnostic accuracy of 83% (Davidson et al., 1997). A more recent study in military veterans (McDonald, Beckham, Morey & Calhoun, 2009) has shown that the DTS has adequate internal consistency ( $\alpha = .97$ ) and concurrent, convergent and discriminant validity. Its Spanish version has demonstrated adequate internal consistency ( $\alpha = .90$ ) and test-retest reliability (ICC= .87) (Bobes et al., 2000),

- *Hospital Anxiety and Depression Scale (HADS)* (Zigmond & Snaith, 1983). It is a 14-item, self-reporting screening scale with two 7-item Likert subscales, one for anxiety and one for depression. For both subscales, a score of 8 to 10 indicates a mild case, with a score of  $\geq 11$  considered to indicate moderate/severe case status. A literature review (Bjelland, Dahl, Haug & Neckelmann, 2002) showed that Cronbach's alpha for anxiety varied from .68 to .93 (mean .83) and for depression from .67 to .90 (mean .82). In this study we have used the Spanish version (Quintana et al, 2003). A recent review aimed at exploring the psychometric

properties of the Spanish HADS (Terol-Cantero & Cabrera-Perona, 2015) confirms the two factor structure of this scale and show that both subscales have adequate internal consistency ( $\alpha$  ranging from .80 to .87).

- *Posttraumatic Growth Inventory* (PTGI; Tedeschi & Calhoun, 1996). It is the best-known measure to assess PTG, and contains 21 items with a 6-point Likert response format ranging from 0 (“I did not experience this change as a result of my crisis”) to 5 (“I experienced this change to a very great degree as a result of my crisis”). Even though according to its authors it includes five domains (appreciation of life, interpersonal relationships, personal strength, new possibilities in one’s life course, and spiritual growth), a study also included in this dissertation found that a three factor model with a personal, an interpersonal and a transpersonal dimension fits better to that sample. Reliability was high in all, the original ( $\alpha = .90$ ) and the Spanish version ( $\alpha = .95$ ) (Weiss & Berger, 2006). We have used the European Spanish translation (Vázquez & Páez, 2010). In order to be sure that parents responses referred to the experience of their child’s critical hospitalization, instead of asking about responses “as a result of my crisis”, we asked about responses “as a result of my child’s admission to the PICU”.

### ***Procedure***

This study was part of a series of studies that attempted to assess psychological outcomes of having a child admitted to intensive care. The IRB of the hospital approved the study. The parents of every child that had been admitted to the PICU for more than 12 hours were contacted by email, post or telephone 6 months after the child’s discharge from intensive care and asked to complete and return the PTGI, the HADS, and the DTS. All parents were given an informed consent form that described the study and its purposes, potential risk and benefits, and confidentiality.

### *Statistical Analyses*

First, descriptive analyses were conducted to establish the prevalence of PTSD, anxiety, depression and PTG. Second, bivariate Pearson's correlation analyses were conducted to explore the relation between PTSD and its subscales, anxiety, depression and PTGI and its subscales. Finally, to explore the possibility of U-inverse shaped relationships between anxiety, depression and PTSD with PTG we calculated a quadratic solution and compared it to a lineal solution.

#### **3.5.4. Results**

##### *Level of psychopathology and posttraumatic growth*

Regarding PTSD, 33 parents of the 143 participants (23.1%) reported PTSD scores by over the cutoff of 40. The most common symptom of PTSD was hyperarousal ( $M=1.93$ ,  $SD=1.97$ ), the second more common re-experimentation ( $M=1.45$ ,  $SD=1.61$ ), and the least common avoidance/numbing ( $M=1.16$ ,  $SD=1.46$ ). The percentage of parents reporting moderate-severe anxiety (scores  $\geq 11$ ) was 21% ( $N=30$ ), and the percentage of parents reporting moderate-severe depression was 9.1% ( $N=13$ ).

The average score in the PTGI was 47.40 ( $SD= 26.74$ ). A percentage of 37.1% of parents reported growth at least in a medium degree.

##### *Relation between psychopathology and posttraumatic growth*

Table 3.5.1 shows the correlation coefficients among PTG and its dimensions, PTSD and its symptoms, anxiety and depression.

PTSD and all its symptoms were moderately and positively correlated with PTG. The correlations between anxiety and depression with PTG were weaker, but also significant.

Table 3.5.1.

Correlation Coefficients between the PTGI, the DTS and the HADS total scores and subscales

	PTG Pers.	PTG Interp.	PTG Transp.	DTS	Intr.	Avoid.	Hyper.	HADS- A	HADS- D	PIM2	Perceived Severity
PTG	.911***	.825***	.754***	.277***	.269***	.215**	.271***	.218**	.200*	.060	.207*
PTG Personal		.648***	.565***	.151	.157	.128	.158	.075	.081	.041	.159
PTG Interpersonal			.552***	.317***	.321***	.268***	.298***	.224**	.167*	.081	.185*
PTG Transpersonal				.306***	.289***	.179*	.294***	.285***	.311***	-.006	.113
DTS					.863***	.759***	.924***	.673***	.677***	-.050	.151
Intrusion						.676***	.681***	.468***	.442***	.022	.281
Avoidance							.668***	.492***	.479***	-.078	.136
Hyperarousal								.736***	.722***	-.051	.038
HADS-A									.835***	-.091	-.055
HADS-D										-.084	-.081
PIM2											.363***

*Note.* PTGI= Posttraumatic growth inventory; PTG= Posttraumatic growth; DTS= Davidson Trauma Scale; HADS= Hospital Anxiety and depression Scale; posttraumatic growth; Intr.= intrusion; Avoid.= Avoidance; Hyper= Hyperactivation; HADS-A= Hospital Anxiety and Depression Scale, subscale anxiety. HADS-D= Hospital Anxiety and Depression Scale, subscale depression. PIM2= Pediatric index of mortality 2.



Interpersonal growth was moderately and positively correlated with PTSD and all its symptoms and with anxiety. Its correlation to depression was also significant but weaker. The factor transpersonal growth was also positively correlated to PTSD, anxiety and depression, however the factor personal growth was uncorrelated with all the variables assessed.

Also shown in Table 3.5.1, only the factor interpersonal growth showed a significant correlation with perceived severity, while none of the factors were correlated with the child's probability to die in the first 24h of the PICU's admission.

Table 3.5.2 shows the adjustment of linear and quadratic relations between PTG and PTSD, anxiety and depression in all parents, in mothers and in fathers. As this table shows, for the whole sample a quadratic solution between PTSD and PTG didn't fit the data better than a linear solution. Regarding anxiety, a quadratic solution fitted the data slightly better than a linear solution. A subsequent ANOVA conducted on all parents after dividing them in three groups of "low anxiety", "medium anxiety" and "high anxiety" (with around 33% of parents on each group) showed that the parents in the lowest anxiety group reported significantly lower levels of PTG than the medium and the high anxiety groups ( $p = .002$  and  $p = .038$  respectively), but the differences between the medium and the high anxiety groups in PTG were not significant ( $p = .412$ ). With regards to depression, a quadratic solution fitted the data worse than a linear solution.

Finally we aimed to explore whether the relation between psychopathology and PTG was different from men than for women (see Table 3.5.2). Our results showed that for both, men and women, the relation between PTSD and PTG can be explained better by a linear than by a quadratic solution. With regards to the relation between PTG and anxiety, while for all parents and for fathers a quadratic solution showed a better fit, for mothers neither a quadratic nor a linear relationship between anxiety and PTG was significant. Regarding depression, in

neither the only-mothers sample nor the only-fathers sample the relation of this variable with PTG could be explained by a linear or a quadratic solution.

Table 3.5.2

*Linear and quadratic relations between PTG (DV) and PTSD, anxiety and depression (IVs) in all parents, mothers and fathers.*

IV	Model	$R^2$	$p$
<b>All parents (N=143)</b>			
PTSD	Linear	.077	.001
	Quadratic	.093	.001
Anxiety	Linear	.048	.009
	Quadratic	.074	.005
Depression	Linear	.040	.017
	Quadratic	.040	.057
<b>Mothers (n=91)</b>			
PTSD	Linear	.043	.049
	Quadratic	.048	.115
Anxiety	Linear	.021	.168
	Quadratic	.044	.139
Depression	Linear	.015	.253
	Quadratic	.015	.521
<b>Fathers (n=52)</b>			
PTSD	Linear	.084	.038
	Quadratic	.115	.050
Anxiety	Linear	.066	.065
	Quadratic	.155	.016
Depression	Linear	.068	.063
	Quadratic	.070	.170

### **3.5.5. Discussion**

The findings of this study showed the extent of posttraumatic stress disorder, anxiety, depression and posttraumatic growth in parents six months after their child's discharge from intensive care, as well as the relation between PTG and psychopathology. Our first finding is that both positive and negative psychological outcomes are frequent in parents after their child's critical admission. Our second finding is that PTG is positively correlated with all the three indicators of mental health. Thus, higher anxiety, depression and PTSD scores are related to higher PTG scores. Consequently, consistently with some previous studies (Helgeson, Reynolds, & Tomich, 2006; Levine, Laufer, Stein, Hamama-Raz and Solomon, 2009; Morris, Shakespeare-Finch, Rieck, & Newbery, 2005; Taku et al., 2007; Jin, Xu & Liu, 2014) our study supports the idea that positive and negative effects of traumatic events coexist in the same person, so people who perceive benefits do not deny experiencing difficulties. Thus, growth and pain are inextricably linked as part of the post-trauma recovery process like two sides of the same coin.

A first possible explanation of the positive relation between psychopathology and growth is that for PTG to occur, the event has to be upsetting enough to cause considerable disruption to his/her assumptions about how the world operates, and how he/she fit into this world (Janoff-Bulman, 2004). Consequently, it is likely that individuals who have been more negatively impacted by the traumatic experience also have more opportunity for growth. This idea is supported by the fact that in our study higher perceived severity of the child's medical condition is related to higher intrusion thoughts, and also with higher PTGI, which might be showing that parents who perceive their child's situation as more severe make the deepest change, for both, the positive and the negative aspects. This is coherent with the ideas of Helgeson et al. (2006), who suggested that experiencing intrusive thoughts reflects a cognitive processing aimed at understanding and processing the traumatic event more than a marker of

mental health. So, experiencing intrusive thoughts may be a signal that people are working through the implications of the stressor for their lives, which could lead to growth.

A second possibility to explain the association between psychopathology and growth is that growth takes time to emerge, and measures of PTG taken soon after the event reflect a cognitive strategy to face distress more than an actual growth (McFarland & Alvaro, 2000). Even though PTG in our study has not been measured right after the discharge, but 6 months later, there is a possibility that this time lapse has not been long enough for some parents to build real growth. If this were so, parents who are more distressed can be compensating this impairment in their mental health by referring illusory PTG. This is coherent with data from a meta-analytic review which indicated that benefit finding was more strongly related with better outcomes when time since the traumatic event was more than 2 years (Helgeson et al., 2006). To explore whether this is true in parents of critically ill children, new studies should be conducted assessing PTG and psychopathology increasing the time between the child's discharge and the assessment.

Additionally, our data contradicts the idea that the relation between PTSD and PTG has an inverted U-shape as the one found in the study by Colville and Cream (2009). Even though a quadratic solution adjusted better to the relation between anxiety and PTG, an ANOVA showed that not only medium, but also high levels of anxiety were related to the highest PTG. As, to our knowledge, only the mentioned study and the present study have explored the association of PTSD with PTSD, depression and anxiety in that context, and with non-converging results, more evidence is needed before we draw further conclusions.

While not negating the negative impact on mental health of the adverse or traumatic experience of having a child critically ill, including the assessment of PTG as an outcome has important implications. First, not considering the possibility of both, positive and negative psychological consequences of this experience, would imply having an incomplete view of the

psychological impact of a child's critical hospitalization for parents. Second, it seems that interventions to facilitate families' psychological adaptation after PICU should not only be aimed at preventing psychopathology, but also at helping them finding growth and meaning of that experience, which is not incompatible with the suffering of the negative sequelae of trauma. This represents a challenge for researchers who should evaluate whether interventions to prevent psychopathology affects parental PTG, and whether focus on PTG enhances the effectiveness of psychological interventions with this families.

---

**4. PART III:**

**THE PROTECTIVE ROLE OF RESILIENCE  
AND COPING FOR PERSONNEL WORKING  
IN INTENSIVE CARE.**

---

## **4.1. Burnout and Posttraumatic stress in pediatric intensive care staff. Its relation with Resilience and Coping strategies.**

Rocío Rodríguez-Rey<sup>1</sup>; Alba Palacios<sup>2</sup>; Jesús Alonso-Tapia<sup>1</sup>, Elena Pérez<sup>3</sup>, Elena Álvarez<sup>4</sup>,  
Ana Coca<sup>5</sup>, Santiago Mencía<sup>6</sup>, Ana Marcos<sup>7</sup>, Juan Mayordomo<sup>8</sup>, Francisco Fernández<sup>9</sup>,  
Fernando Gómez<sup>10</sup>, Jaime Cruz<sup>2</sup>, Olga Ordóñez<sup>2</sup>, Ana Llorente<sup>2</sup>.

<sup>1</sup> Department of Biological and Health Psychology. Universidad Autónoma de Madrid.

<sup>2</sup> Pediatric Intensive Care Unit, Hospital 12 de Octubre, Madrid.

<sup>3</sup> Pediatric Intensive Care Unit, Hospital Cruces, Vizcaya.

<sup>4</sup> Pediatric Intensive Care Unit, Hospital La Paz, Madrid.

<sup>5</sup> Pediatric Intensive Care Unit, Hospital Ramón y Cajal, Madrid.

<sup>6</sup> Pediatric Intensive Care Unit, Hospital Gregorio Marañón, Madrid.

<sup>7</sup> Pediatric Intensive Care Unit, Hospital de Murcia.

<sup>8</sup> Pediatric Intensive Care Unit, Hospital de Oviedo.

<sup>9</sup> Pediatric Intensive Care Unit, Hospital de Salamanca.

<sup>10</sup> Pediatric Intensive Care Unit, Hospital de Burgos.

#### **4.1.1. Abstract**

*Objective:* PICU staff are repeatedly exposed to work related stress which make them prone to develop psychological disorders including burnout and posttraumatic stress disorder (PTSD). Our aims were to explore 1) the prevalence of burnout and PTSD in a sample of Spanish PICU staff, and to compare these rates with a sample of general pediatric staff, 2) to explore how resilience and coping predict burnout and PTSD and 3) to explore association of sociodemographic and professional variables with burnout and PTSD levels.

*Methods:* A multi centric cross-sectional study was conducted. A total of 298 PICU workers (57 physicians, 177 nurses, 64 nursing assistants) and 189 professionals working other pediatric units completed the Brief Resilience Scale, the Coping strategies questionnaire for health care providers, the Maslach Burnout Inventory and the Trauma Screening Questionnaire.

*Results:* 56% of PICU workers reported burnout on at least one of its three dimensions and 20.1% reported PTSD. There were no differences in burnout and PTSD rates between PICU and non-PICU professionals, neither between physicians and nursing personnel. Higher burnout and PTSD rates emerged when the death of a child and/or conflicts with patients/families or colleagues occurred in the previous week. As a path analysis showed, around 30% of the variance in burnout and in PTSD is predicted by a frequent usage of the emotion-focused coping style and an infrequent usage of the problem-focused coping style. Resilience predicted lower depersonalization (burnout dimension) only in PICU staff.

*Discussion:* Interventions to prevent/ treat distress among the pediatric staff are needed, and should be focused on: 1) Promoting an active emotional processing of traumatic events and positive thinking, 2) regulating over-implication with patients/families, 3) improving abilities to manage interpersonal conflicts and 3) training in end-of-life care.

*Keywords:* PICU staff, pediatric staff, resilience, coping strategies, posttraumatic stress, burnout syndrome.



#### **4.1.2. Introduction**

Pediatric intensive care staff are exposed in their daily life to a very demanding environment in which they are continuously in touch with traumatic events, changing and stressful situations and children and families suffering. Research aimed at studying mental health among intensive care staff is scarce. The findings of the limited amount of studies conducted up to date agree that intensive care staff show high rates of work-related stress, even being described at the level of an epidemic. (Curtis & Puntillo, 2007).

The most explored outcome in health care providers has been burnout syndrome (BOS), defined as the experience of long-term emotional exhaustion and diminished interest (depersonalization), as well as a sense of low personal accomplishment in the work context (Maslach, Schaufeli & Leiter, 2001). Its clinical symptoms are nonspecific and include tiredness, headaches, eating problems, insomnia, irritability, emotional instability, and rigidity in interpersonal relationships (Embriaco, Papazian, Kentish-Barnes, Pochard & Azoulay, 2007).

Two studies conducted on adult intensive care units (ICUs) in France have found that around 50% of physicians (Embriaco, Azoulay, Barrau et al., 2007) and 30% of nursing staff reported BOS (Poncet et al., 2007). A study conducted in Spain showed lower rates, with 16% of nurses, 14% of resident doctors, 13% of physicians and 10% of nursing assistants reporting BOS (Frade-Mera et al., 2009). In the context of pediatric intensive care units (PICUs), findings have been similar. A recent study conducted in a PICU in the UK found that 61% of physicians and nurses showed high rates of burnout in at least one of its three dimensions (emotional exhaustion, depersonalization and lack of personal accomplishment) (Colville, Dalia, Brierley, Abbas, Morgan & Perkins-Porras, 2014). In a study conducted in Argentina the BOS rate in PICU physicians was 41% (Galván et al., 2014), and in the USA it was nearly 50% (Fields, Cuendon, Brasseur, Gets, et al., 1995).

Even though posttraumatic stress disorder (PTSD) is the most commonly explored outcome in people who have faced traumatic situations, it has been scarcely studied in ICU and PICU staff. A study conducted in an ICU in the USA found that 24% of nursing staff reported PTSD, and that this rate is higher than in professionals from other units (Mealer, Shelton, Berg, et al., 2007). Colville et al. (2014) found that 18% of professionals in the PICU showed clinically significant symptoms of PTSD.

The overall view emerging from these studies is that in different countries the rates of psychological impairment in intensive care clinicians are alarmingly high. This can have many negative consequences, as such as diminished work effectiveness (Maslach, Schaufeli, Leiter, 2001), decreased quality of care (Shanafelt, Bradley, Wipf, Back, 2002; Arnedt et al. 2005), or poor communication with the families (Shanafelt et al., 2002; Shanafelt, Sloan & Habermann, 2003) all of which have particularly devastating consequences in the PICU.

In order to prevent the development of BOS and PTSD, it would be crucial to study which variables can contribute to predict them. One of the variables that has emerged as a protective factor for psychological disorders among intensive care professionals is resilience (Colville et al., 2014; Mealer, Jones & Moss, 2012; Ríos-Rísquez, Sánchez-Meca and Godoy-Fernández, 2010). Resilience is defined as the process of positive adaptation despite experiences of significant adversity (Luthar, 2006). Coping strategies have also been found to be associated with health among PICU professionals in the sense that individuals who tend to ignore or minimize their stress levels show higher BOS and PTSD, while those who try to find benefits and learning in their work report the lowest rates of psychological impairment (Colville et al, 2014). A study aimed at exploring the mechanism by which resilience acts as a protective factor found that high-resilient ICU nurses use different coping strategies (more cognitive flexibility, optimism and higher social support) than those who report PTSD (Mealer et al., 2012), which suggests a relation between resilience and coping in this population.

Additionally, some demographic and environmental variables might be related to BOS and PTSD. Regarding demographic variables, some studies have found no associations with mental health (Colville et al., 2014), while others found that women (Embriaco, Azoulay, Barrau et al., 2007), younger professionals (Chen & McMurray, 2001; Galván et al., 2014; Poncet, Toullic, Papazian, et al, 2007) and divorced/separated individuals (Chen & McMurray, 2001) are at increased risk of psychological disorders. Finally, some environmental variables such as the number of night-shifts per months, time since last vacations, having been on night-shift the previous night, years of experience and conflicts with work colleagues have found to be related to higher BOS. No associations have been found with patient-related variables, such as their severity or mortality (Embriaco, Azoulay, Barrau et al., 2007; Frade-Mera et al., 2009; Lockley et al., 2004).

### ***Objectives and hypotheses***

Given the high rates of BOS and PTSD found in the studies aimed at exploring mental health status in PICU staff, combined to the lack of information regarding which variables are related to mental health in that population, this study was designed with the following aims:

- (1) To explore the prevalence of BOS and PTSD in PICU staff, and to compare it with the prevalence in professionals from other pediatric units. We expect higher levels of BOS and PTSD in PICU staff than in professionals working in other pediatric wards.
- (2) To explore the role of resilience and coping in predicting BOS and PTSD. We expect that individuals using less the problem-focused coping style (including specific strategies such as positive thinking) and more the emotion-focused coping style (including strategies such as rumination) will show higher BOS and PTSD. Our expectation is that the relation between coping and psychological outcomes will be mediated by resilience. Thus, individuals using more adaptive coping strategies will perceive themselves as more

resilient (Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016c), which will be related to lower BOS and PTSD.

(3) To explore in which degree BOS and PTSD are associated with sociodemographic variables and variables concerning professional activity. We expect that days since the last free day, number of night-shifts in the previous week, number of days worked the month before and the occurrence of the death of at least one patient in the previous week will be related to PTSD and BOS levels.

### **4.1.3. Methods**

#### ***Participants***

Participants were 298 professionals working in nine different PICUs in six different cities in Spain (57 physicians, 177 nurses and 64 nursing assistants), as well as 189 professionals working in pediatrics in the same nine hospitals, but not in PICU (53 physicians, 104 nurses and 32 nursing assistants).

#### ***Procedure***

Ethical permission for this multi-centric cross-sectional study was granted by the Hospital 12 de Octubre Research Ethics Committee. A designated responsible of data collection in every hospital contacted the potential participants in their work place, and asked them for voluntary, anonymous and confidential participation.

#### ***Instruments***

- *Demographic questionnaire*: It assessed background characteristics including sex, age, marital status and number of children.

- *Professional activity questionnaire*: including profession (physician, nurse, nursing assistant), years of experience, years of experience in the PICU, number of night-shifts the week before, number of deceased patients in their PICU in the previous week, presence of

conflicts with patients and colleagues the week before, number of days since the last free day, number of days worked in the last month, and desire to be transferred to a different unit.

- *Brief Resilience Scale (BRS; Smith et al., 2008)*. It is a 6-item self-report scale with a 5-point Likert response scale which assesses a person's self-report of their resilience, defined as the ability to recover from stress. The scores may range from 0 to 30, with higher scores indicating higher resilience. It has shown adequate internal consistency ( $\alpha$  ranging from .80 to .90) and test-retest reliability ( $r= 0.62 - 0.69$ ) in a number of different samples, and has been recommended on the basis of its psychometric properties in a recent review of 15 measures of resilience (Windle, Bennett & Noyes, 2011). In this study the Spanish version developed by Rodríguez-Rey, Alonso-Tapia & Hernansaiz- Garrido (2015) was used. The Spanish BRS scores showed adequate internal consistency ( $\alpha=.83$ ) and test-retest reliability (ICC=.69).

- *Coping questionnaire for health care providers (CQ-HC)*: This scale is an adaptation for health care providers of the Situated Coping Questionnaire for Adults (Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016a). It includes 16 items on a 5-point Likert scale to assess the frequency of usage of 8 coping strategies divided into two factors: Problem-focused coping style and emotion-focused coping style. An exploratory factor analysis in our sample showed that the first factor ( $\alpha=.71$ ) included the strategies included help-seeking, solution-seeking and positive thinking while the second ( $\alpha=.76$ ) included rumination, emotional expression, isolation, self-blaming and avoidance. The 8 strategies are assessed in two areas: problems related to colleagues and problem related to patients/families.

- *Maslach Burnout Inventory (MBI; Maslach, Jackson & Leiter, 1996)*. This 22-item questionnaire assess the frequency of occurrence of different feelings in relation to their job in the last week in a 7-point Likert scale. It contains three dimensions: emotional exhaustion (EE), depersonalization (DP) and personal achievement (PA). A meta-analysis has shown an average internal consistency (Cronbach's  $\alpha$ ) of .88, .71, and .78, respectively for each dimension

(Aguayo, Vargas, Emilia de la Fuente, & Lozano, 2011). We used the Spanish translation by Seisdedos (1997). Cutoffs scores for EE are between 15 and 24 (the score is low if is below 15 and high if is up to 24), for DP between 4 and 9 and for PA between 33 and 39.

-*Trauma Screening Questionnaire* (TSQ; Brewin et al., 2002). It is a 10-item measure with a yes-no response format that enquired about re-experiencing or arousal symptoms in the past week. Previous research has demonstrated that it has excellent performance relative to other PTSD screening instruments and that endorsement of six or more symptoms yields high levels of sensitivity and specificity (Brewin, 2005).

### ***Statistical analyses***

First, descriptive analyses were conducted to establish the prevalence of BOS dimensions and PTSD as well as Chi square tests to compare the percentages of PICU and non-PICU workers reporting BOS and PTSD. Second, ANOVAs were conducted to explore the differences in the scores among groups (by gender, profession, etc.). Third we conducted correlations between resilience and coping styles and strategies with BOS dimensions and PTSD. Fourth, we conducted a path analyses with latent variables (PALV) to study the effect of coping and resilience in predicting PTSD and BOS. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA, SRMR) were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, Anderson, & Tathan (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ). Fifth, we conducted a multi-group cross-validation analyses to test the validity of the model. Finally we conducted a second multiple group analysis to compare how the model works for PICU and non-PICU workers.

#### 4.1.4. Results

##### *Sample descriptive data*

Demographics data concerning professional activity for the sample of PICU staff and for the sample of pediatric but non-PICU staff are collected in Table 4.1.1.

Table 4.1.1.

*Demographic and professional characteristics of the sub-samples of PICU and non-PICU pediatric staff.*

	PICU staff (n/%)	Pediatric (non-PICU) staff (n/%)
<b>Demographics</b>		
Gender (% women)	246/ 82.6	159/ 84.1
Marital status (%)		
Single	139/ 46.6	82/ 43.4
Married	139/ 46.6	90/ 47.6
Divorced	14/ 4.7	14/ 7.4
Widow	6/ 2	3/ 1.6
Having children (%)	149/ 50	107/ 56.6
Age (Mean / SD)	40.20 (9.25)	44.12 (11.24)
Number of children* (Mean / SD)	1.81 (0.68)	1.87 (0.67)
<b>Data concerning professional activity</b>		
Profession (%)		
Physician	57/ 19.1	53/ 28
Nurse	177/ 59.4	104/ 55
Nursing assistant	64/ 21.5	32/ 16.9
Conflict with colleagues last week (%)	37/ 12.5	13/ 7
Conflict with patients last week (%)	12/ 4.1	20/ 10.8
Desire to be transferred to another unit (%)	78/ 26.1	33/ 17.7
Years of experience (Mean / SD)	16.18 (8.38)	20.56 (11.62)
Years of experience in PICU (Mean / SD)	9.72 (8.38)	—
N° night-shifts previous week (Mean / SD)	1.60 (1.23)	1.25 (1.31)
N° days from last free day (Mean / SD)	3.12 (2.71)	3.84 (3.76)
N° days worked last month (Mean / SD)	18.52 (3.76)	19.27 (4.09)
N° deaths in your unit last week (Mean / SD)	0.56 (0.86)	0.07 (0.30)

*Note.* SD = standard deviation; \*Mean number of children calculated only with individuals who have children.

### *Prevalence of Burnout and PTSD*

The proportions of PICU staff scoring in the ranges deemed indicative of high risk of burnout for the three dimensions measured by the MBI were 36.20% for EE, 27.20% for DP and 20.10% for lack of PA, with 56% of the sample reporting burnout on at least one dimension. A total of 20.1% of PICU staff reported PTSD scores over the cutoff of 6.

As Chi square tests included in Table 4.1.2 show, the percentage of the sample of non-PICU workers reporting EE, DP, BOS in at least one of its three dimensions and PTSD was the same that for PICU workers. However, in the group of non-PICU staff a higher percentage of individuals scored in the highest range of PA.

Table 4.1.2

*Prevalence of burnout and posttraumatic stress for PICU and non-PICU staff and Chi square tests.*

		PICU (n/ %)	No-PICU (n/ %)	Chi square test
EE	High (>24)	108/ 36.20	65/ 34.40	$\chi^2 = .485; df = 2; p = .785$
	Medium (16-24)	112/ 37.60	77/ 40.70	
	Low (<15)	78/ 26.20	47/ 24.90	
DP	High (>9)	81/ 27.20	52/ 27.50	$\chi^2 = .096; df = 2; p = .953$
	Medium (5-8)	116/ 38.90	71/ 37.60	
	Low (<4)	101/ 33.90	66/ 34.90	
PA	<b>High (&gt;39)</b>	<b>142/ 47.70</b>	<b>115/ 60.85</b>	$\chi^2 = 11.21 .; df = 2; p = .004$
	<b>Medium (34-38)</b>	<b>96/ 32.20</b>	<b>36/ 19.04</b>	
	<b>Low (&lt;33)</b>	<b>60/ 20.10</b>	<b>38/ 20.11</b>	
BOS	Yes	167/ 56	98/ 51.90	$\chi^2 = .818; df = 1; p = .366$
total	No	131/ 44	91/ 48.10	
PTSD	High (>6)	60/ 20.10	35/ 18.50	$\chi^2 = .192; df = 1; p = .376$
	Not high (<6)	238/ 79.90	154/ 81.50	

*Note.* PICU: Pediatric Intensive Care Unit; *df*= degrees of freedom; EE: Emotional exhaustion; DP: Depersonalization; PA: Personal achievement. Significant differences are marked in bold.



**Relation of demographic and professional variables to Burnout and PTSD levels.**

Table 4.1.3 shows the association between demographic and work-related variables and burnout and PTSD levels.

*Table 4.1.3.*

Association of demographic and work-related variables with burnout and posttraumatic stress. ANOVAs and Pearson's correlation tests.

		Burnout			PTSD
		EE	DP	PA	
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
<b>ANOVAs for categorical variables</b>					
<i>Demographic data</i>					
Gender	Women	21.37(9.21)	6.23(4.57)	38.23(6.81)	3.03(2.70)
	Men	21.15(9.57)	6.59(5.32)	38.74(6.86)	2.79(2.43)
Relationship status	With a couple	22.00(9.09)	6.17(4.46)	37.72(7.37)	3.07(2.74)
	Without	20.74(9.39)	6.40(4.92)	38.85(6.23)	2.92(2.57)
Having children	Yes	21.95(9.44)	6.14(4.40)	38.54(7.09)	2.96(2.64)
	No	20.64(9.02)	6.46(5.02)	38.06(6.49)	3.02(2.67)
<i>Data concerning professional activity</i>					
Working in PICU	Yes	21.16(9.20)	6.28(4.67)	38.04(6.28)	3.10(2.66)
	No	21.59(9.37)	6.30(4.77)	38.75(7.55)	2.81(2.63)
Profession	Physician	20.74(9.01)	6.00(4.63)	38.78(6.10)	2.92(2.43)
	Nurse	21.74(9.17)	6.41(4.56)	37.74(6.88)	3.12(2.76)
	N. assistant	2.80(9.82)	6.26(5.20)	38.47(7.21)	2.70(2.57)
Any death last week	Yes	<b>23.43(9.19)**</b>	6.92(5.10)	37.69(6.68)	<b>3.88(2.69)***</b>
	No	<b>20.65(9.19)</b>	6.08(4.56)	38.52(6.84)	<b>2.70(2.58)</b>
Conflict colleagues	Yes	<b>23.82(9.56)*</b>	6.86(5.05)	38.68(5.55)	<b>3.92(2.87)**</b>
	No	<b>21.00(9.20)</b>	6.20(4.65)	38.30(6.97)	<b>2.86(2.61)</b>
Conflict patient/ fam	Yes	<b>25.63(9.30)**</b>	<b>8.69(5.54)**</b>	36.91(6.77)	<b>4.34(3.00)**</b>
	No	<b>20.96(9.30)</b>	<b>6.08(4.59)</b>	38.43(6.83)	<b>2.88(2.61)</b>
Wish to change	Yes	<b>26.49(8.68)***</b>	<b>7.84(5.15)***</b>	37.94(6.28)	<b>3.98(2.76)***</b>
	No	<b>19.58(8.71)</b>	<b>5.79(4.48)</b>	38.56(6.98)	<b>2.64(2.55)</b>
<b>Correlations for continuous variables</b>					
Age		.016	-.039	.028	<b>-.112*</b>
Years of experience		.027	-.048	.018	-.081
Night shifts p. week		.066	.031	.082	.020
Days worked p. week		<b>.177**</b>	-.006	.007	.068
Days since free day		.038	.054	-.033	.009

Note. SD = standard deviation. EE= emotional exhaustion; DP= depersonalization; PA= personal accomplishment; PTSD= Posttraumatic stress disorder. \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$  or ANOVAs and correlations. Significant associations are indicated in bold.

As Table 4.1.3 shows, there were no differences in the scores for the three dimensions of BOS and in PTSD scores between professionals working in PICU and professionals working in another pediatric unit, neither between physicians, nurses and nursing assistants.

However, EE and PTSD scores were higher when at least a patient died in the unit during the previous week and when the individual has experienced conflicts with work colleagues in the previous week. Having had conflict with families/patients the week before is related to higher EE, DP and PTSD scores. Those who would like to be transferred to a different unit report the highest EE, DP and PTSD.

Age was inversely correlated to PTSD levels, and the number of days worked in the previous month to higher EE. Years of experience, number of days since the last free day and number of nights-shifts in the week before were unrelated to BOS and PTSD levels.

#### ***Correlations between coping strategies and resilience with BOS dimensions and PTSD***

These correlations calculated for the whole sample are included in Table 4.1.4. Resilience showed a moderate inverse correlation with EE and PTSD, a smaller but also inverse correlation with DP, and a weak but direct correlation with PA.

Emotion-focused coping style was moderately correlated with higher EE, DP and PTSD, and weakly correlated to lower PA. Regarding the specific strategies conforming the emotion-focused coping-style, self-isolation, emotional expression and self-blame were related to EE, DP, PTSD and PA in the same direction than emotion-centered coping. However, rumination and thinking avoidance were unrelated to PA. On the other hand, problem-focused coping style was moderately and directly correlated to PA, uncorrelated to PTSD and inversely and weakly correlated to EE and DP. Regarding the specific strategies conforming the problem-focused coping-style, positive thinking was strongly associated to higher PA, and inversely correlated to EE, DP and PTSD. However, help seeking were significantly and weakly correlated only

with EE (inversely) and with PA (directly), and problem solving only directly and weakly with PA.

Table 4.1.4.

*Pearson correlations between resilience, coping and demographic and work variables with psychological outcomes.*

	Resilience	EE	DP	PA	PTSD
Resilience	1	-.351***	-.142**	.144***	-.358***
Emotion-focused coping	-.407***	.361***	.252***	-.163***	.399***
Rumination	-.338***	.171***	.124**	-.021	.251***
Thinking avoidance	-.185***	.237***	.130**	-.038	.228***
Self-isolation	-.233***	.324***	.215***	-.190***	.340***
Emotional expression	-.254***	.241***	.162***	-.126**	.161***
Self-blame	-.327***	.237***	.209***	.181***	.333***
Problem-focused coping	.125**	-.128***	-.145***	.308***	-.029
Help seeking	.012	-.097*	-.070	.149***	.005
Problem solving	.104*	.046	-.084	.233***	.071
Positive thinking	.263***	-.230***	.215***	.400***	-.169***

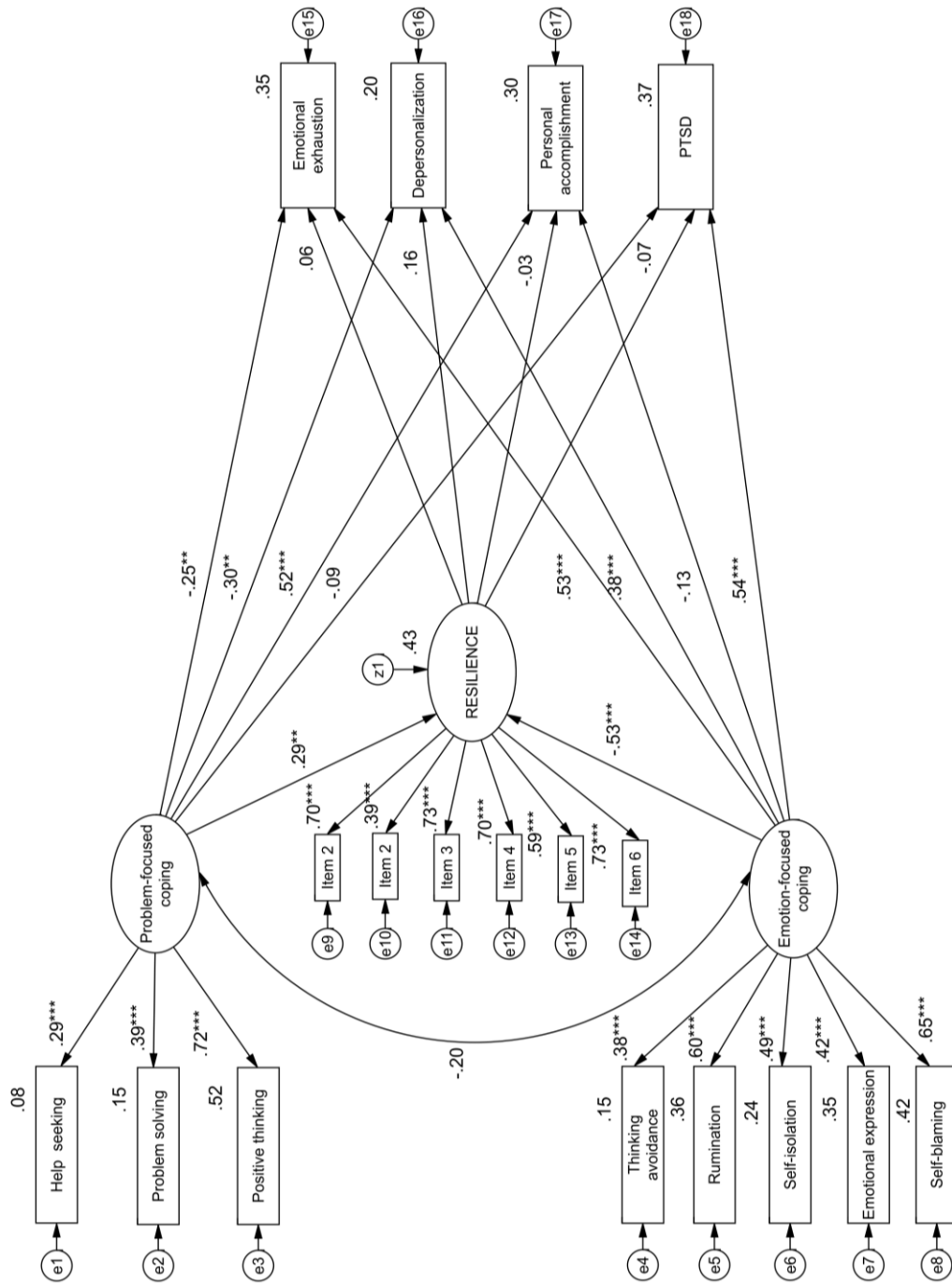
*Note.* EE= emotional exhaustion; DP= depersonalization; PA= personal accomplishment; PTSD= Posttraumatic stress disorder; \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$

Resilience is strongly and inversely related to the emotion-focused coping style, and all the strategies conforming it. Correlation between resilience and problem-focused coping style was weaker and direct. Regarding its specific strategies, problem solving, and mostly positive thinking were directly related to resilience, while help seeking was unrelated to resilience.

***Predictive model from resilience and coping. Multi-group cross-validation analyses***

We first randomly divided the sample into two groups, one for testing the model and the other for cross-validation. Then, a PALV was conducted using the first subsample (n=244) in order to explore the relation between resilience, coping, BOS and PTSD (PALV-1). Figure 4.1.1 shows the standardized estimates and the squared multiple correlations for the model.

Figure 4.1.1. Prediction of burnout dimensions and posttraumatic stress from coping and resilience. Standardized estimates and squared multiple correlations for the path analyses with latent variables (N=244; PALV-1).



\* = p ≤ .05; \*\* = p ≤ .01; \*\*\* = p ≤ .001

As figure 4.1.1 shows, 35% of the total variance in EE, 20% in DP 30% in PA and 37% in PTSD were predicted from the model. EE and DP were negatively related to problem-focused coping, and positively related to emotion-focused coping, while PA was positively related to problem-focused coping and unrelated to emotion-focused coping. PTSD was predicted (positively) only by emotion-focused coping. In spite of the fact that resilience were correlated with BOS and PTSD, in the model the relations of resilience with BOS dimensions and PTSD did not reached the significance levels.

Regarding the fit statistics of the PALV, as Table 4.1.5 shows Chi-square, the ratio  $\chi^2/df$  and the SRMR were well inside the limits that allow the model to be accepted. The remaining adjustment indexes fell slightly short of the standard limits of acceptance. So, in order to test the validity of the model, a cross-validation analysis was carried-out (CVA). The fit statistics (Table 4.1.5) are similar to those of the PALV, with the exception of the RMSEA which was considerably lower in the CVA.

Table 4.1.5.

*Prediction of burnout dimensions and posttraumatic stress from coping and resilience Goodness of fit for path analysis with latent variables (PALV), for cross validation analyses (CVA), and for multiple group analyses (MGA).*

	$\chi^2$	<i>df</i>	<i>p</i>	$\chi^2/df$	GFI	IFI	CFI	RMSEA	SRMR
PALV-1 (N=244)	322.38	124	<.001	2.60	.875	.816	.811	.081	.077
CVA (N=244/243)	758.94	295	<.001	2.57	.854	.789	.788	.057	.081
MGA (N=298/189)	694.29	248	<.001	2.80	.868	.797	.802	.061	.072

*Note.* GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual.

However, the model comparison statistics against the unrestricted model, establishing equality restrictions between groups for measurement weights ( $\Delta\chi^2 = 20.43$ ,  $p = .616$ ),

structural weights ( $\Delta\chi^2 = 21.72, p = .652$ ), structural covariances ( $\Delta\chi^2 = 21.96, p = .783$ ), structural residuals ( $\Delta\chi^2 = 22.64, p = .793$ ) and measurement residuals ( $\Delta\chi^2 = 45.79, p = .523$ ) showed that fit is not significantly reduced in relation to the model without restrictions. Therefore, it may be concluded that the model is well estimated and that it should not be rejected

### *Comparison of the model between PICU and non-PICU professionals*

In order to explore whether the relations in the model tested differed between these two groups, we conducted a multiple group analysis, with samples of PICU and non-PICU staff (MGA). The fit statistics (Table 4.1.5) are very similar to those of the PALV.

The model comparison showed that the fit index significantly decrease when restrictions are imposed for measurement weights ( $\Delta\chi^2 = 39.66, p = .017$ ), structural weights ( $\Delta\chi^2 = 42.89, p = .014$ ), structural covariances ( $\Delta\chi^2 = 49.91, p = .007$ ), structural residuals ( $\Delta\chi^2 = 52.67, p = .005$ ) and measurement residuals ( $\Delta\chi^2 = 96.13, p = .000$ ) which is indicative of differences between both samples.

To explore which relations between the variables included in the model were different for PICU and non-PICU staff, we compared regression weights using the Z-Clogg, Petkova and Haritou (1995) test. According to such test, when the Z Clogg statistic is  $> \pm 1.96$ , regression weights are different for the compared groups. These results are included in Table 4.1.6.

As Table 4.1.6 shows, there were differences between PICU and non PICU staff in how Help seeking, Problem Solving and Positive thinking are related with Problem-focused Coping, and in how Thinking avoidance is related to emotion-focused Coping, which suggests differences in how the coping questionnaire works for both populations. The most relevant difference, however, is that Resilience is directly related to DP only for PICU staff, while unrelated for non-PICU staff.

Table 4.1.6.

*Differences in measurement weights between PICU and non-PICU staff for the model of prediction of burnout and posttraumatic stress. Z-Clogg, Petkova and Haritou test.*

Relations in the model		Beta PICU	SD PICU	Beta no PICU	SD no PICU	Z Clogg
<b>Help seeking</b>	<-- <b>Problem coping</b>	<b>.30</b>	<b>.12</b>	<b>1.14</b>	<b>.20</b>	<b>-5.30</b>
<b>Problem solving</b>	<-- <b>Problem coping</b>	<b>.45</b>	<b>.11</b>	<b>1.06</b>	<b>.18</b>	<b>-4.19</b>
<b>Positive Thinking</b>	<-- <b>Problem coping</b>	<b>2.20</b>	<b>.53</b>	<b>.95</b>	<b>.17</b>	<b>2.24</b>
Rumination	<-- Emotion coping	1.31	.19	2.23	.67	-1.44
Self-Blaming	<-- Emotion coping	1.09	.12	.97	.17	.79
Self-isolation	<-- Emotion coping	.74	.10	.67	.13	.53
<b>Thinking avoidance</b>	<-- <b>Emotion coping</b>	<b>.76</b>	<b>.11</b>	<b>.45</b>	<b>.14</b>	<b>2.45</b>
Emotional expression	<-- Emotion coping	.50	.08	.64	.13	-1.44
BRS-item 1	<-- Resilience	1.59	.21	1.81	.38	-.62
BRS-item 2	<-- Resilience	.63	.08	.55	.12	.80
BRS-item 3	<-- Resilience	1.01	.08	.96	.13	.53
BRS-item 4	<-- Resilience	1.07	.09	.97	.14	.96
BRS-item 5	<-- Resilience	.78	.08	.91	.14	-1.34
BRS-item 6	<-- Resilience	.98	.08	.80	.12	1.88
Resilience	<-- Emotion coping	-.29	.06	-.34	.08	.77
Resilience	<-- Problem coping	.24	.07	1.00	.07	1.83
Emotional exhaustion	<-- Resilience	-1.46	.89	-1.24	1.32	-.09
Personal accomplishment	<-- Resilience	-1.45	.75	.16	1.05	-.87
<b>Depersonalization</b>	<-- <b>Resilience</b>	<b>1.49</b>	<b>.52</b>	<b>-.46</b>	<b>.68</b>	<b>1.98</b>
PTSD	<-- Resilience	-.49	.25	-.51	.37	.06
Emotional exhaustion	<-- Problem coping	-1.63	.66	-1.04	.77	-.47
Depersonalization	<-- Problem coping	-1.51	.42	-.98	.41	-.91
Personal accomplishment	<-- Problem coping	3.22	.76	3.79	.77	-.42
PTSD	<-- Problem coping	-.05	.18	-.05	.21	.00
Emotional exhaustion	<-- Emotion coping	2.86	.64	3.32	.96	-.29
Depersonalization	<-- Emotion coping	1.26	.36	1.57	.48	-.53
Personal accomplishment	<-- Emotion coping	-.92	.48	-.94	.70	.02
PTSD	<-- Emotion coping	1.11	.19	.82	.26	1.10

*Note.* Significant differences (Z-Clogg > ± 1.96) are marked in bold. *SD* = standard deviation.

#### 4.1.5. Discussion

This study confirms that professionals working in intensive care show very high rates of psychological impairment, with 56% of PICU workers showing burnout syndrome in at least one of its three dimensions, and 20.1% of them reporting posttraumatic stress. These rates were very similar to those found in previous studies (Colville et al, 2014; Galván et al., 2014; Fields, Cuendon, Brasseur, Gets, et al., 1995).

Contrary to data from a study conducted on adult ICU (Mealer, Shelton, Berg, et al., 2007), PTSD and the BOS dimensions EE and DP weren't lower for staff working in pediatrics but not in intensive care, showing that the tendency of having mental health issues is not exclusive for professionals working intensive care settings. The only difference between PICU clinicians and other pediatric staff was that there were less PICU clinicians with a high level of personal accomplishment. Additionally, there were no differences in psychological impairment between physicians, nurses and nursing assistants, contrary to data from Spanish adult ICUs which found the highest BOS in nurses (Frade-Mera et al., 2009). Thus, all pediatric professionals are equally vulnerable to the development of BOS and PTSD, even though their sources of stress might be different –for example, the nursing personnel might be stressed because they are constantly in touch with the very sick children and their families, while the physicians might be stressed because they have to make difficult decisions regarding the treatment of the children which are susceptible to affect their survival–.

Regarding the role of coping and resilience in predicting distress, our study has shown that between 20 and 35% of the variance in BOS dimensions and 37% of the variance in PTSD can be predicted from them. As expected, individuals who use less the problem-focused coping style –and mainly the strategy positive thinking– and more the emotion-focused coping style show higher BOS and PTSD. However, even though we expected that resilience will mediate that relation it doesn't. As correlation analyses have shown, resilience is inversely related to



BOS and PTSD however, when introduced in to the model, its relation with these variables is not significant because coping styles are much stronger predictors of BOS and PTSD.

Among differences in the model between PICU and non-PICU staff, interestingly resilience is directly related to depersonalization only in the group of PICU-staff, while its relation is inexistent in the group of non-PICU staff. This data contradicts our expectations, and might be suggesting that for individuals who are repeatedly exposed to traumatic events, such as PICU staff, being able to recover easily after difficulties (showing resilience) is easier for individuals who are able to moderate one's compassion for others, by developing a sense of "detached concern" (Cadge & Hammonds, 2012). A certain degree of emotional distancing may be one way of protecting oneself from intense emotional arousal that could interfere with functioning effectively at the job (Maslach et al., 2001). However, beyond some point excessive detachment, combined with little concern, might become pathological depersonalization, impairing the ability to form necessary relations with the patients/families. So, avoiding excessive emotional attachment, could be a healthy strategy for PICU staff. That is not to say that professionals shouldn't feel compassionate about their patients. Of course they should, but avoiding crossing the thin line between involvement and over-involvement.

Gender, age, and having or not children were unrelated to BOS and PTSD levels, coherently with the study of Colville et al (2014). With regards to work-related variables, only the occurrence of the death of a patient and having had conflicts with work colleagues or patients and/or families the week before were associated to higher BOS and PTSD. Some other variables, such as number of night-shifts or years of experience were not related to clinicians' mental health, contrary to data emerging from other studies (Embriaco, Azoulay, Barrau et al., 2007; Frade-Mera et al., 2009; Lockley et al., 2004).

Additionally, previous studies have pointed out that currently the lack of clinicians who desire to work in intensive care is an important problem (Galván et al., 2014; Mealer et al.,

2012). This is confirmed by our results, as the percentage of professionals who would like to be transferred to a different unit is higher for PICU staff (26.1%) than for non PICU staff (17.7%). As in our study higher desire to be transferred to a different unit is associated to higher scores in EE, DP and PTSD, taking care of clinician's mental health, by developing programs and policies that provide support to them would probably contribute to reduce the problem of the shortage of intensivists and critical care nursing personnel.

Among strengths of this study is that it is multi-centric, having included nine hospitals from six different cities all around Spain. Additionally, we have included physicians, nurses and nursing assistants. Thus, we consider that we have a representative sample of the Spanish population of the PICU staff. Furthermore, having included a subsample of pediatric population not working in the PICU has made possible to make comparisons. However, we are aware that our study has several limitations too. First, although efforts were made by the responsible of data collection for every unit to get the highest possible number of workers involved, not all the workers in every unit participated in the study. Thus, there is potential for bias, however, as suggested by Curtis and Puntillo (2007) the direction of that bias is unknown; maybe more distressed clinicians might be more motivated to participate, but it is also possible that individuals with severe BOS or PTSD may be less likely to participate due to avoidance or apathy. A second limitation of our study is its cross-sectional nature, which makes impossible to establish causal relationships. In consequence, results need to be treated with caution, and should be replicated for further guarantees.

In spite of its limitations, our study has important clinical implications, as it evidences that interventions to prevent BOS and PTSD are urgently needed for pediatric clinicians, as well as treatment interventions for those professionals who are already experiencing distress. According to our results, and to results from previous studies, interventions to prevent and treat clinicians' distress should be focused on four aspects: 1) *Training emotion self-regulation* by

exercising strategies which might involve active emotional processing of traumatic experiences at work, avoiding strategies conforming the emotion-focused coping style, such as thinking avoidance or self-blaming. Additionally, the problem focused-coping style, should be promoted, mainly potentiating their capacity to learn from adversities, 2) *training abilities for self-regulating their relations with their patients* in order to help them find a balance between the necessary detachment and compassion (Baverstock, Finlay, 2015), 3) *improve professionals' abilities to solve interpersonal conflicts* with their work colleagues and patients/families, as we consider that these conflicts are inevitable in the work place, however being able to manage them could help to reduce their negative impact over their mental health and 4) *provide clinicians an adequate training in end-of-life care*, as professionals are especially vulnerable to BOS and PTSD after the death of a child. In this line, previous studies suggest that improving communication about end-of-life care and offering clinicians the opportunity to discuss their experiences after the death of a patient, may help to address their symptoms of burnout and PTSD (Hough, Hudson, Salud, Lahey & Curtis, 2005).

In conclusion, given the high prevalence of BOS and PTSD found in this and in other studies, it is important to keep researching to increase our understanding of factors that cause and maintain distress among pediatric clinicians as well as to develop and test the effectiveness of interventions to reduce it. Doing that would impact on the staff psychological wellbeing and in the quality of the care received by patients and families.



## **4.2. Posttraumatic growth in pediatric intensive care personnel and its dependence on resilience and coping strategies.**

Rocío Rodríguez-Rey<sup>1</sup>; Alba Palacios<sup>2</sup>; Jesús Alonso-Tapia<sup>1</sup>, Elena Pérez<sup>3</sup>, Elena Álvarez<sup>4</sup>, Ana Coca<sup>5</sup>, Santiago Mencía<sup>6</sup>, Ana Marcos<sup>7</sup>, Juan Mayordomo<sup>8</sup>, Francisco Fernández<sup>9</sup>, Fernando Gómez<sup>10</sup>, Jaime Cruz<sup>2</sup>, Olga Ordóñez<sup>2</sup>, Ana Llorente<sup>2</sup>.

<sup>1</sup> Department of Biological and Health Psychology. Universidad Autónoma de Madrid.

<sup>2</sup> Pediatric Intensive Care Unit, Hospital 12 de Octubre, Madrid.

<sup>3</sup> Pediatric Intensive Care Unit, Hospital Cruces, Vizcaya.

<sup>4</sup> Pediatric Intensive Care Unit, Hospital La Paz, Madrid.

<sup>5</sup> Pediatric Intensive Care Unit, Hospital Ramón y Cajal, Madrid.

<sup>6</sup> Pediatric Intensive Care Unit, Hospital Gregorio Marañón, Madrid.

<sup>7</sup> Pediatric Intensive Care Unit, Hospital de Murcia.

<sup>8</sup> Pediatric Intensive Care Unit, Hospital de Oviedo.

<sup>9</sup> Pediatric Intensive Care Unit, Hospital de Salamanca.

<sup>10</sup> Pediatric Intensive Care Unit, Hospital de Burgos.

#### 4.2.1. Abstract

*Introduction and objectives:* Professionals working in the pediatric intensive care unit (PICU) are inherently exposed to potentially traumatic events. *Posttraumatic growth* (PTG) is the occurrence of positive changes after experiencing a traumatic event. This study aims: (1) To explore the degree of PTG in PICU staff, (2) To explore the role of resilience and coping strategies in predicting PTG and (3) To explore the relation of demographic and work-related variables with PTG.

*Methods:* This is a multi-centric, cross sectional study. Participants were 298 PICU workers (57 physicians, 177 nurses and 64 nursing assistants), as well as 189 professionals working in non-critical pediatric units. They completed the Brief Resilience Scale, the Coping strategies questionnaire for health care providers, the Posttraumatic Growth Inventory (PTGI), and provided demographic and work-related information.

*Results:* Of PICU staff, 68.8% had experienced positive change to a “great” or “very great” degree in at least one of the dimensions of the PTGI. Working or not in PICU and profession did not influence PTG levels. Professionals reported higher appreciation for life when a child had died the week before in the unit, and higher scores in new possibilities when conflicts with work colleagues occurred the week before. A total of 11% of the variance in PTG was predicted from coping. Emotion-focused coping was related to PTG only in PICU staff, while problem-focused coping was related to PTG in both groups. However, the relation between resilience and PTG is not significant.

*Discussion:* The study proved that work-related trauma can act as a catalyst for significant positive post-trauma changes. Modifying coping strategies may be a way to increase PTG in health care providers.

*Keywords:* posttraumatic growth, resilience, coping strategies, PICU staff, work-related trauma.

#### **4.2.2. Introduction**

The pediatric intensive care unit (PICU) is characterized by a high level of work-related stress. As the children admitted to PICU are, by definition, at increased risk of death, their lives are literally in the hands of the critical care personnel. Considering their inherent exposition to stress and potentially traumatic experiences, as well as the ethical dilemmas that these professionals face, it is not strange that the few studies aimed at exploring their mental health agree that PICU personnel show alarmingly high rates of burnout and posttraumatic stress (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995).

Without denying the negative impact of potentially traumatic events, more recently, research has broadened its scope to investigate positive changes that may occur following these events. It is broadly assumed that adverse experiences can potentially result in posttraumatic growth (PTG) which is defined as the perception of psychological changes as the result of one's struggle with a potentially traumatic event (Tedeschi & Calhoun, 1996).

In the field of pediatrics, the phenomena of PTG has been explored in children exposed to serious illness and their parents (Picoraro, Womer, Kazakn & Feudtner, 2014), and a study conducted in the PICU have shown that PTG is a frequent post-discharge outcome for parents (Colville and Cream, 2009). If PTG is a frequent phenomenon for families, one may hypothesize that it might be present in pediatric staff as well. Nevertheless, all the studies conducted on PICU staff have attempted to determine who will suffer from the experience of occupational trauma, while PTG has never been overlooked. As far as we know, to date, only one study has explored the prevalence of PTG in professionals working in critical situations, finding that 98.6% of ambulance personnel experienced at least one positive change following the experience of a work-related traumatic event (Shakespeare-Finch, Smith, Gow, Embelton & Baird, 2003).

Whilst there is an obvious need to detect and attend to those who suffer psychopathological reactions in the aftermath of work-related traumatic events, it is also important to explore whether self-perceived positive changes may occur as a consequence of the exposure to these events. Demonstrating and recognizing the occurrence of PTG in these workers, may lead to new ideas for interventions with personnel exposed to trauma in their workplace (Shakespeare-Finch et al., 2003). However, as PTG does not occur in all individuals following a traumatic event, it is crucial to study which personal and contextual variables are related to PTG in order to plan such interventions.

Among the personal variables that might be related to PTG are resilience, defined as positive adaptation or recovery despite experiences of significant adversity (Luthar, 2006) and coping, understood as the process by which an individual manages the demands and emotions generated by that which is appraised to be stressful (Lazarus, 1999).

Resilience has been considered a protective factor for the mental health of PICU personnel in different studies (Colville et al, 2014; Mealer Jones & Moss, 2012; Mealer, Jones, Newman et al., 2012), but its effect in predicting PTG in this context is unknown. Traditionally, many studies equate resilience and PTG, or even consider PTG superior to resilient outcomes (Westphal & Bonanno, 2007). However, we consider that these two terms reflect different constructs. Even though both need a potentially traumatic situation to occur, showing resilience means that the individual is facing that situation fast and without compromising his/her mental health, while developing PTG implies that the person recognizes a positive change after the situation. However, both phenomena could be related, as that the more adaptive coping strategies used by resilient individuals (Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016c) can potentially result in PTG. On the other hand, resilient individuals are less likely to perceive difficult events as traumatic, which is a necessary condition for the development of PTG (Janoff-Bulman, 2004). Thus, more resilient individuals could be less



likely to engage in the kind of meaning-making behaviors associated with PTG because they tend not to struggle to the same extent as might other, more traumatized individuals (Westphal & Bonanno, 2007). Consequently, the relation between resilience and PTG might be inverse (Levine, Laufer, Stein, Hamama-Raz and Solomon, 2009).

The idea that certain coping strategies work as protective factors for mental health in PICU professionals has been supported by different studies (Colville et al, 2014; Ríos Rísquez, Sánchez Meca y Godoy Fernández, 2010). However their effect in predicting PTG is less known. A study conducted on emergency ambulance personnel has proved that coping mediates the relation between personality dimensions and PTG (Shakespeare-Finch, Gow & Smith, 2005). A subsequent study in the same population found that specific adaptive and maladaptive coping strategies respectively linked to post-trauma positive and negative symptoms (Kirby, Shakespeare-Finch & Palk, 2011).

Additionally, it is possible that some demographic variables might be related to PTG. A meta-analytic review showed that women, and young people tend to report more PTG (Helgeson, Reynolds, & Tomich, 2006). Finally, in intensive care, there are some work-related variables (e.g., number of night-shifts) which have found to be associated to poorer outcomes (Embriaco, Azoulay, Barrau et al., 2007). However, its relation to PTG is unknown.

Given the lack of information about the prevalence of PTG in that group, and about the psychological, demographic and work-related variables that can explain it, we have designed our study with the following aims:

- (1) To study the prevalence of PTG in PICU staff, and whether their scores are different from those reported by professionals working in other pediatric units.
- (2) To explore the role of resilience and coping strategies in predicting PTG.
- (3) To study in which degree PTG scores are related to sociodemographic and work-related variables.

### **4.2.3. Methods**

#### ***Participants***

Participants were 298 professionals working in 9 different PICUs in Spain (57 physicians, 177 nurses and 64 nursing assistants), as well as 189 professionals working in other pediatric wards in the same 9 hospitals (53 physicians, 104 nurses and 32 nursing assistants).

#### ***Procedure***

The research ethics committee of the Hospital 12 de Octubre approved this multi-centric, cross sectional study. This study formed part of a larger project and therefore the questionnaire contained a range of instruments. In this study the interest was in determining the prevalence of PTG and its determinants. A responsible of data collection was designed in every hospital. Participants were contacted in the unit where they worked by that responsible and were asked for voluntary, anonymous and confidential participation.

#### ***Instruments***

- *Demographic questionnaire*: It assessed background characteristics including sex, age, marital status and number of children.

- *Professional activity questionnaire*: It asked about profession (physician, nurse, nursing assistant), years of experience, years of experience in the PICU, number of night-shifts in the previous week, number of deceased patients in the unit where they work in the previous week, presence of conflicts with patients and colleagues, number of days since their last free day, number of days worked in the month before and desire to be transferred to a different unit.

- *Brief Resilience Scale (BRS; Smith et al., 2008)*. It is a 6-item self-report scale with a 5-point Likert response scale which assesses a person's self-report of their resilience, defined as the ability to recover from stress. The scores may range from 0 to 30, with higher scores indicating higher resilience. It has shown adequate internal consistency ( $\alpha$  ranging from .80 to

.90) and test-retest reliability ( $r=0.62 - 0.69$ ) in a number of different samples, and has been recommended on the basis of its psychometric properties in a recent review of 15 measures of resilience (Windle, Bennett & Noyes, 2011). In this study the Spanish version developed by Rodríguez-Rey, Alonso-Tapia & Hernansaiz- Garrido (2015) was used. The Spanish BRS scores showed adequate internal consistency ( $\alpha=.83$ ) and test-retest reliability ( $ICC=.69$ ).

-*Coping questionnaire for health care providers (CQ-HC)*: This questionnaire is an adaptation for health care providers of the Person-situation Coping Questionnaire for Adults (Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016a). It includes 16 items on a 5-point Likert scale to assess the frequency of usage of 8 coping strategies divided into two factors: Problem-focused coping style and emotion-focused coping style. An exploratory factor analysis in our sample showed that the first factor ( $\alpha=.71$ ) included the strategies included help-seeking, solution-seeking and positive thinking while the second ( $\alpha=.76$ ) included rumination, emotional expression, isolation, self-blaming and avoidance. The 8 strategies are assessed in two areas: problems related to colleagues and problem related to patients/families.

- *Posttraumatic Growth Inventory Short Form (PTGI-SF; Calhoun et al., 2010)*. It is based in the 21-items original version by Tedeschi & Calhoun (1996), designed to measure the positive legacy of trauma. The PTGI-SF contains 10 items with a 6-point Likert response format. The scores may range from 0 to 50, with higher scores indicating higher PTG. It includes five domains: greater appreciation of life, improved relationships with others, greater personal strength, recognition of new possibilities in one's life course, and spiritual or religious growth. Both the English and the Spanish versions have shown adequate internal consistency – $\alpha$  ranging from .84 to .90 for the English version and  $\alpha= .83$  for the Spanish version (Cárdenas, Barrientos & Rovira (2015) –, and validity. In order to make sure that the PTG that professionals reported was a consequence to the exposure of their work environment, instead

of asking about responses “as a result of my crisis”, we asked about responses “as a result of my work”.

### ***Statistical analyses***

First, descriptive analyses were conducted to establish the degree of PTG and its subscales, as well as Chi square test to compare the percentages of PICU and non-PICU workers experiencing growth. Second ANOVAs and correlations were conducted to explore the associations between sociodemographic and medical variables with PTG. Third we conducted correlations between resilience and coping with PTG to explore the relations between predictors and criteria. Fourth, we conducted a path analysis with latent variables to study the conjoint effect of coping and resilience in predicting PTG. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA, SRMR) were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, Anderson, & Tathan (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ). Fifth, we conducted a multi-group cross-validation analyses to test the validity of the model. Finally we conducted a second multiple group analysis to compare how the model works for PICU and non-PICU workers.

#### **4.2.4. Results**

##### ***Sample descriptive data***

Demographic data, and information concerning professional activity for the sub-samples of PICU staff and pediatric but non-PICU staff are collected in Table 4.1.1 (see page 257). More than 80% of the professionals were women. The best-represented group were nurses (more than 50%). The death of a patient occurred 8 times more frequently in the PICU. Having conflicts with colleagues was more frequent for PICU (12.5%) than for non-PICU staff (7%), while having conflicts with patients or families was more frequent for non PICU (10.8%) than for PICU staff (4.1%).

**Prevalence of PTG and its subscales.**

The mean score for the PTGI in the sample of PICU staff is 28.54 (*SD*= 9.10). In order to know the percentage of the sample who experienced significant growth, we calculated who obtained mean scores of at least 3 (“I have experienced this change in a medium degree”) in the PTGI total score and in each of its five dimensions. These results for PICU and non PICU professionals are shown in Table 4.2.1. According to this criterion, 93 PICU professionals (49.2%) indicated that they had experienced positive change at least to a medium degree. To make our data comparable to those of previous studies we also calculated how many participants indicated that they had experienced positive change to a “great” or “very great” degree (scores  $\geq 4$ ) in at least one of the dimensions of the PTGI, and 205 PICU professionals (68.8%) indicated so. The percentage of the samples of PICU and non-PICU workers experiencing PTG was equivalent except for spiritual growth, which was lower in PICU staff.

Table 4.2.1.

*Prevalence of posttraumatic growth and its dimensions in PICU and non-PICU subsamples and Chi square tests.*

		PICU (%)	No-PICU (%)	Chi square test
PTG total (mean>3)	Yes	47.3	49.2	$\chi^2 = .166; df = 1; p = .684$
	No	52.7	50.8	
RO (mean>3)	Yes	77.5	75.7	$\chi^2 = .223; df = 1; p = .636$
	No	22.5	24.3	
NP (mean>3)	Yes	50	49.7	$\chi^2 = .003; df = 1; p = .955$
	No	50	50.3	
PS (mean>3)	Yes	57	57.1	$\chi^2 = .000; df = 1; p = .983$
	No	43	42.9	
<b>SG (mean&gt;3)</b>	<b>Yes</b>	<b>16.8</b>	<b>27</b>	<b><math>\chi^2 = 7.33; df = 1; p = .007</math></b>
	<b>No</b>	<b>83.2</b>	<b>73</b>	
AL (mean>3)	Yes	85.9	80.4	$\chi^2 = 2.56; df = 1; p = .110$
	No	14.1	19.6	
Mean in at least one dimension >4	Yes	68.8	66.1	$\chi^2 = .373; df = 1; p = .541$
	No	31.2	33.9	

*Note.* PICU: Pediatric Intensive Care Unit; RO= relationship to others; NP= new possibilities; PS= personal strength; SG= spiritual growth; AL= appreciation for life. Significant differences are indicated in bold.

***Influence of demographic and professional variables on the PTG scores.***

Table 4.2.2 shows the association between demographic and work-related variables and PTG and its dimensions. We calculated ANOVAs for categorical variables and Pearson correlations for continuous variables.

Table 4.2.2.

*Relation between demographic and work-related variables and posttraumatic growth.*

		PTG total	AL	NP	SG	PS	RO
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
<b><i>ANOVAs for categorical variables</i></b>							
<i>Demographic data</i>							
Gender	Women	28.82(9.54)	7.20(2.28)	2.28(.113)	3.65(2.52)	5.74(2.51)	6.86(2.22)
	Men	27.11(8.60)	6.96(2.38)	2.38(.263)	3.26(2.58)	5.16(2.24)	6.65(2.21)
Relationship status	With couple	28.56(8.75)	7.13(2.17)	5.24(2.35)	2.45(1.62)	5.68(2.26)	6.79(2.02)
	Without	28.52(9.98)	7.19(2.41)	5.40(2.48)	2.59(1.61)	5.60(2.65)	6.85(2.38)
Having children	Yes	28.77(9.59)	7.14(2.27)	5.34(2.49)	3.73(2.61)	5.62(2.45)	6.93(2.18)
	No	28.28(9.32)	7.18(2.33)	5.30(2.34)	3.42(2.43)	5.66(2.50)	6.71(2.26)
<i>Data concerning professional activity</i>							
Working in PICU	Yes	28.54(9.10)	7.32(2.23)	5.29(2.43)	<b>3.37(2.44)*</b>	5.71(2.39)	6.84(2.17)
	No	28.53(9.91)	6.90(2.39)	5.38(2.41)	<b>3.93(2.64)</b>	5.52(2.60)	6.80(2.31)
Profession	Physician	26.68(8.62)	7.26(2.08)	5.29(2.20)	3.52(2.55)	5.51(2.43)	7.10(2.61)
	Nurse	28.00(9.42)	7.08(2.32)	5.18(2.37)	3.58(2.47)	5.51(2.40)	6.64(2.22)
	Assistant	29.95(10.19)	7.27(2.49)	5.79(2.75)	3.67(2.69)	6.17(2.70)	7.05(2.40)
Any death last week	Yes	29.13(9.10)	<b>7.66(2.21)**</b>	5.58(2.43)	3.33(2.54)	5.68(2.55)	6.87(2.21)
	No	28.35(9.51)	<b>7.00(2.30)</b>	5.24(2.38)	3.67(2.49)	5.63(2.45)	6.81(2.23)
Conflict colleagues	Yes	30.26(9.40)	7.30(2.48)	<b>6.10(2.32)*</b>	<b>4.26(2.63)*</b>	5.94(2.37)	6.66(2.38)
	No	28.32(9.46)	7.14(2.29)	<b>5.24(2.42)</b>	<b>3.52(2.52)</b>	5.59(2.50)	6.83(2.21)
Conflict patient/ fam	Yes	28.72(8.87)	7.38(2.20)	5.59(2.03)	3.72(2.77)	5.47(2.66)	6.56(2.26)
	No	28.51(9.51)	7.15(2.32)	5.31(2.46)	3.58(2.51)	5.65(2.47)	6.82(2.23)
Wish to change	Yes	28.80(10.03)	7.25(2.32)	5.37(2.61)	3.68(2.67)	5.81(2.59)	6.70(2.20)
	No	28.35(9.32)	7.10(2.30)	5.27(2.37)	3.54(2.51)	5.57(2.45)	6.86(2.34)
<b><i>Correlations for continuous variables</i></b>							
Age		-.031	<b>-.157***</b>	-.074	<b>.118**</b>	-.021	.001
Years exp.		-.022	<b>-.137***</b>	-.062	<b>.128**</b>	-.017	-.011
Night shifts		<b>-.099*</b>	-.011	-.083	-.048	-.069	<b>-.117**</b>
Days worked		.056	-.078	-.015	.074	.068	.070
Days since free day		.026	.025	.004	.060	.004	-.022

*Note.* PTG= posttraumatic growth; RO= relationship to others; NP= new possibilities; PS= personal strength; SG= spiritual growth; AL= appreciation for life; SD = standard deviation; \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$ . Significant relations are marked in bold. Analyses conducted with the whole sample (N=487).

As Table 4.2.2 shows, PTG scores do not differ by gender, relationship status, having or not children, working in PICU versus working in other pediatric unit, profession and having had conflicts with patients or families in the previous week. Additionally, PTG is unrelated to the professional's desire to be transferred to a different unit. However, when at least a patient had died in the unit the week before, professionals report higher scores in appreciation for life, and when conflicts with work colleagues occurred in the previous week their scores in the dimensions new possibilities and spiritual change are higher.

Age and years of experience were weakly associated to lower appreciation for life and higher spiritual change, and number of night shifts was significantly but weakly related to lower total PTG and its subscale relation to others.

#### ***Correlations between coping strategies and resilience with PTG and its dimensions***

Pearson correlations between coping styles and strategies with PTG and its dimensions are included in Table 4.2.3. Resilience was unrelated to PTG and all its dimensions. The more frequent use of the emotion-focused coping style was significantly but weakly related to higher PTG, and to higher score on new possibilities. Among the strategies conforming the emotion-focused coping style, rumination showed a significant weak correlation with the total PTG score and with the dimension new possibilities. Thinking avoidance was weakly related to higher personal strength, self-isolation was weakly related with new possibilities and spiritual change, and emotional expression showed a weak correlation with new possibilities. On the other hand, a higher frequency of usage of the problem-focused coping style, and specifically of the strategies problem solving and positive thinking was associated to higher scores in total PTG and all its subscales with the exception of spiritual change. Help seeking was only related to higher scores in appreciation for life and relation to others.

Resilience is strongly and inversely related with emotion-focused coping style, and significantly correlated with all the strategies conforming it. Correlation between resilience and

problem-focused coping style was weak and direct. Regarding its specific strategies, problem solving, and mostly positive thinking were directly related to resilience, while help seeking was unrelated to resilience.

Table 4.2.3.

*Correlations between coping strategies and resilience with PTG and its dimensions*

	Resilience	PTG	AL	NP	SG	PS	RO
Resilience	1	-.029	-.042	-.027	-.007	-.025	-.014
Emotion-focused coping	-.407***	.105*	.087	.100*	.072	.095	.058
Rumination	-.338***	.110*	.135**	.088	-.004	.081	.146***
Thinking avoidance	-.185***	.078	.085	.070	.002	.121**	.031
Self-isolation	-.233***	.055	.035	.091*	.126**	.007	-.054
Emotional expression	-.254***	.087	.033	.097*	.076	.085	.047
Self-blame	-.327***	.017	-.011	-.008	.055	.017	.008
Problem-focused coping	.170***	.193***	.192***	.126**	.058	.159***	.239***
Help seeking	.012	.076	.121**	.015	.002	.033	.142**
Problem solving	.104*	.152***	.151***	.111*	.039	.137**	.172***
Positive thinking	.263***	.192***	.141***	.153***	.089	.180***	.202***

*Note.* PTG= posttraumatic growth; AL= appreciation for life; NP= new possibilities; SG= spiritual growth; PS= personal strength; RO= relationship to others.

Correlations calculated for the whole sample of health care providers ( $N=487$ )

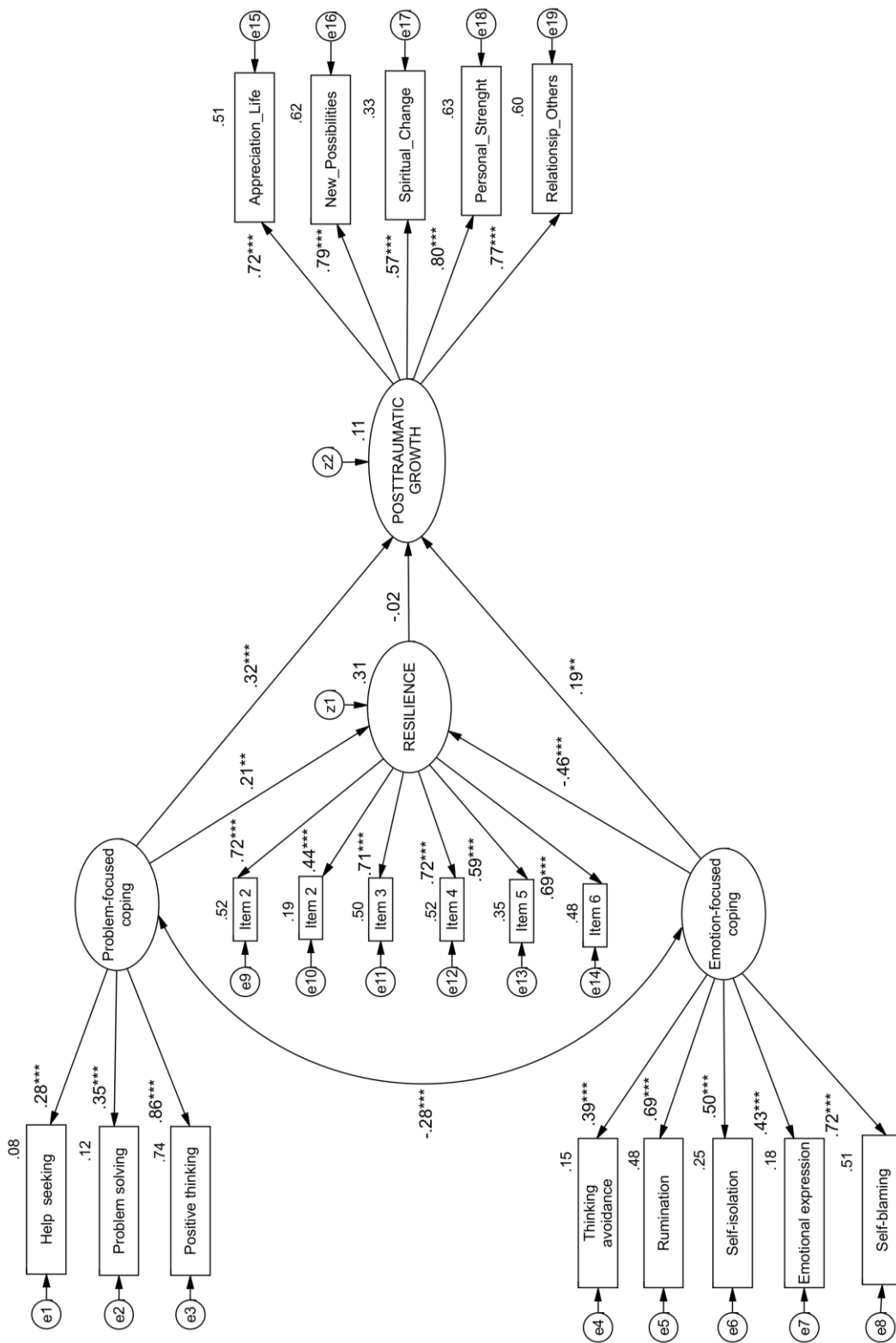
\* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$

***Predictive model from resilience and coping***

We first randomly divided the sample into two groups, one for testing the model and the other for cross-validation. Then, a PALV was conducted using the first subsample ( $N=244$ ) in order to explore the relation between resilience and coping with PTG (PALV). Figure 4.2.1 shows the standardized estimates as well as the squared multiple correlations for the model. The model predicted 11% of the total variance in PTG. Problem-focused coping was directly related to resilience and PTG, while Emotion-focused coping was inversely related to resilience, and directly related to PTG. Resilience was unrelated to PTG.



Figure 4.2.1. Standardized estimates and squared multiple correlations for the predictive model of PTG (PALV).



PALV = Path analysis with latent variables. \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$

Regarding the fit statistics, as Table 4.2.4 shows Chi-square, the ratio  $\chi^2/df$  and the SRMR were acceptable. The remaining adjustment indexes fell short of the standard limits of acceptance. So, in order to test the validity of the model, a cross-validation analysis was carried-out (CVA). The fit statistics (see Table 4.2.4.) are very similar to those of the PALV. However, the model comparison statistics against the unrestricted model, establishing equality restrictions between groups for measurement weights ( $\Delta\chi^2 = 18.80, p = .223$ ), structural weights ( $\Delta\chi^2 = 22.97, p = .290$ ), structural covariances ( $\Delta\chi^2 = 23.45, p = .435$ ), structural residuals ( $\Delta\chi^2 = 24.01, p = .519$ ) and measurement residuals ( $\Delta\chi^2 = 49.52, p = .263$ ) showed that fit is not significantly reduced in relation to the model without restrictions, which supported the invariance of the model across the two groups.

Table 4.2.4.

*Predictive model of PTG. Goodness of fit for path analyses with latent variables (PALV), for cross validation analyses (CVA), and for multiple group analyses (MGA).*

	$\chi^2$	<i>df</i>	<i>p</i>	$\chi^2/df$	GFI	IFI	CFI	RMSEA	SRMR
PALV (N=244)	595.71	146	<.001	4.08	.885	.841	.839	.080	.068
CVA (N=244/243)	805.24	336	<.001	2.40	.852	.835	.834	.054	.078
MGA (N=298/189)	778.68	292	<.001	2.67	.857	.834	.831	.059	.073

*Note.* GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual.

### ***Comparison of the model between PICU and non-PICU professionals***

In order to explore whether the relations in the model differed between these two groups, we conducted a second multiple group analysis, with samples of PICU and non-PICU staff (MGA). The fit statistics (see Table 4.2.4.) are very similar to those of the PALV. Results showed that the fit index significantly decrease when restrictions are imposed for measurement weights ( $\Delta\chi^2 = 30.64, p = .010$ ), structural weights ( $\Delta\chi^2 = 46.58, p = .001$ ), structural covariances

( $\Delta\chi^2 = 50.10$   $p = .001$ ), structural residuals ( $\Delta\chi^2 = 55.05$ ,  $p = .000$ ) and measurement residuals ( $\Delta\chi^2 = 87.59$ ,  $p = .000$ ) which is indicative of differences between both samples. To explore which relations were different, we compared regression weights using the Z-Clogg, Petkova and Haritou (1995) test (see Table 4.2.5). When the Z-Clogg statistic is  $> \pm 1.96$ , regression weights are different for the compared groups.

Table 4.2.5.

*Differences in measurement weights between PICU and non-PICU staff for the model of prediction of posttraumatic growth. Z-Clogg, Petkova and Haritou test.*

Relations in the model		Beta PICU	SD PICU	Beta no PICU	SD no PICU	Z Clogg
<b>Help seeking</b>	<-- <b>Problem coping</b>	<b>.20</b>	<b>.10</b>	<b>1.25</b>	<b>.24</b>	<b>-6.49</b>
<b>Problem solving</b>	<-- <b>Problem coping</b>	<b>.27</b>	<b>.11</b>	<b>1.29</b>	<b>.26</b>	<b>-5.73</b>
Positive thinking	<-- Problem coping	3.72	1.55	.78	.16	1.86
Rumination	<-- Emotion coping	1.57	.23	2.90	.90	-.26
Self-blaming	<-- Emotion coping	.98	.10	.87	.14	.92
Self-isolation	<-- Emotion coping	.61	.09	.43	.10	1.89
<b>Thinking avoidance</b>	<-- <b>Emotion coping</b>	<b>.64</b>	<b>.10</b>	<b>.36</b>	<b>.11</b>	<b>2.63</b>
Emotional expression	<-- Emotion coping	.45	.07	.46	.10	-.19
BRS-item 1	<-- Resilience	1.60	.21	1.84	.39	-.68
BRS-item 2	<-- Resilience	.63	.08	.54	.12	.87
BRS-item 3	<-- Resilience	1.00	.08	.97	.13	.34
BRS-item 4	<-- Resilience	1.09	.09	.95	.14	1.30
BRS-item 5	<-- Resilience	.78	.08	.92	.14	-1.37
<b>BRS-item 6</b>	<-- <b>Resilience</b>	<b>.99</b>	<b>.08</b>	<b>.78</b>	<b>.12</b>	<b>2.17</b>
Resilience	<-- Emotion coping	-.27	.05	-.28	.06	.23
Resilience	<-- Problem coping	.13	.06	.15	.08	-.31
PTG	<-- Resilience	.16	.19	-.35	.27	1.96
PTG	<-- Problem coping	.38	.18	.42	.20	-.16
<b>PTG</b>	<-- <b>Emotion coping</b>	<b>.40</b>	<b>.12</b>	<b>-.06</b>	<b>.15</b>	<b>3.24</b>
Appreciation for life	<-- PTG	.83	.10	.91	.09	-.77
New Possibilities	<-- PTG	1.21	.10	1.10	.11	.98
Spiritual growth	<-- PTG	.86	.10	.93	.12	-.63
Personal Strenght	<-- PTG	1.18	.10	1.23	.12	-.46
Relation to others	<-- PTG	1.01	.10	1.08	.11	-.70

*Note.* PICU= Pediatric Intensive Care unit; SD = standard deviation. Significant differences (Z-Clogg  $> \pm 1.96$ ) are marked in bold.

As Table 4.2.5. shows, there were differences between in how Help seeking and Problem Solving are related with Problem-focused Coping, in how Thinking avoidance is related to emotion-focused Coping, and in how the item 6 of the resilience questionnaire (BRS) is related with the total scale ( $Z\text{-Clogg} > 1.96$ ) which is suggestive of differences in how the coping and the resilience questionnaires work for both populations. More importantly, problem-focused coping was related (positively) to PTG only for PICU staff, while it was unrelated for professionals working in other units.

#### **4.2.5. Discussion**

This is the first study which has attempted to explore posttraumatic growth and its determinants in PICU clinicians. Our first remarkable result is that almost 70% of PICU workers refer PTG to a “great” or “very great” degree in at least one of the dimensions of the PTGI-SF. Thus, consistently with the study that Shakespeare-Finch, et al (2003) conducted on ambulance personnel, PTG is a common outcome for individuals exposed to traumatic situations in their work environment. This rate do not differ between professionals working in PICU and personnel working at other pediatric wards, neither between physicians, nurses and nursing assistants. Consequently, our study informs that PTG is a very common phenomena in all health care providers working in pediatric units.

Regarding the predictive model, resilience is not related to PTG. However the *problem-focused coping style*, is related to higher growth. This is consistent with the study of Kirby et al., (2011), who found that a more prolific use of adaptive coping strategies generally corresponded with higher PTG scores. Among all the strategies conforming the problem-focused coping style, the one showing the strongest relation to PTG is positive thinking. So, professionals who face their problems trying to learn from the difficulties are, logically, those who report the highest growth. Regarding the *emotion-focused coping style*, is also positively related to PTG for the PICU group, but unrelated for the non-PICU group. Thus, strategies

such as thinking repetitively about the problem (rumination) or self-blaming, which might be maladaptive to face most of everyday situations, may result in growth when used by individuals exposed to higher levels of trauma (PICU staff). Consequently, it seems that coping strategies are not adaptive or maladaptive *per se*, but any particular strategy can be either adaptive or maladaptive depending on the circumstance (Kirby et al., 2011). For example, using the strategy self-blame could be related to higher PTG if as a consequence of its utilization the individual changes his perceptions of themselves and the others for the positive.

Gender, marital status, having or not children, number of days worked last month and time since their last free day were not associated with PTG scores. Nevertheless, age and years of experience were associated to lower appreciation for life and higher spiritual change, and number of night shifts was associated to lower scores in PTG and in relation to others. Having had conflicts with work colleagues in the previous week, was related to higher scores in the dimension new possibilities and spiritual change. However, a stronger and most interesting result is that when the death of a child occurred in the previous week, the workers report higher appreciation for life, maybe because being directly confronted with death increase their awareness about the reality that they themselves and their loved ones are going to die one day, which makes them appreciate how valuable their lives are.

This study has some limitations that, luckily, open paths for future research. First, as this is a cross-sectional design, causal relations cannot be established. Furthermore, it is unclear whether self-reported PTG reflects actual life changes or retrospective reattribution for the pain experienced during the recovery process, as suggested by Bonnano (2005). Second, although the predictive model of PTG from coping and resilience has proved to fit our data, only 11% of the variance in PTG is predicted from it. Actually, there are many other variables, such as personal attributes (e.g., optimism) or having endured a personal trauma in addition to a work-related trauma which contribute to predict PTG (Shakespeare-Finch et al., 2005). Thus, in the

future, other predictive variables should be added in to the model. Finally, even though efforts were made by the responsible of data collection for every unit to get the highest possible number of participants, not all the workers get involved. Thus, there is potential for bias.

Accepting that there are some limitations in the present study, there are also some practical applications of the results. The most immediate may be an issue of normalization. Trauma informed education for pediatric staff should not only include the frequent negative reactions to trauma (e.g., intrusive thoughts), but also the possibility of PTG. Thus, education to pediatric staff needs to ‘normalize’ the positive legacy of trauma in the same way that negative reactions are regarded as ‘normal’. A second intervention derived from our results is that the awareness of specific coping strategies to better manage trauma should be also a part of intervention and/or prevention programs. Additionally, according to the results of this study, promoting the use of a problem-focused coping style, and mainly in the strategy of learning from their adverse experiences could possibly increase their perception of PTG.

The study supports theoretical and clinical expectations that the experience of occupational trauma can act as a catalyst for positive post-trauma changes. Thus, this possibility should not be denied or ignored, which doesn’t mean that we should dedicate less attention to the study, prevention and treatment of negative psychological outcomes among that population. Actually, an interesting future direction for research would be to explore the relation between PTG and negative post-trauma outcomes (e.g., burnout) among pediatric staff, and to test whether they are positively associated as suggested by some studies (Helgeson et al., 2006; Levine et al., 2009). Furthermore, it would be interesting to explore in which degree and direction negative and positive consequences derived from facing work-related traumatic situations impact professionals’ well-being. It is likely that positive outcomes can compensate the negative effect of psychopathology in professionals’ well-being. However, this is a hypothesis that should be proved in future studies.

### **4.3. Are pediatric critical personnel satisfied with their lives?**

#### **Prediction of satisfaction with life from burnout, posttraumatic stress and posttraumatic growth.**

Rocío Rodríguez-Rey<sup>1</sup>; Alba Palacios<sup>2</sup>; Jesús Alonso-Tapia<sup>1</sup>, Elena Pérez<sup>3</sup>, Elena Álvarez<sup>4</sup>,  
Ana Coca<sup>5</sup>, Santiago Mencía<sup>6</sup>, Ana Marcos<sup>7</sup>, Juan Mayordomo<sup>8</sup>, Francisco Fernández<sup>9</sup>,  
Fernando Gómez<sup>10</sup>, Jaime Cruz<sup>2</sup>, Olga Ordóñez<sup>2</sup>, Ana Llorente<sup>2</sup>.

<sup>1</sup> Department of Biological and Health Psychology. Universidad Autónoma de Madrid.

<sup>2</sup> Pediatric Intensive Care Unit, Hospital 12 de Octubre, Madrid.

<sup>3</sup> Pediatric Intensive Care Unit, Hospital Cruces, Vizcaya.

<sup>4</sup> Pediatric Intensive Care Unit, Hospital La Paz, Madrid.

<sup>5</sup> Pediatric Intensive Care Unit, Hospital Ramón y Cajal, Madrid.

<sup>6</sup> Pediatric Intensive Care Unit, Hospital Gregorio Marañón, Madrid.

<sup>7</sup> Pediatric Intensive Care Unit, Hospital de Murcia.

<sup>8</sup> Pediatric Intensive Care Unit, Hospital de Oviedo.

<sup>9</sup> Pediatric Intensive Care Unit, Hospital de Salamanca.

<sup>10</sup> Pediatric Intensive Care Unit, Hospital de Burgos.

#### **4.3.1. Abstract**

*Background and objectives:* PICU personnel show high rates of burnout and posttraumatic stress disorder (PTSD), as well as high levels of posttraumatic growth (PTG). However, their levels of satisfaction with life (SWL) and how positive and negative post-trauma outcomes relate to each other and contribute to predict SWL remain unknown. Thus, we attempt to explore these aspects in this study.

*Methods:* This is a multi-centric, cross sectional study. Participants were 298 PICU workers (57 physicians, 177 nurses and 64 nursing assistants), and 189 professionals working in non-critical pediatric units. They completed self-report measures of burnout, PTSD, posttraumatic growth (PTG), SWL, and provided demographic and work-related information.

*Results:* Of PICU staff, 16.4% were very satisfied with their lives, 34.2% were satisfied, 34.6% showed average SWL, and 14.8% were below average. These percentages were not significantly different for not-PICU workers. Women reported lower SWL than men, and physicians reported the higher SWL than nursing staff. PTSD and PTG were positively correlated. A total of 27% of the variance in SWL was predicted from positive and negative post-trauma outcomes. Higher burnout and PTSD predicted lower SWL, while PTG was a weaker predictor of higher SWL. The predictive model did not significantly differ between PICU and non-PICU staff, neither between physicians and nurses.

*Discussion:* PTG can moderate the negative effect of traumatic work-related experiences in SWL. The fact that PTSD is related to PTG indicates that positive and negative impact of work-related potentially traumatic events tend to coexists in the same person. Interventions aimed at reducing distress and fostering growth in professionals could impact in an improvement in their SWL.

*Keywords:* Satisfaction with life, burnout, posttraumatic stress, posttraumatic growth, physicians, nursing, pediatric intensive care unit.



### 4.3.2. Introduction

Working in intensive care is considered to be inherently stressful (Curtis & Puntillo, 2007). The context is plagued by a wide variety of stressors, such as time pressure, work overload, contact with patients and families suffering, critical life or death situations and sophisticated technologies, among others. Thus, it is not strange that professionals working in pediatric intensive care units (PICU) show high prevalence of mental health issues, and mainly burnout syndrome (BOS) and posttraumatic stress disorder (PTSD) (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995).

It is well documented that high rates of distress produce a negative impact in the work environment, involving diminished work effectiveness (Maslach, Schaufeli, Leiter, 2001), decreased quality of care (Shanafelt, Bradley, Wipf, Back, 2002; Arnedt et al. 2005), poor communication with the families (Shanafelt, Bradley, Wipf & Back, 2002; Shanafelt, Sloan & Habermann, 2003), increased turnover and absenteeism (Maslach, Schaufeli, Leiter, 2001). Nevertheless, the personal impact of BOS and PTSD for physicians, nurses and nursing assistants has received scarce attention.

In this line, Demerouti, Bakker, Nachreiner and Schaufeli (2000) found that high burnout rates are predictive of low *satisfaction with life* (SWL) among nurses. SWL is defined as a global assessment of a person's quality of life which is dependent upon a comparison of one's circumstances with what the person expects to have or achieve in his/her life (Diener, Emmons, Larsen & Griffin, 1985). Nevertheless, although there is a large body of literature about physician' distress, little is known about physician' wellness (Shanafelt, Sloan & Habermann, 2003). A longitudinal study conducted in a sample of young physicians in Switzerland (Klaghofer, Stamm, Buddeberg, et al. 2011) found that SWL in that group was lower than in the general population, which they explain as a consequence of their high rates of stress. In contrast, another longitudinal study in Norway (Nylenna et al. 2005) found high

levels of SWL among this group. To our knowledge the levels of life satisfaction have not been explored in PICU staff.

Given the high rates of BOS and PTSD of PICU staff, it is logical to expect a diminished SWL among them. However, the previous study presented in this dissertation found that almost 70% of PICU workers refer posttraumatic growth (PTG) to a “great or “very great” degree, which is defined as the perception of psychological changes as the result of one’s struggle with a potentially traumatic event (Tedeschi & Calhoun, 1996). Thus, it seems that the high demands and stress, as well as the potentially traumatic situations that PICU workers face in their workplace, do not only result in negative, but also in positive outcomes. However, the effect of PTG is physicians and nurses SWL has not been previously explored, but, as it is a positive outcome, we may expect that PTG will contribute to compensate the negative impact of distress in clinicians’ SWL.

Another important issue, is the study of how positive and negative consequences of traumatic events relate to each other. Research to date have yielded inconsistent findings. While some studies endorse a positive and linear relationship between positive and negative post-trauma symptoms (Helgeson, Reynolds & Tomich, 2006; Jin, Xu & Liu, 2014; Levine et al., 2009), Colville and Pierce (2012) found that the relation between PTSD and PTG has an inverted U-shaped curvilinear shape, with mediums levels of distress related to the highest PTG. Other authors have found negative relationships (Frazier, Tashiro, Berman, Steger & Long, 2004) and others, no relationship at all (Powell, Rosner, Butollo, Tedeschi & Calhoun, 2003). Thus, we think that it is important to explore the relation between positive and negative outcomes in our sample to better understand how the professionals are affected by experience of dealing with stress and critical situations in their workplace.

Given the gap of knowledge above described, the aims of this study are the following:

- (1) To study the levels of SWL in personnel working in PICU and to compare their levels with the ones of professionals working in other pediatric wards.
- (2) To explore the contribution of negative outcomes (burnout, PTSD) and positive outcomes of trauma (PTG) in predicting SWL.
- (3) To explore the relation between positive and negative outcomes of trauma in professionals working in PICU and in other pediatric wards.
- (4) To explore in which degree SWL is associated with sociodemographic and work related variables, such as working hours or deaths occurred in the unit.

### **4.3.3. Methods**

#### ***Participants***

The participants of this study were 298 professionals working in 9 different PICUs in Spain (57 physicians, 177 nurses and 64 nursing assistants), as well as 189 professionals working in pediatrics, but not on PICU (53 physicians, 104 nurses and 32 nursing assistants).

#### ***Procedure***

This is a multi-centric, cross sectional study. The IRB of the Hospital 12 de Octubre approved the study. A responsible of data collection was designed in every hospital. Participants were contacted in the pediatric ward where they work by that responsible and were asked for voluntary, anonymous and confidential participation.

#### ***Instruments***

- *Demographic questionnaire*: It assessed sex, age, marital status and number of children.

- *Professional activity questionnaire*: including profession (physician, nurse or nursing assistant), years of experience, years of experience in the PICU, number of night-shifts in the last week, number of deceased patients in their PICU in the last week, presence of conflicts

with patients/families and colleagues, number of days since the last free day, number of days worked in the last month, and desire to be transferred to another unit.

- *Maslach Burnout Inventory* (MBI; Maslach, Jackson & Leiter, 1996). This 22-item questionnaire assess the frequency of occurrence of different feelings in relation to their job in the last week in a 7-point Likert scale. It contains three dimensions: emotional exhaustion (EE), depersonalization (DE) and personal achievements (PA). A meta-analytic reliability generalization study of the MBI showed that the average reliability was .88 for emotional exhaustion, .71 for depersonalization and .78 for personal accomplishment (Aguayo, Vargas, de la Fuente, & Lozano, 2011). We used the Spanish translation by Seisdedos (1997).

- *Trauma Screening Questionnaire* (TSQ; Brewin et al, 2002). It is a 10-item measure with a yes-no response format that enquired about re-experiencing or arousal symptoms in the past week. The endorsement of six or more symptoms yields high levels of sensitivity and specificity for detecting PTSD (Brewin, 2005).

- *Posttraumatic Growth Inventory Short Form* (PTGI-SF; Calhoun et al., 2010). It is based in the 21-items original version by Tedeschi & Calhoun (1996). The PTGI-SF contains 10 items with a 6-point Likert response format ranging from 0 to 5. It includes five domains: (1) greater appreciation of life, (2) improved relationships with others, (3) greater personal strength, (4) recognition of new possibilities in one's life course, and (5) spiritual or religious growth. Both the English and the Spanish versions have shown adequate internal consistency – $\alpha$  ranging from .84 to .90 for the English version and  $\alpha = .83$  for the Spanish version (Cárdenas, Barrientos & Rovira (2015) –, and validity.

- *Satisfaction with Life Scale* (SWLS; Diener et al., 1985). This is the most popular scale for measuring SWL (Vassar, Ridge & Hill, 2088). It contains 5 items, which respondents are asked to answer on a 7-point Likert scale. Both the English (Diener et al., 1985) and the Spanish (Vázquez, Duque & Hervás, 2013) versions showed adequate internal consistency ( $\alpha = .87$  for

the English SWLS and  $\alpha = .88$  for its Spanish version) and a single factor solution. Scores between 30-35 are indicative of very high satisfaction, 25-29 of high SWL, 20-24 average, 15-19 slightly below average, 10-14 dissatisfied and 5-9 extremely dissatisfied.

### ***Statistical analyses***

First, descriptive analyses were conducted to study the levels of SWL in PICU personnel, and a Chi square test to compare their levels with the ones of non-PICU pediatric staff. Second, ANOVA tests and Pearson correlations were conducted to explore the relation of demographic and work-related variables to SWL. Third, we conducted correlations between BOS dimensions, PTG and SWL to explore how these variables relate to each other. Fourth, we conducted a path analysis with latent variables to study the effect of BOS, PTSD and PTG in predicting SWL. In order to assess model fit, absolute fit indexes ( $\chi^2$ ,  $\chi^2/df$ ), relative fit indexes (IFI) and non-centrality fit indexes (CFI, RMSEA, SRMR) were used, as well as criteria for acceptance or rejection described by Hair, Black, Babin, Anderson, & Tathan (2010) (ratio  $\chi^2/df < 5$ ; SRMR  $< .08$ ; RMSEA  $< .08$ ; GFI, CFI and IFI  $> .90$ ). Fifth, we conducted a multi-group cross-validation analyses to test the validity of the model. Finally two additional multi-groups analyses were conducted to compare how the model works for PICU and non-PICU workers, and for physicians, nurses and nursing assistants.

### **4.3.4. Results**

#### ***Demographics***

Of the subsample of PICU staff, 82.6% were women, with an average age of 40.20 years ( $SD = 9.25$ ). A percentage of 46.6% were married, 46.6% were single, 4.7% were divorced and 2% were widow. A half of the sample (50%) have children. In the subsample of non-PICU staff, 84.1% were women, with a mean age of 44.12 years ( $SD = 11.24$ ). Almost half of the participants were married (47.6%), 43.4% were single, 7.4% were divorced and 1.6% were widow, with a 56.6% having children.

### ***Work-related information***

Of the PICU subsample, 19.1% were physicians, 59.4% were nurses, and 21.5% were nursing assistants. Their average years of experience were 16.18( $SD= 8.38$ ), and in PICU 9.72 ( $SD= 8.38$ ). In the non-PICU sample, 28% were physicians, 55% nurses and 16.9% nursing assistants. Their average years of experience were 20.56 ( $SD= 11.62$ ).

The death of a patient occurred 8 times more frequently in the PICU, as the average number of deaths reported by PICU professionals in the last week was .056 ( $SD= .86$ ), while in not-PICU professionals it was .07( $SD= .30$ ). A total of 12.5% of PICU personnel and 7% of non-PICU personnel reported having had conflicts with colleagues in the last week, while 4.1% of PICU clinicians and 10.8% of non-PICU clinicians reported problems with patients or families. The percentage of professionals who would like to be transferred to other unit was 26.1% for PICU workers and 17.7% for non-PICU workers.

### ***Levels of satisfaction with life***

Of the sample of PICU staff, 16.4% showed very high SWL, 34.2% high SWL, 34.6% average SWL, 11.4% were slightly below average, 2.7% were dissatisfied and 0.7% were extremely dissatisfied. As a Chi-square test showed, these percentages were not significantly different for the subsample of pediatric staff not working in PICU ( $\chi^2= 1.10$ ;  $df =5$ ;  $p=.954$ ). Thus, for both, PICU and non-PICU staff, around 15% of the sample show levels of SWL below average.

### ***Influence of demographic and professional variables on SWL***

As Table 4.3.1 shows, women reported lower SWL than men. Also, there were significant differences by profession. As the post-hoc Bonferroni test showed, differences were only significant between physicians and nurses ( $p= .006$ ) and between physicians and nursing assistants ( $p=.003$ ), but not between nurses and nursing assistants ( $p=.970$ ). Thus, physicians

reported higher SWL than nurses and nursing assistants. Professionals who would like to be transferred to another unit reported the lowest SWL. Age and years of experience showed a weak negative correlation with SWL.

Table 4.3.1.

*Association of demographic and work-related variables with Satisfaction with Life. ANOVAs and Pearson Correlations.*

		Mean (SD)	ANOVA/ correlation
<b>Demographic variables</b>			
<b>Gender</b>	<b>Women</b>	<b>24.29(5.04)</b>	<b>F=5.13; p=.024</b>
	<b>Men</b>	<b>25.67(4.90)</b>	
Relationship status	With a couple	24.92(4.82)	F=2.67; p=.103
	Without	24.17(5.21)	
Having children	Yes	24.74(5.20)	F=.960; p=.328
	No	24.29(4.86)	
<b>Work-related variables</b>			
Working in PICU	Yes	24.49(5.03)	F=.046; p=.830
	No	24.59(5.08)	
<b>Profession</b>	<b>Physician</b>	<b>25.98(4.60)</b>	<b>F=6.55; p=.002</b>
	<b>Nurse</b>	<b>24.25(4.93)</b>	
	<b>N. assistant</b>	<b>23.67(5.54)</b>	
Any death last week	Yes	24.72(4.91)	F=2.31; p=.129
	No	23.92(5.41)	
Conflict work colleagues	Yes	24.10(5.13)	F=.493; p=.483
	No	24.63(5.03)	
Conflict patient/ families	Yes	23.16 (6.34)	F=2.57; p=.109
	No	24.64(4.96)	
<b>Wish to change</b>	<b>Yes</b>	<b>23.38(5.36)</b>	<b>F=8.11; p=.005</b>
	<b>No</b>	<b>24.93(4.92)</b>	
<b>Correlations for continuous variables</b>			
Age			<b>-.11*</b>
Years of experience			<b>-.090*</b>
Night shifts p. week			-.031
Days worked p. month			.063
Days since free day			.023

Note. SD = standard deviation \* =  $p \leq .05$ ; \*\* =  $p \leq .01$ ; \*\*\* =  $p \leq .001$ . Significant relations are marked in bold.

There wasn't any significant association with relationship status, having children, working in PICU or in another unit, the occurrence of the death of a child in the unit, or having had conflicts with work colleagues, or patients/families in the last week

### ***Correlations between BOS, PTSD, PTG and SWL***

As Table 4.3.2 shows, SWL is inversely correlated with emotional expression, depersonalization and PTSD. Its correlation with personal accomplishment and PTG was also significant but positive. Regarding PTG dimensions, all of them with the exception of new possibilities are positively correlated with SWL.

Regarding the correlation of PTG with burnout and PTSD, PTG and all its dimensions are positively correlated to personal accomplishment. The correlation of PTG and its dimensions new possibilities, spiritual growth and appreciation for life with PTSD was also significant and positive. The association between PTSD and PTG cannot be better explained by a curvilinear relation in the form of an inverted-U shape ( $p=.003$ ) than by a linear solution ( $p=.001$ ).

### ***Predictive model of SWL from BOS, PTSD and PTG***

We first randomly divided the sample into two groups, one for testing the model and the other for cross-validation. Then, a PALV was conducted using the first subsample (N=244) in order to explore the relation between distress (BOS and PTSD) and PTG with SWL (PALV). Figure 4.3.1 shows the standardized estimates as well as the squared multiple correlations for the model. As can be seen, 27% of the total variance in SWL was predicted from distress and PTG. Distress was the strongest predictor of SWL, and its relation to it was inverse. PTG was a significant and direct predictor of PTG, but its predictive effect was weaker.



Table 4.3.2.

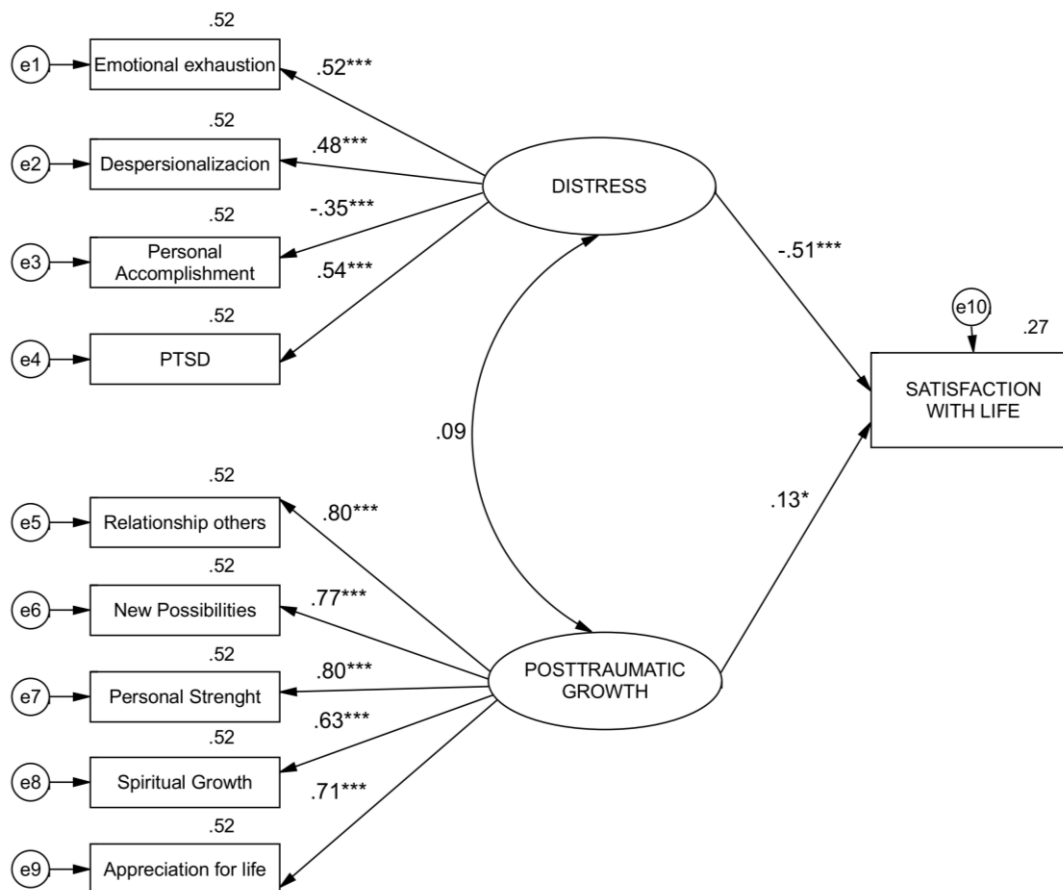
*Correlations between Burnout Syndrome dimensions (EE, DP and PA), Post-traumatic Stress Disorder (PTSD), Post-Traumatic Growth (PTG) total score and dimensions, and Satisfaction With Life (SWL) for the whole sample (N=487).*

	SWL	EE	DP	PA	PTSD	PTG	RO	NP	PS	SG	AL
SWL	1	-.295***	-.145***	.247***	-.192***	.160***	.167***	.052	.143**	.134***	.137**
EE		1	.339***	-.172***	.402***	.073	-.043	.085	.057	.088	.093*
DP			1	-.209***	.178***	.019	-.027	.024	.007	.063	.004
PA				1	-.147***	.179***	.201***	.106*	.148***	.117**	.141**
PTSD					1	.145***	.050	.133**	.079	.160***	.146***
PTG						1	.811***	.835***	.834***	.705***	-.762***
RO							1	.577***	.628***	.467***	.559***
NP								1	.609***	.492***	.616***
PS									1	.482***	.564***
SG										1	.299***
AL											1

*Note.* EE= Emotional Exhaustion; DP= Depersonalization; PA= Personal achievements; RO= relationship to others; NP= new possibilities; PS= personal strength; SG= spiritual growth; AL= appreciation for life.



Figure 4.3.1. Standardized estimates and squared multiple correlations for the predictive model of Satisfaction with Life (PALV).



Regarding the fit statistics, as Table 4.3.3 shows, all the adjustment indexes were well inside the limits that allow the model to be accepted, with the exception of the RMSEA which fell slightly short of the standard limits of acceptance. In order to test the validity of the model, a cross-validation analysis was carried-out (CVA). The fit statistics presented in Table 4.3.3 are all inside the limits of acceptance, and the model comparison statistics against the unrestricted model, establishing equality restrictions between groups for measurement weights ( $\Delta\chi^2 = 9.54, p = .39$ ), structural covariances ( $\Delta\chi^2 = 21.65, p = .48$ ) and measurement residuals ( $\Delta\chi^2 = 12.10, p = .52$ ) showed that fit is not significantly reduced in relation to the model without restrictions. Therefore, it may be concluded that the model is well estimated.

Table 4.3.3.

*Predictive model of SWL. Goodness of fit for path analysis with latent variables (PALV), cross validation analyses (CVA), and multiple group analyses (MGA).*

	$\chi^2$	<i>df</i>	<i>p</i>	$\chi^2/df$	GFI	IFI	CFI	RMSEA	SRMR
PALV (N=244)	83.39	33	<.001	2.56	.94	.93	.93	.080	.07
CVA (N=244/243)	189.72	88	<.001	2.16	.93	.92	.92	.049	.07
MGA-1 (N=298/189)	190.32	88	<.001	2.16	.93	.92	.92	.049	.08
MGA-2 (N=110/377)	177.55	78	<.001	2.23	.94	.92	.92	.051	.10

*Note.* GFI= Goodness of Fit Index; IFI= Incremental Fit Index; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual. SWL= Satisfaction with life. MGA-1 = multiple group analysis to compare the model for PICU staff with the model for staff working in other pediatric units. MGA-2= multiple group analysis to compare the model in physicians with the model in nurses and nursing assistants.

***Comparison of the model between PICU and non-PICU professionals***

In order to explore whether the relations in the model differed between these two groups, we conducted a second multiple group analysis, with subsamples of PICU and non-PICU staff (PALV-3). The adjustment indexes for this model are included on Table 4.3.3. The fit indexes do not significantly decrease when restrictions are imposed for measurement weights ( $\Delta\chi^2 = 2.90, p = .97$ ), structural covariances ( $\Delta\chi^2 = 9.10, p = .69$ ) and measurement residuals ( $\Delta\chi^2 = 21.14, p = .51$ ) so there are not differences in the model between samples.

***Comparison of the model between physicians and nurses/nursing assistants***

As there were differences in the level of life satisfaction between physicians and the rest of professionals, we conducted a third multiple group analysis, with samples of physicians on one side and nursing and nursing assistants on the other side (MGA-2), to explore whether the relations in the model differed for both groups. The adjustment indexes for this model are included on Table 4.3.3. The  $\chi^2$  fit index do not significantly decrease when restrictions are

imposed for measurement weights ( $\Delta\chi^2 = 14.82, p = .096$ ) and structural covariances ( $\Delta\chi^2 = 20.36, p = .06$ ). Thus, the relations in the model do not differ between samples.

### **5.3.5. Discussion**

To date, most of studies aimed at exploring the negative consequences of burnout and traumatic stress of nurses and physicians have focused on exploring how distress can impair their work effectiveness and the care they provide to their patients (Maslach et al., 2001; Shanafelt et al. 2005; Shanafelt et al., 2003). However, this study proves that, as expected, burnout and posttraumatic stress, as well as posttraumatic growth can also impact professionals' satisfaction with life.

The majority of PICU workers are satisfied with their lives, as more than 50% of the personnel report high or very high SWL. However, there is a lower but important percentage of professionals (14.8%) who are dissatisfied, which evidences the importance of studying which factors predispose to low life satisfaction. Our predictive model showed that 27% of the variance in SWL can be predicted from distress (burnout and PTSD) and PTG. The stronger predictor of low SWL is high distress, however PTG is also a significant –but weaker- predictor of SWL, acting in the opposite direction, as a protective factor for SWL.

Regarding the relation between positive and negative outcomes, in this study the only burnout dimension (positively) correlated with PTG was personal achievements, while depersonalization and emotional exhaustion were not related to PTG. PTSD and PTG were positively correlated. Consequently, our study supports the idea that positive and negative effects of traumatic events tend to coexist in the same person (Helgeson, Reynolds & Tomich, 2006; Jin, Xu & Liu, 2014; Levine et al., 2009). A possible explanation is that for PTG to occur, the event has to be upsetting enough to cause considerable disruption to the person's assumptions about how the world operates, and how he/she fit into this world (Janoff-Bulman, 2004). Therefore, individuals who are more negatively impacted by traumatic experiences

might have more opportunity for growth. In that sense, Helgeson et al. (2006) suggested that experiencing symptoms of PTSD such as intrusive and avoidance thoughts reflects a cognitive processing aimed at understanding traumatic events rather than markers of mental health. Experiencing intrusive thoughts about a stressor may be a signal that people are working through the implications of the stressor for their lives, and those implications could lead to growth. Consequently, as in our study individuals with higher PTSD tend to have PTG, and PTSD contributes to decrease SWL while PTG contributes to increase it, in individual highly distressed, PTG might be contributing to compensate the negative impact of PTSD in SWL.

Consistently with previous studies (McMurray et al., 2000) women showed lower SWL than men. With regards to work-related variables, even though the PICU represents a higher-risk environment than other pediatric wards (more time pressure, higher severity and mortality of the patients, etc.) the levels of SWL do not differ between PICU-staff and non-PICU staff. However, physicians are more satisfied with their lives than nurses and nursing assistants. As neither PTSD, burnout or PTG differ between physicians and nursing staff (as the two studies previously included in this dissertation have shown), we hypothesize that the explanation of this difference in SWL might be on the higher social and economic rewards received by physicians.

Our study has also shown that the percentage of professionals who would like to be transferred to a different unit is higher for PICU staff (26.1%) than for non PICU staff (17.7%). This fact confirms data that currently there is a lack of clinicians who desire to work in intensive care (Galván et al., 2014). As in our study higher desire to be transferred to a different unit is associated to lower SWL, developing programs and policies that provide them with support could contribute to reduce the shortage of critical care personnel.

We are aware that our study has some limitations. The main one is its cross sectional nature, which doesn't allow to establish causal relations. In consequence, results need to be

treated with caution, and should be replicated for further guarantees. Additionally, even though efforts were made to get the highest possible number of workers involved, not all the workers in every unit participated in the study. Thus, there is potential for bias.

In spite of its limitations, our study has some advantages and implications. Among the first ones is that it is multi-centric, having included nine hospitals from six different cities all around Spain. Additionally, we have included physicians, nurses and nursing assistants. Thus, we consider that we have a representative sample of the Spanish population of the PICU staff. Furthermore, having included a subsample of pediatric population not working in the PICU has made possible to make comparisons. Finally, the realization of multi-group analyses has made it possible to show that the model proposed is highly reliable, as it has remained constant among different sub-samples.

Regarding the implications of our study, as BOS and PTSD contribute to lower SWL, while PTG contributes to higher SWL, interventions aimed at decreasing distress and recognizing the positive effect of traumatic events might favor professionals' SWL. According to data from previous studies, interventions aimed at fostering PTG and decreasing distress should be focused on modifying the coping strategies used to face difficult situations (Colville et al., 2014; Shakespeare-Finch et al., 2005; Kirby, Shakespeare-Finch & Palk, 2011). However, even though the link between work and life satisfaction is undoubted (Demerouti et al., 2000), SWL is dependent on many other factors, such as personality characteristics, the individual's health status, or the degree in which individual's personal and social life satisfies that he/she wants and needs (Reig Ferrer et al., 2004). Thus, even if interventions in the workplace would be effective in decreasing negative and increasing positive impact of work-related adverse experience, they could have a limited impact in professionals' SWL. Nevertheless, the effect of such interventions should be evaluated in future research.

---

## **5. DISCUSIÓN GENERAL**

---

## 5.1. RESULTADOS PRINCIPALES

A continuación se presenta la Tabla 5.1 que resume los objetivos y resultados principales de cada uno de los estudios incluidos en esta tesis doctoral.

Tabla 5.1.

*Objetivos y principales resultados de los estudios que conforman esta tesis doctoral.*

	<b>Título</b>	<b>Objetivos principales</b>	<b>Resultados y discusión</b>
<b>PARTE I</b>	<b>Fiabilidad y Validez de la versión Española de la <i>Brief Resilience Scale</i> (BRS).</b>	Adaptar la BRS (que evalúa resiliencia entendida como la habilidad de recuperarse rápidamente tras situaciones estresantes) al castellano. Analizar la fiabilidad y validez de sus puntuaciones.	Las puntuaciones de la BRS mostraron adecuada fiabilidad. Los análisis factoriales conformatorios (AFA) mostraron que la BRS tiene una estructura monofactorial. Las puntuaciones también mostraron adecuada validez convergente, concurrente y predictiva. La versión española de la BRS es un instrumento fiable y válido.
	<b>Evaluación de afrontamiento desde la perspectiva persona-situación. Desarrollo y validación del Cuestionario Situacional de Afrontamiento para adultos.</b>	Desarrollar y validar el Cuestionario Situado de Afrontamiento para adultos (SCQA por sus siglas en inglés), que tiene en cuenta la dimensión situacional de las estrategias de afrontamiento, y estudiar sus propiedades psicométricas.	Los AFA mostraron que la situación influye en el grado en que las personas utilizan distintas estrategias de afrontamiento, pero éstas también son estables en cierta medida. Los análisis de regresión mostraron que los estilos de afrontamiento contribuyen a predecir resiliencia en la dirección esperada, apoyando la validez del cuestionario. El SCQA es un instrumento fiable y válido para evaluar afrontamiento desde una perspectiva situacional.
	<b>Factores de personalidad que subyacen a la resiliencia: Desarrollo y validación del Cuestionario de <i>Resiliency</i><sup>1</sup> para Adultos.</b>	Desarrollar y validar el Cuestionario de <i>Resiliency</i> para Adultos (RQA por sus siglas en inglés), basado en la teoría de Prince-Embury, que entiende <i>resiliency</i> como dos factores protectores: sentido de dominio y (SD), sentido de relación (SR) y uno de riesgo: reactividad emocional (RE).	Los AFA mostraron que tanto un modelo de dos como de tres factores se ajustan a los datos. Los <i>Path analyses</i> con variables latentes (PALV) mostraron que los <i>resiliency</i> factors predicen dos tercios de la varianza en resiliencia. SD es un factor protector para resiliencia. RE y (contrario a lo esperado) SR fueron factores de riesgo. El RQA es una herramienta fiable y válida.
	<b>Desarrollo y validación del Cuestionario Situacional de Resiliencia Subjetiva para Adultos.</b>	Desarrollar y validar Cuestionario Situado de Resiliencia Subjetiva para Adultos (SSRQA por sus siglas en inglés) que evalúa resiliencia frente a distintas situaciones adversas.	La situación influye en el grado en que las personas se auto-perciben como resilientes. Sin embargo la resiliencia también tiende a generalizarse transituacionalmente en cierta medida. El SSRQA es una herramienta fiable y válida para evaluar resiliencia desde una perspectiva situacional.

<sup>1</sup> El término “*resiliency*” se refiere a los factores personales del individuo que facilitan o dificultan la resiliencia. Se emplea para poder ser diferenciado el término “resiliencia” que se refiere a la capacidad del individuo de sobreponerse a las dificultades de los factores personales que lo hacen posible. Dado que no existe en castellano un término con el mismo significado que *resiliency*, emplearemos el término en inglés en esta sección.



	<b>Predicción de resiliencia subjetiva desde estrategias de afrontamiento y factores protectores de la personalidad (<i>resiliency</i>).</b>	Explorar en qué medida la resiliencia puede predecirse a partir de los estilos de afrontamiento utilizados – afrontamiento centrado en el problema (ACP) y afrontamiento centrado en la emoción (ACE)- y los factores de <i>resiliency</i> -sentido de dominio (SD), sentido de relación (SR) y reactividad emocional (RE)-.	Las estrategias de afrontamiento afectan a la resiliencia a través de la <i>resiliency</i> . Los individuos que usan más el ACP y menos el ACE mostraron mayor SD y SR y menor RE. SD predijo mayor resiliencia. RE y – en contra de lo esperado- SR predijeron menor resiliencia. Las intervenciones para fomentar la resiliencia deberían enfocarse en evitar el ACE y promover el ACP, evitando que las personas confíen exclusivamente en el apoyo externo para afrontar sus dificultades.
<b>PARTE II</b>	<b>Desarrollo de un instrumento de screening para la evaluación de estrés en padres de niños hospitalizados en cuidados intensivos pediátricos.</b>	<ol style="list-style-type: none"> <li>1) Validar un instrumento breve para evaluar estrés parental producido por los estímulos de la unidad de cuidados intensivos pediátricos (UCIP): la Escala Breve de Estrés Percibido Parental para UCIP (A-PSS:PICU por sus siglas en inglés)</li> <li>2) Estudiar qué factores del entorno de la UCIP son más estresantes para una muestra de padres españoles.</li> <li>3) Estudiar qué variables están relacionadas con estrés.</li> </ol>	<ol style="list-style-type: none"> <li>1) La escala A-PSS:PICU mostró dos factores, además de una adecuada fiabilidad y validez convergente y predictiva.</li> <li>2) Los aspectos más estresantes de la UCIP para los padres fueron las conductas y respuestas emocionales del niño y la pérdida del rol parental.</li> <li>3) Edad, género, estado de salud del niño, duración del ingreso, creencias espirituales y ventilación mecánica se asociaron con el nivel de estrés parental.</li> </ol>
	<b>La estructura factorial del <i>Posttraumatic Growth Inventory</i> (PTGI) en padres de niños críticamente enfermos.</b>	<ol style="list-style-type: none"> <li>1) Analizar la estructura factorial del Cuestionario de Crecimiento Postraumático (PTGI por sus siglas en inglés) en padres cuyos hijos fueron hospitalizados en cuidados intensivos y estudiar su validez de constructo en esta población.</li> <li>2) Incrementar nuestra comprensión del constructo crecimiento postraumático.</li> </ol>	<ol style="list-style-type: none"> <li>1) Emergieron tres factores que explicaron el 73.41% de la varianza: crecimiento personal, crecimiento interpersonal y crecimiento transpersonal.</li> <li>2) A pesar de que el PTGI ha mostrado estructuras factoriales diferentes en diversas poblaciones, las tres dimensiones de crecimiento originamente propuestas por Tedeschi y Calhoun parecen ser consistentes, lo que habla en favor de la validez de constructo de esta escala.</li> </ol>
	<b>El papel de la resiliencia en la predicción de psicopatología en padres tras el ingreso de su hijo en cuidados intensivos; un estudio longitudinal.</b>	<ol style="list-style-type: none"> <li>1) Explorar el grado en que los padres experimentan ansiedad, depresión y trastorno de estrés postraumático (TEPT) tres y seis meses después del ingreso de su hijo en UCIP.</li> <li>2) Estudiar el efecto de la resiliencia, las emociones positivas y negativas, el estrés y la percepción de gravedad del niño por parte de los padres en el nivel de psicopatología parental.</li> <li>3) Estudiar la relación del nivel de psicopatología parental con variables sociodemográficas y médicas.</li> </ol>	<ol style="list-style-type: none"> <li>1) Seis meses después del alta el 23.1% de los padres mostraron TEPT clínicamente significativo. El 21% y el 9% mostraron niveles moderados/ severos de ansiedad o depresión respectivamente. Estas tasas fueron iguales a los tres meses.</li> <li>2) Un PALV mostró que las variables psicológicas evaluadas tras el alta pudieron predecir el 48% de la varianza en psicopatología seis meses después. La resiliencia tuvo un fuerte efecto protector e indirecto mediado principalmente por el nivel de estrés experimentado durante el ingreso.</li> <li>3) Los padres con dificultades económicas, que habían tenido problemas de salud mental previamente, y cuyo hijo había sido ingresado en UCIP anteriormente mostraron mayor psicopatología.</li> </ol>

	<p><b>Resiliencia y crecimiento postraumático en madres y padres de niños críticamente enfermos: un estudio longitudinal.</b></p>	<ol style="list-style-type: none"> <li>1) Explorar el grado en que los padres indican haber experimentado crecimiento postraumático (CPT) seis meses después del alta de su hijo de la UCIP.</li> <li>2) Estudiar en qué medida resiliencia, emociones positivas y negativas y estrés evaluados al alta del niño predicen el grado de CPT generado por la experiencia del ingreso seis meses después.</li> </ol>	<ol style="list-style-type: none"> <li>1) Seis meses después del alta casi el 40% de los padres experimentaron CPT en gran o muy gran medida a raíz del ingreso de su hijo en UCIP en al menos una de sus dimensiones.</li> <li>2) El grado en que los padres experimentaron emociones positivas durante el ingreso fue la única variable relacionada con CPT, sin embargo esta variable estuvo positivamente influida por el nivel de resiliencia. Las intervenciones para fomentar el CPT en padres deberían centrarse en incrementar la resiliencia y las emociones positivas durante el ingreso.</li> </ol>
	<p><b>Relación entre psicopatología y crecimiento postraumático en padres tras el ingreso de su hijo en cuidados intensivos. ¿Dos caras de la misma moneda?</b></p>	<p>Explorar la relación entre psicopatología (TEPT, ansiedad y depresión) y crecimiento postraumático (CPT) en padres seis meses después del alta de su hijo de una unidad de cuidados intensivos.</p>	<p>Puntuaciones más elevadas en ansiedad, depression y TEPT se asocian a mayores puntuaciones en CPT. Las consecuencias positivas y negativas derivadas de afrontar una situación potencialmente traumática coexisten en la misma persona, y, por lo tanto, los padres que experimentan CPT no tienden a negar las dificultades.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>PARTE III</b></p>	<p><b>Burnout y estrés postraumático en personal de cuidados intensivos pediátricos. Su relación con resiliencia y estrategias de afrontamiento.</b></p>	<ol style="list-style-type: none"> <li>1) Estudiar la prevalencia de burnout y trastorno de estrés postraumático (TEPT) en una muestra de personal de UCIP y comparar sus niveles con los de profesionales de otras unidades de pediatría.</li> <li>2) Explorar en qué grado y cómo resiliencia y estrategias de afrontamiento contribuyen a predecir burnout y TEPT.</li> <li>3) Explorar la relación de burnout y TEPT con variables sociodemográficas y del entorno laboral.</li> </ol>	<ol style="list-style-type: none"> <li>1) Un 56% de los trabajadores de UCIP mostraron burnout en al menos una de sus dimensiones y el 20.1% mostraron TEPT. No hubo diferencias con profesionales de otras unidades.</li> <li>2) Un 30% de la varianza en las dimensiones de burnout y en TEPT pudo predecirse por un uso frecuente del estilo de afrontamiento centrado en la emoción y un uso infrecuente del centrado en el problema.</li> <li>3) Los profesionales mostraron niveles mayores de burnout y TEPT cuando la muerte de un paciente o conflictos con compañeros o pacientes/familiares habían ocurrido la semana previa.</li> </ol>
	<p><b>Crecimiento postraumático en personal de cuidados intensivos pediátricos y su relación con resiliencia y estrategias de afrontamiento.</b></p>	<ol style="list-style-type: none"> <li>1) Explorar el grado de crecimiento postraumático (CPT) en personal de UCIP por primera vez y compararlo con el de profesionales de otras unidades de pediatría.</li> <li>2) Explorar el papel de la resiliencia y las estrategias de afrontamiento en la predicción de CPT.</li> <li>3) Explorar la relación de variables demográficas y del entorno laboral con CPT.</li> </ol>	<ol style="list-style-type: none"> <li>1) Alrededor del 70% de los profesionales de UCIP mostraron CPT en gran o muy gran medida en al menos una de sus dimensiones. No hubo diferencias con trabajadores de otras unidades.</li> <li>2) Un 11% de la varianza en CPT pudo predecirse a partir del modelo propuesto. Resiliencia no se relacionó con CPT. Afrontamiento centrado en la emoción se relacionó positivamente con CPT en profesionales de UCIP, mientras que afrontamiento centrado en el problema lo hizo en ambos grupos.</li> <li>3) Los trabajadores mostraron mayor CPT cuando el fallecimiento de un niño o conflictos habían ocurrido recientemente en la unidad.</li> </ol>

	<p><b>Predicción de satisfacción con la vida en personal de cuidados intensivos pediátricos a partir de burnout, estrés postraumático y crecimiento postraumático.</b></p>	<ol style="list-style-type: none"> <li>1) Explorar el grado de satisfacción con la vida (SCV) en personal de UCIP.</li> <li>2) Estudiar la relación de SCV con variables demográficas y del entorno laboral.</li> <li>3) Estudiar cómo las consecuencias positivas (CPT) y negativas (burnout y TEPT) derivadas de trabajar en UCIP se relacionan entre sí y contribuyen a predecir los niveles de SCV de los profesionales.</li> </ol>	<ol style="list-style-type: none"> <li>1) Más del 50% de los profesionales de UCIP se mostraron satisfechos o muy satisfechos con su vida. El 14.8% mostró niveles bajos de SCV. Estos porcentajes no fueron diferentes para profesionales de otras unidades.</li> <li>2) Las mujeres mostraron menor SCV que los varones. Los médicos mayor SCV que el resto de profesionales.</li> <li>3) TEPT y PTG mostraron una correlación positiva. Las consecuencias positivas y negativas del trabajo en UCIP tienden a coexistir. Un 27% de la varianza en SCV pudo predecirse a partir de CPT (relación positiva), burnout y TEPT (relación negativa). Las intervenciones destinadas a reducir el estrés e incrementar CPT podrían repercutir en una mejora en la SCV.</li> </ol>
--	--	---	--

## 5.2. CONCLUSIONES GENERALES

En las próximas líneas presentaremos las conclusiones principales derivadas del conjunto de los estudios incluidos en esta tesis. Posteriormente, presentaremos sus limitaciones, las posibles futuras líneas de investigación derivadas de los mismos y sus implicaciones de cara a la evaluación y a la práctica clínica.

### 5.2.1. Los determinantes de la resiliencia

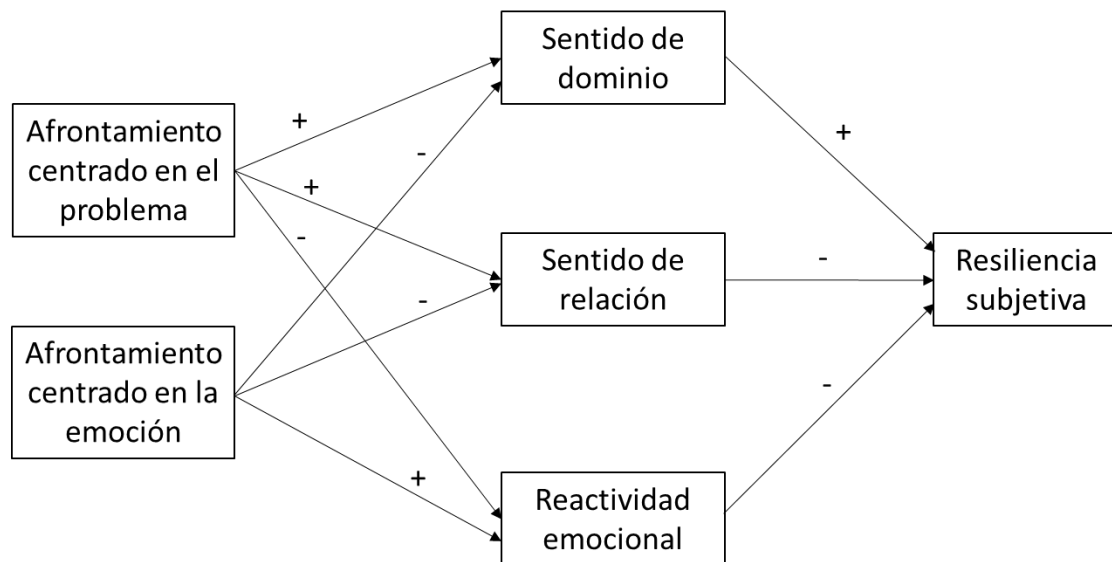
La primera sección de esta tesis (parte I) aporta información relevante sobre los factores que pueden determinar el nivel de resiliencia de un individuo, entendiendo resiliencia como la habilidad de sobreponerse tras situaciones difíciles o estresantes. Basándonos en datos de estudios previos, habíamos hipotetizado que el nivel de resiliencia percibida de una persona dependería de las estrategias y estilos de afrontamiento que utilizase (ej., Leipold & Greeve, 2009), y de sus factores protectores/de riesgo de personalidad (ej., Prince-Embury & Courville, 2008), lo que se ha visto confirmado por nuestros resultados. En consecuencia, de acuerdo con la literatura previa, la resiliencia es multi-determinada y depende, entre otros factores, de características personales del individuo (“Reaching In... Reaching out”, 2010).

Con respecto a la dirección de la relación entre afrontamiento, factores protectores y de riesgo de la personalidad (*resiliency*) y resiliencia subjetiva, nuestros estudios han mostrado que parece seguir la dirección representada en el siguiente cuadro:

Estrategias de afrontamiento → Factores de <i>Resiliency</i> → Resiliencia subjetiva
--

Como muestra este diagrama, la relación entre afrontamiento y resiliencia subjetiva está mediada por los factores personales protectores o de riesgo (*resiliency*). En consecuencia, modificando las estrategias de afrontamiento que los individuos utilizan para hacer frente a los problemas, podría modificarse la percepción de sus características personales, lo que podría impactar en su habilidad percibida para sobreponerse a la adversidad (resiliencia subjetiva).

Con respecto a las estrategias de afrontamiento y factores de *resiliency* específicos que están relacionados con resiliencia, nuestros resultados muestran que el estilo de afrontamiento centrado en el problema se relaciona con mayor resiliencia subjetiva, así como las estrategias de afrontamiento específicas que conforman este estilo (ej. solución de problemas, pensamiento positivo y aprendizaje de los problemas), con la excepción de búsqueda de ayuda, que no se relaciona con resiliencia. Por el contrario, un estilo de afrontamiento centrado en la emoción se relaciona con menor resiliencia, así como las estrategias que lo conforman (ej. rumiación, auto-culpabilización). Sin embargo, la relación entre coping y resiliencia, como ya hemos mencionado previamente, no es directa sino mediada por los tres factores de *resiliency* estudiados: Sentido de Dominio (SD), Sentido de Relación (SR) y Reactividad Emocional (RE). La dirección de las relaciones encontradas en nuestros estudios, se encuentran resumidas en el siguiente diagrama. Las relaciones positivas están representadas con el signo “+” y las negativas con el signo “-”.



Como muestra el diagrama, los individuos que puntúan más alto en afrontamiento centrado en el problema y más bajo en afrontamiento centrado en la emoción mostraron puntuaciones mayores en SD y SR, pero puntuaciones menores en RE. En consecuencia, estas personas: 1) muestran mayor optimismo, autoeficacia y adaptabilidad (componentes de SD), 2) confían más en los demás, perciben mayor apoyo social y se sienten más cómodos en sus relaciones con los otros (componentes de SR) y 3) la intensidad de sus respuestas emocionales negativas es menor y son capaces de auto-regular sus emociones (componentes de RE).

Con respecto a la relación entre los factores de *resiliency* y resiliencia, SD se relaciona con mayor resiliencia, mientras que RE y SR se relacionan con menores puntuaciones en resiliencia. La relación positiva entre resiliencia y SD, así como la negativa entre RE y resiliencia eran resultados esperados, ya que tener alto SD implica tener más recursos internos para hacer frente a los problemas (ej. optimismo) mientras que puntuar alto en RE indica una falta de habilidades de auto-regulación emocional. Sin embargo, el hecho de que SR se relacione negativamente con resiliencia es un resultado inesperado, ya que según la teoría de Prince-Embury es un factor protector. Este resultado podría estar indicando que confiar en el apoyo externo cuando nos enfrentamos a la adversidad puede ser un índice de resiliencia, pero únicamente si la persona ha intentado previamente afrontarla por sí misma y no lo ha

conseguido. Sin embargo, si una persona parte de confiar en su apoyo para resolver la situación en lugar de tratar de afrontarlo por sí misma, esto podría estar indicando una falta de resiliencia. Todo ello tiene importantes implicaciones para la intervención, como se describirá posteriormente en la sección de implicaciones.

Un hallazgo adicional es que el grado en que las estrategias de afrontamiento y factores de *resiliency* se relacionan con resiliencia tiende a variar dependiendo del contexto en que se produzca la dificultad (por ejemplo, la estrategia de afrontamiento “solución de problemas” se relaciona con resiliencia frente a todas las situaciones problemáticas salvo los problemas de salud de una persona cercana). Este hecho indica que algunas estrategias de afrontamiento pueden facilitar que la persona responda positivamente a determinados contextos pero no a otros. En consecuencia, la flexibilidad en la utilización de distintas estrategias de afrontamiento en cada contexto parece ser un aspecto importante a tener en cuenta.

Para terminar describiendo nuestros resultados sobre los factores personales relacionados con resiliencia, nos gustaría mencionar que, a parte de las estrategias de afrontamiento y los factores de *resiliency*, nuestros estudios han confirmado que hay algunas características demográficas que se relacionan con la misma. Encontramos que, de forma consistente con estudios previos (Smith et al., 2008; Bonanno et al., 2007), las mujeres mostraron menores puntuaciones en resiliencia. Esto es coherente con el hecho de que en los estudios en el ámbito del trauma, las mujeres muestren de forma consistente niveles más elevados de psicopatología que los varones (Brewin et al., 2000). Aunque esta tesis no ofrece información acerca de las razones que podrían explicar esta diferencia, pensamos que la razón podría estar en las diferencias en regulación emocional entre hombres y mujeres que se han encontrado en estudios previos, entendiendo “regulación emocional” como el conjunto de actividades que permiten a un individuo monitorizar, evaluar y modificar la naturaleza y curso de su respuesta emocional para conseguir sus metas y responder a las demandas del entorno

(Cole, Martin, Dennis, 2004). De acuerdo con una revisión (Nolen-Hoeksema, 2012), las mujeres emplean respuestas más internalizadas y pasivas a sus emociones (ej. rumiación), lo que está asociado a mayor psicopatología y podría explicar también las diferencias de género en resiliencia.

Además, nuestros estudios confirmaron que, de acuerdo a la literatura previa (Brewin et al., 2000; Bonanno et al., 2007; Smith et al., 2010), las personas más jóvenes muestran niveles menores de resiliencia. Esto podría ser una consecuencia de diferencias de edad en el procesamiento emocional, ya que la literatura ha mostrado de forma consistente que los individuos de más edad experimentan menores niveles de emociones negativas, mayores niveles de emociones positivas y tienen un control emocional mejor que las personas más jóvenes (ej. Yeung, Wong & Lok, 2011). Finalmente, y también de forma coherente con estudios previos (Frankenberg et al., 2013), aunque contraria a otros (Bonanno et al., 2007), las personas con niveles educativos superiores mostraron niveles más elevados de resiliencia, lo que apoya la idea de que tiene un efecto protector.

### **5.2.2. Afrontamiento y resiliencia ¿Estables o dependientes del contexto?**

Los estudios de la parte I pretendían, entre otros objetivos, explorar en qué medida resiliencia y afrontamiento eran características estables del individuo o aspectos que tendían a variar situacionalmente.

Empezando con las estrategias de afrontamiento, las situaciones juegan un importante papel en el grado en que las personas las utilizan, como han mostrado los análisis factoriales confirmatorios (AFA) utilizando técnicas de análisis bi-factoriales. En consecuencia, y de forma coherente con la literatura previa, las estrategias de afrontamiento no son rasgos estables, ya que implican una respuesta a demandas específicas internas y externas (Lazarus & Folkman, 1984) que pueden cambiar de una situación a otra. Así, los individuos no enfrentan todas las situaciones empleando las mismas estrategias de afrontamiento. Sin embargo, nuestros

estudios también apoyan la idea de que dichas estrategias también tienden a generalizarse en cierta medida (Schwarzer & Schwarzer, 1996; Steed, 1998), ya que las personas pueden tender también a emplear de forma consistente las mismas estrategias para dar respuesta a situaciones distintas.

Lo mismo ocurre en el caso de la resiliencia, ya que depende de ambos aspectos: las tendencias de cada individuo y la situación a la que se enfrentan. En consecuencia, de acuerdo con Luthar (2006), nuestros estudios apoyan la idea de que un individuo puede mostrar resiliencia frente a algunas situaciones pero no frente a otras, y, al mismo tiempo también tiende a generalizarse en cierto grado.

### **5.2.3. La UCIP como un entorno de alto riesgo susceptible de generar psicopatología**

Los estudios de las partes II y II de la tesis tenían como objetivo explorar los efectos de la resiliencia subjetiva en las consecuencias psicológicas derivadas de afrontar un contexto particularmente difícil: la Unidad de Cuidados Intensivos Pediátricos (UCIP).

Los porcentajes de la muestra de padres que mostraron niveles clínicamente significativos de trastorno de estrés postraumático (TEPT) (23.1%), ansiedad moderada-severa (21%) y depresión moderada-severa (9.1%) seis meses tras el alta, así como la elevada prevalencia en profesionales sanitarios tanto de burnout (56% en al menos una de sus dimensiones) como de TEPT (20.1%) confirman que la UCIP es un contexto de alto riesgo tanto para los padres de los niños ingresados como para los trabajadores.

Las tasas de psicopatología que han emergido en nuestros estudios con muestras españolas son similares a las que se han encontrado en estudios previos realizados con padres (Balluffi et al., 2004; Bronner et al., 2008; Bronner et al., 2010; Colville & Gracey, 2006; Colville & Pierce, 2012; Fauman et al., 2011) y profesionales de cuidados intensivos (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995; Mealer et al., 2007), la mayor parte de ellos realizados con muestras anglosajonas. En consecuencia, aunque puedan existir diferencias



culturales, el entorno de la UCIP parece ser tan amenazante para la población española como ha mostrado ser para personas de otros países.

La alta prevalencia de distrés en padres y personal de UCIP confirma la importancia de investigar en resiliencia en este contexto.

#### **5.2.4. Crecimiento postraumático como un fenómeno frecuente tras experimentar situaciones potencialmente traumáticas**

A pesar de que la UCIP es un contexto de alto riesgo susceptible de generar psicopatología, nuestros estudios también confirman que el crecimiento postraumático (CPT), fenómeno que ocurre frecuentemente tras haber experimentado una situación potencialmente traumática (ej., Tedeschi & Calhoun, 1995; Lee et al., 2010; Polatinsky & Esprey, 2000; Picoraro et al., 2014), puede ocurrir tras la experiencia de tener un hijo ingresado en esta unidad.

Además, la parte III de esta tesis ha mostrado que este fenómeno también es muy común en individuos que están expuestos a situaciones potencialmente traumáticas en su entorno laboral, lo cual es coherente con los estudios realizados en personal de ambulancias de emergencias (Shakespeare-Finch et al., 2003; Shakespeare-Finch et al., 2005).

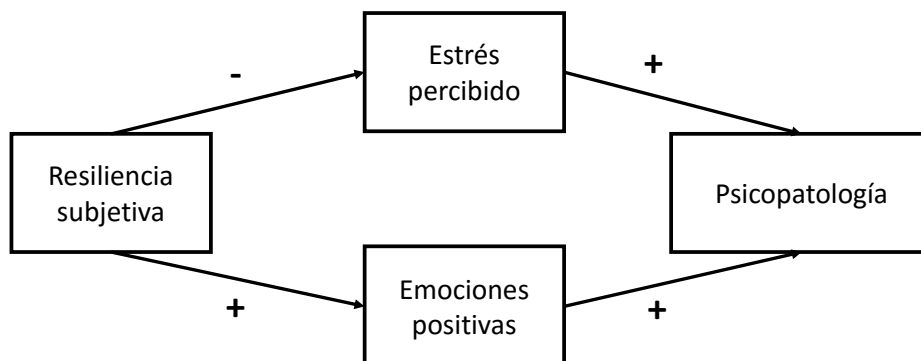
A pesar de que el CPT es un fenómeno común a ambos grupos, los profesionales sanitarios parecen manifestarlo casi con el doble de frecuencia que los padres.

#### **5.2.5. El efecto de la resiliencia subjetiva sobre la salud mental en padres de niños críticamente enfermos y trabajadores de cuidados intensivos pediátricos**

Nuestros estudios han mostrado que la resiliencia subjetiva, entendida como la capacidad auto-percibida de enfrentarse a las dificultades con éxito, es un factor protector para la salud mental de los padres de niños críticamente enfermos tras su hospitalización en UCIP. Esto es coherente con la literatura que ha explorado el efecto de la resiliencia en adultos que sufren de diversas enfermedades (ej., Dale et al., 2014; Eicher et al., 2015; Maestas et al.,

2014; et al., 2012) y en padres de niños con cáncer (ej., Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014; Gudmundsdottir et al., 2011).

Un nuevo hallazgo ha emergido de los estudios realizados con padres es el hecho de que el efecto protector de la resiliencia sobre la salud mental, aunque muy significativo, es indirecto. Dicho efecto se produce principalmente a través del grado en que los padres perciben estrés durante el ingreso de su hijo. Este hallazgo implica un acercamiento a la comprensión del mecanismo por el cual resiliencia actúa como factor protector. Como han manifestado estudios previos (Bonanno et al., 2011), los individuos más resilientes experimentan menos estrés durante el evento adverso (en este caso el ingreso crítico del niño). Esta menor vivencia de estrés en el período peri-traumático conduce a que tengan una mejor salud mental meses después (Balluffi et al., 2004). Por otro lado, de forma contraria a lo esperado, aunque los individuos resilientes muestren más emociones positivas durante el ingreso, esta tendencia se asocia de forma débil pero significativa con mayor psicopatología meses después. Dado que era la primera vez que la relación entre estas variables era estudiada en este grupo poblacional, unido a que este resultado contradice la literatura previa (Fredrickson et al., 2003) pensamos que la relación entre estas variables debería ser estudiada en otras muestras de padres de niños críticamente enfermos antes de sacar conclusiones más definitivas. Las relaciones entre las variables mencionadas se muestran en el siguiente diagrama:



De la dirección de estas relaciones se derivarán diversas implicaciones para la intervención orientada a reducir psicopatología en padres de niños críticamente enfermos, como se describirá posteriormente en la sección de implicaciones.

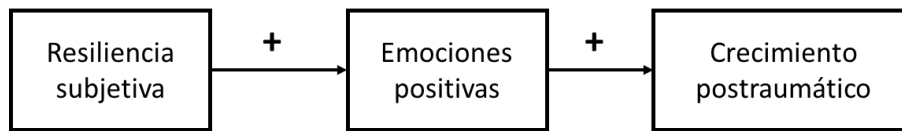
Por otra parte, en la muestra de profesionales sanitarios, niveles más altos de resiliencia subjetiva correlacionaron significativamente con menores niveles de burnout y TEPT. Sin embargo, cuando el modelo de predicción de las dimensiones de burnout y de TEPT fue puesto a prueba mediante *Path analyses* con variables latentes (PALV por sus siglas en inglés), la resiliencia se relacionó únicamente con despersonalización (una de las dimensiones de burnout) y solo en el grupo de profesionales de UCIP. Esto puede implicar que para personas que se hayan constantemente expuestas a eventos traumáticos, como el personal de UCIP, un nivel mayor de resiliencia puede relacionarse con la habilidad de ser capaz de regular la propia compasión por los otros (Cadge & Hammonds, 2012). El PALV también mostró que un uso frecuente de un estilo de afrontamiento centrado en el problema y un uso infrecuente del estilo de afrontamiento centrado en la emoción están relacionados con menores niveles de distrés, lo cual es consistente con los resultados hallados en la parte I de esta tesis y con estudios previos (Colville et al., 2014). Estos resultados también tienen importantes implicaciones para la intervención, como será descrito posteriormente.

#### **5.2.6. El efecto de la resiliencia subjetiva en el crecimiento postraumático de padres de niños críticamente enfermos y trabajadores de cuidados intensivos pediátricos**

Aunque partimos de la idea de que resiliencia y crecimiento postraumático (CPT) son fenómenos distintos a pesar de haber sido considerados frecuentemente equivalentes (Westphal & Bonanno, 2007), considerábamos que estos dos fenómenos podían estar relacionados. Por ello explorar esta relación ha sido uno de los objetivos de las partes I y II de esta tesis.

Los resultados han mostrado que la relación entre resiliencia y CPT no es significativa. Sin embargo los estudios realizados en la muestra de padres han mostrado que la resiliencia

puede afectar al CPT a través del grado en que los padres experimentan emociones positivas durante el ingreso en UCIP de sus hijos. La relación entre resiliencia, emociones positivas y CPT se resume en el siguiente diagrama:



Como puede verse, la resiliencia subjetiva puede afectar al CPT a través de su relación con las emociones positivas experimentadas durante el evento crítico. Estos estudios apoyan los resultados de Fredrickson (2003), quién encontró que las emociones positivas mediaron la relación entre ego-resiliencia y CPT tras los atentados del 11 de Septiembre en los Estados Unidos. La influencia de las emociones positivas en CPT puede explicarse por la *teoría broaden-and-build* de las emociones positivas desarrollada por Fredrickson (2000), que propone que experimentar emociones positivas durante el evento crítico amplía los modos habituales de actuar o pensar de las personas, lo cual puede conducir a un CPT capaz de persistir una vez que el evento traumático ha finalizado. Así, aunque nuestros estudios no han apoyado los efectos beneficiosos de experimentar emociones positivas en el período peri-traumático en términos de reducción de psicopatología, si lo han hecho en términos de contribuir al incremento del CPT experimentado tras el ingreso de un hijo en una UCIP.

Por otra parte, los resultados de los estudios realizados con la muestra de profesionales sanitarios también han mostrado que resiliencia no está relacionada con crecimiento. Sin embargo, este estudio también ha mostrado que las estrategias de afrontamiento sí fueron capaces de predecir CPT. Según lo esperado (Kirby et al., 2011), la utilización de un estilo de afrontamiento centrado en el problema se relacionó con mayor CPT. Sin embargo, el estilo de afrontamiento centrado en la emoción se relacionó también positivamente con CPT, pero sólo en el grupo de profesionales de UCIP. Esto equivaldría a decir que emplear estrategias que *a*

*priori* pueden resultar desadaptativas para afrontar la mayoría de las situaciones cotidianas (ej. rumiación, auto-culpabilización) pueden conducir a mostrar crecimiento cuando son empleadas por individuos que están constantemente expuestos a situaciones traumáticas, como el personal de UCIP. Estos resultados apoyan la idea de que las estrategias de afrontamiento no son adaptativas o desadaptativas *per se*, sino que cada estrategia particular puede o no serlo dependiendo de la circunstancia en que la persona la utilice.

### **5.2.7. La relación entre las consecuencias psicológicas positivas y negativas de enfrentarse a un acontecimiento traumático**

Como ya hemos mencionado en los apartados anteriores, nuestros estudios han puesto de manifiesto que tanto la ocurrencia de problemas psicológicos (ej. TEPT) como la de CPT son frecuentes tras haber experimentado una situación traumática. Un hallazgo relevante que ha emergido de forma consistente en nuestros estudios es que dichos efectos positivos y negativos están positivamente relacionados. En concreto, en los estudios llevados a cabo con la muestra de padres de niños críticamente enfermos, TEPT, ansiedad y depresión se relacionaron con mayor CPT. Por otro lado, en los estudios llevados a cabo con la muestra de personal sanitario, TEPT también se relacionó con mayor CPT. Dichas relaciones positivas son consistentes con los resultados de muchos de los estudios previos (Helgeson et al., 2006; Levine et al., 2009; Morris et al., 2005; Taku et al., 2007; Jin et al., 2014).

Así, nuestros estudios muestran que las consecuencias positivas y negativas derivadas de experimentar una situación adversa tienden a coexistir en la misma persona. El hecho de que los individuos que se han visto más negativamente afectados por la experiencia sean también los que manifiestan mayor crecimiento es un resultado aparentemente contradictorio que puede ayudarnos a comprender mejor el fenómeno del CPT. Una primera posible explicación es que para que el CPT tenga lugar, el evento tiene que ser lo suficientemente disruptivo como para que la persona se cuestione sus asunciones sobre cómo funciona el mundo

y cómo se sitúan ante el mismo (Janoff-Bulman, 2004). De este modo, es probable que los individuos que se han visto más negativamente afectados por la experiencia difícil tengan más oportunidades de crecer, mientras aquellos que la enfrentan con menor dificultad son menos propensos a llevar a cabo el proceso de dotar sentido a sus vidas nuevamente que puede llevar al CPT. Esta explicación puede resumirse en la frase siguiente frase: “Ningún mar en calma hace experto a un marinero”. Por otra parte, de acuerdo con Helgeson et al., (2006), también es posible que algunos síntomas de TEPT, como los pensamientos intrusivos, reflejen más un procesamiento cognitivo destinado a entender y procesar el evento traumático que un indicador de salud mental. En consecuencia, experimentar estos síntomas podría indicar que la persona está procesando el evento, lo que puede conducir al desarrollo de CPT.

Una segunda explicación a esta relación positiva podría ser que las medidas de CPT que se toman poco tiempo después del evento traumático estén reflejando más una estrategia cognitiva para hacer frente al malestar, o un crecimiento ilusorio, que un crecimiento real (McFarland & Alvaro, 2000; Sumalla et al., 2009). De acuerdo con esta idea, el “CPT real” necesita tiempo para producirse. Por ello es posible que seis meses (tiempo transcurrido entre el alta del niño de la UCIP y la evaluación de CPT en los padres) no haya sido un período de tiempo suficiente para que se produzca crecimiento real. Esta idea es coherente con los datos de un metaanálisis (Helgeson et al., 2006) que concluyó que CPT tiende a relacionarse en mayor medida con mejor salud mental cuando habían pasado al menos dos años desde el evento traumático. Esta posibilidad podría explicar la asociación positiva entre psicopatología y CPT en el grupo de padres, pero dejaría sin explicar la relación positiva entre TEPT y CPT en el grupo de profesionales sanitarios, ya que la media de tiempo que los participantes de este estudio habían estado trabajando en UCIP fue de casi 10 años. Esto implicaría que estos profesionales han estado expuestos a situaciones potencialmente traumáticas tiempo suficiente como para que el CPT que manifiestan sea real. En conclusión, pensamos que la primera

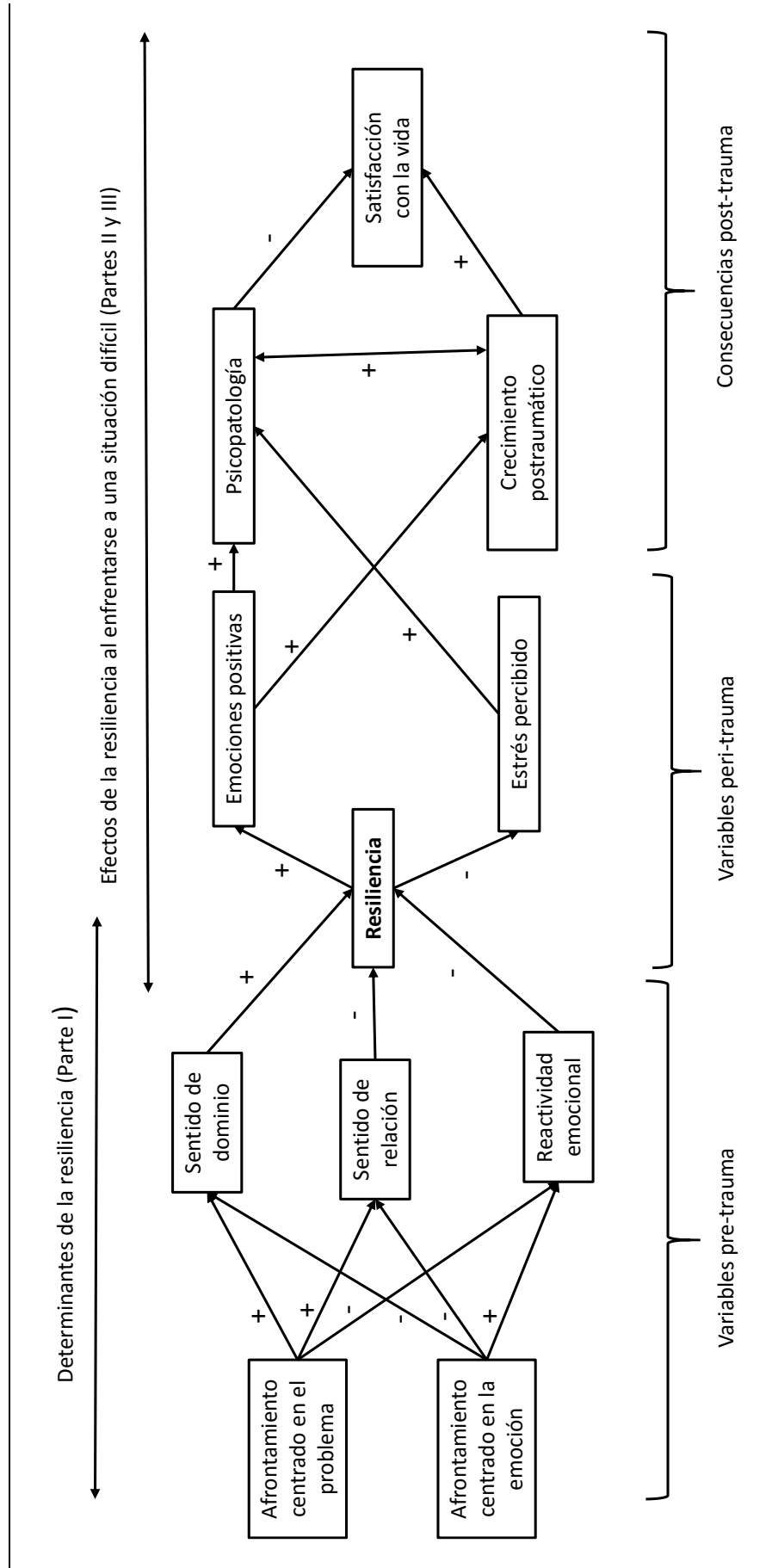
explicación proporciona una mejor comprensión acerca de la relación positiva entre psicopatología y CPT.

Para concluir, uno de nuestros estudios también exploró cómo estas consecuencias positivas (CPT) y negativas (burnout, TEPT) de trabajar en cuidados intensivos pediátricos fueron capaces de predecir la satisfacción con la vida (SCV) de los profesionales sanitarios. Encontramos que ambos contribuyeron significativamente a predecirla, sin embargo el nivel de distrés contribuyó negativamente (a mayor distrés menor SCV) mientras que el CPT contribuyó positivamente (a mayor CPT mayor SCV). Dado que los efectos positivos y negativos, como ya hemos mencionado, coexisten en la misma persona, el CPT podría compensar el efecto negativo del distrés sobre la satisfacción vital en los profesionales que se han visto muy afectados por la experiencia traumática.

#### **5.2.8. Resumen de las relaciones entre las variables incluidas en esta tesis**

Con el objetivo de añadir claridad a la presentación de nuestras conclusiones, incluimos en la siguiente página un diagrama que resume las relaciones principales entre las variables que se han explorado en esta tesis doctoral, y que acabamos de describir.

Figura 5.1. Diagrama resumen de las principales relaciones entre las variables exploradas en esta tesis.





### **5.3. LIMITACIONES DE LOS ESTUDIOS DE ESTA TESIS**

Los estudios incluidos en esta tesis doctoral tienen una serie de fortalezas que les convierten en relevantes para el avance en la investigación en el área de la resiliencia desde una perspectiva teórica, metodológica y aplicada. Sin embargo, también tienen limitaciones que restringen el alcance de nuestros resultados. A continuación se presenta una descripción de las mismas. Específicamente nos referiremos a las siguientes áreas: diseño de los estudios, representatividad de las muestras empleadas, variables de los estudios e instrumentos de evaluación.

#### **5.3.1. Diseño de los estudios**

Una de las principales limitaciones de nuestro trabajo tiene que ver con el hecho de que los estudios incluidos en las partes I y III tienen un diseño transversal, lo que imposibilita el establecimiento de relaciones causales. En consecuencia, a pesar de que hemos hipotetizado relaciones secuenciales entre las variables estudiadas (ej. afrontamiento, factores de *resiliency* y resiliencia), no podemos afirmar que una variable sea la causa de la otra.

En los estudios incluidos en la parte II hemos superado parcialmente esta limitación al haber empleado un diseño de tipo longitudinal, que ha incluido evaluaciones de los padres en tres momentos diferentes. Sin embargo, como consecuencia de las dificultades a la hora de conseguir una muestra de personas atravesando un momento tan delicado, unido a las dificultades derivadas de mantenerlas a lo largo del estudio, la muestra de este estudio ha sido menor que las empleadas en las partes I y III, lo que ha impedido realizar análisis multi-grupo para realizar una validación cruzada de los modelos desarrollados.

#### **5.3.2. Representatividad de las muestras**

Para llevar a cabo los estudios incluidos en la parte I, empleamos una muestra que incluyó tres sub-muestras: “población general”, “personas experimentando problemas de

salud”, y “padres de un niños con un problema de salud o de desarrollo”. Dado que empleamos muestras de conveniencia, la primera sub-muestra estuvo principalmente formada por profesores universitarios y estudiantes, lo que podría no representar bien a la población general en términos de nivel educativo y socioeconómico. La segunda sub-muestra estuvo formada por adultos con VIH o cáncer, y la tercera por padres de niños con diferentes diagnósticos (ej. cáncer, autismo). Dado que algunos de los diagnósticos estaban infrarrepresentados en nuestra muestra, no pudimos establecer comparaciones entre personas con problemas específicos (ej. padres de niños con cáncer versus padres de niños con problemas de desarrollo). Dado que podría haber diferencias relevantes dentro de los grupos incluidos en cada submuestra, sería interesante explorar este aspecto en el futuro.

Con respecto a los estudios de la parte II, la muestra de padres fue recogida en una sola UCIP, lo que podría limitar la generalización de nuestros resultados. Además, aunque se hayan hecho esfuerzos considerables por mantener a los padres y madres en el estudio (ver el protocolo para la recogida de datos en el Anexo B, página 440), algo menos de una cuarta parte de los participantes no completaron las tres evaluaciones. Además, dado que su negación para participar o continuar en este estudio puede estar reflejando un comportamiento evitativo (siendo la evitación uno de los síntomas que conforman un diagnóstico de TEPT), es posible que la muestra de padres con este diagnóstico en nuestro estudio esté infrrepresentada.

En último lugar, con respecto a los estudios de la parte III, se han invertido esfuerzos en asegurar la representatividad de la muestra, empleando un diseño multicéntrico que ha incluido un total de nueve hospitales. Sin embargo, es posible que sólo los profesionales con mayor distrés hayan decidido participar como un modo de expresar su malestar, o que los individuos con burnout o TEPT severos hayan participado menos (Curtis y Puntillo, 2007), lo que, como en el caso de los padres podría estar mostrando un comportamiento de evitación. A pesar de ello, no creemos que exista una solución para evitar estos posibles sesgos en futuros estudios

con familiares de niños enfermos o profesionales, ya que el respeto a las decisiones de los participantes con respecto a su colaboración en los estudios ha de ser una prioridad en el código ético de los investigadores.

### **5.3.3. Variables de los estudios**

Cada estudio de esta tesis ha incluido distintas variables, con un énfasis principal en el estudio de la resiliencia. Aunque basándonos en los resultados de los distintos estudios hemos propuesto el modelo general mostrado en la Figura 5.1, ninguno de nuestros estudios ha incluido todas las variables comprendidas en el mismo (afrentamiento, factores de *resiliency*, resiliencia subjetiva, emociones, estrés percibido, psicopatología, crecimiento postraumático y satisfacción con la vida). Así, por ejemplo, los estudios realizados con padres han incluido la evaluación de la resiliencia subjetiva, el estrés y las emociones positivas como medidas predictoras (variables independientes), y los niveles de TEPT, ansiedad, depresión y CPT como variables dependientes. Sin embargo, estos estudios no incluyeron la evaluación de los determinantes de la resiliencia (afrentamiento y factores de *resiliency*), asumiendo que los resultados derivados de la parte I serían aplicables a los padres de niños críticamente enfermos. Esta asunción, sin embargo, debería ser confirmada en futuros estudios.

### **5.3.4. Instrumentos de evaluación**

Todos los instrumentos de evaluación utilizados en esta tesis son de tipo autoinforme, lo que podría tener importantes limitaciones que hemos intentado contrarrestar dedicando importantes esfuerzos al estudio de las propiedades psicométricas de los cuestionarios empleados. Sin embargo, algunos de los cuestionarios utilizados han sido expresamente desarrollados para los estudios realizados (ej. el *Situated Coping Questionnaire for Adults*, el *Situated Subjective-Resilience Questionnaire for Adults*), y, en consecuencia, sus propiedades psicométricas no pudieron conocerse antes de utilizarlos. Por otra parte, algunos de los

cuestionarios utilizados han sido adaptados a muestra española en nuestros estudios (ej. la *Brief Resilience Scale*), lo que implica la misma limitación. Finalmente, algunos instrumentos, aunque estaban previamente validados, no habían sido empleados previamente en las poblaciones de nuestros estudios (ej. el *Posttraumatic Growth Inventory*). En consecuencia, aunque todos los cuestionarios empleados hayan funcionado adecuadamente para los propósitos que perseguíamos, somos conscientes de que se beneficiarían de futuros estudios de validación en diferentes muestras y poblaciones.

#### **5.4. FUTURAS LÍNEAS DE INVESTIGACIÓN**

Los estudios incluidos en esta tesis pueden ser punto de partida para diferentes futuras líneas de investigación. En las próximas líneas describiremos las que consideramos más relevantes.

La primera futura línea de investigación se deriva de los estudios en los cuales han sido desarrollados los cuestionarios situacionales de coping y resiliencia (el *Situated Coping Questionnaire for Adults* y el *Situated Subjective-Resilience Questionnaire for Adults*). Estos cuestionarios representan una importante innovación en la evaluación de estos constructos, ya que tienen en cuenta que pueden ser características relativamente estables de los individuos que, al mismo tiempo, pueden cambiar dependiendo de la situación a la que se enfrenten. Sin embargo, únicamente pudimos incluir un número limitado de situaciones en cada uno de estos cuestionarios –cinco-, ya que añadir más los habría hecho demasiado largos. Como consecuencia de ello, las situaciones que incluimos fueron limitadas y poco específicas (ej. problemas de trabajo o de salud).

A pesar de lo limitado de estas situaciones, el modelo persona-situación funcionó adecuadamente, de modo que estos estudios abren la posibilidad de desarrollar en el futuro cuestionarios situacionales más específicos para evaluar afrontamiento o resiliencia frente a distintas situaciones concretas. Por ejemplo, en grupos específicos que se enfrentan a diferentes

situaciones estresantes como el personal de UCIP sería posible evaluar su nivel de resiliencia subjetiva frente a algunas de las situaciones difíciles con las que tienen que lidiar habitualmente. Si hiciéramos esto, podríamos tener un indicador general de resiliencia en el contexto de la UCIP para cada persona además de indicadores de resiliencia frente a distintas dificultades específicas (ej. comunicar malas noticias, tomar decisiones difíciles). Esto podría mejorar la predicción de cómo las personas se van a enfrentar con amenazas concretas, así como ayudarnos a proporcionarles ayudas más ajustadas.

Como indicamos con anterioridad, ninguno de nuestros estudios ha incluido todas las variables que componen el modelo secuencial propuesto en la Figura 5.1. Por ello, una segunda posible línea de investigación sería poner a prueba este modelo en personas atravesando diferentes situaciones difíciles e incluyendo todas las variables que lo componen. Para hacerlo, un diseño longitudinal sería la mejor aproximación, además del empleo de una muestra lo suficientemente grande como para realizar una validación cruzada de nuestros resultados. También pensamos que la utilización de metodologías mixtas de investigación, combinando técnicas cuantitativas y cualitativas, podría ayudarnos a comprender mejor este modelo, ya que algunas de las variables que lo componen, como las estrategias de afrontamiento, podrían ser evaluadas mejor con enfoques más idiosincráticos (como preguntas abiertas acerca de qué hace la persona para enfrentarse a ciertas dificultades). Por otra parte, pensamos que las metodologías cualitativas podrían añadir información más detallada y comprehensiva que no es proporcionada por el uso de cuestionarios, y que sería de utilidad para completar nuestro modelo.

Además, hay evidencia de que las variables que entran en juego una vez que la situación adversa ha finalizado (ej. el procesamiento afectivo post-trauma del evento) también puede afectar a los niveles de distrés y crecimiento postraumático (Picoraro et al., 2014; Kazak et al. 2006). Sin embargo, estas variables no están incluidas en nuestro modelo, que predice salud

mental a partir de variables pre y peri-trauma (ver figura 5.1). Por este motivo, en el caso de los padres de niños críticamente enfermos, pensamos que sería interesante explorar los procesos que ocurren una vez que el niño ha sido dado de alta, y que conducen a distintos niveles de adaptación tiempo después. Paralelamente, en el caso de los profesionales de pediatría, pensamos que sería interesante explorar los procesos que ocurren tras un evento traumático relacionado con el trabajo.

Una tercera posible línea de investigación, sería explorar los niveles de resiliencia, y como esto afecta a su adaptación posterior en niños tras su ingreso en UCIP. En esta tesis hemos incluido estudios con padres y profesionales, sin embargo pensamos que explorar los factores que llevan a psicopatología (ej. TEPT, ansiedad) y crecimiento postraumático tras un ingreso en UCIP en los propios niños sería crucial para ayudarles a afrontar esta situación del modo más resiliente posible. Para hacerlo, y especialmente en el caso de los niños de menor edad o con dificultades (ej. de desarrollo, de comunicación), deberían emplearse diferentes aproximaciones metodológicas para ajustarse a las necesidades y características de la población pediátrica.

Finalmente, pensamos que la línea de investigación más interesante de cara al futuro sería la realización de estudios de intervención que pusieran a prueba los modelos desarrollados. Estas intervenciones tendrían como objetivo ayudar a las personas que se enfrentan a situaciones potencialmente traumáticas, tratando de minimizar las consecuencias negativas y maximizar las positivas. En la siguiente sección describiremos las implicaciones para la intervención derivadas de los resultados de nuestros estudios. Estas recomendaciones constituirían la guía de las intervenciones que pensamos sería interesante desarrollar y poner a prueba en el futuro.

## **5.5. IMPLICACIONES PARA LA PRÁCTICA: EVALUACIÓN E INTERVENCIÓN**

A continuación se presentan las implicaciones teóricas y prácticas para la evaluación e intervención derivadas de esta tesis doctoral.

### **5.5.1. Implicaciones para la evaluación**

Esta tesis tiene importantes implicaciones de cara a la evaluación psicológica. En primer lugar, ha proporcionado a la comunidad científica hispanohablante una serie de instrumentos validados que permiten evaluar resiliencia, factores de personalidad protectores y de riesgo para la resiliencia (*resiliency*) y estrategias de afrontamiento en diferentes poblaciones. Además, uno de los estudios ha desarrollado una escala breve para evaluar en qué medida los distintos estímulos de la UCIP son estresantes para los padres. Esta escala puede ser de especial utilidad para los profesionales de UCIP e investigadores en el área. Adicionalmente, uno de los estudios de esta tesis ha proporcionado información sobre cómo interpretar la escala más utilizada para la evaluación del crecimiento postraumático (*Posttraumatic Growth Intentionary*, PTGI) en padres de niños críticamente enfermos.

Sin embargo, las implicaciones más relevantes de cara a la evaluación psicológica se derivan de los estudios incluidos en la parte I de esta tesis doctoral. Estos estudios han mostrado que tanto el grado en que se utilizan diferentes estrategias de afrontamiento como el nivel de resiliencia dependen tanto de la situación difícil a la que se enfrente la persona como a su propia tendencia individual. En consecuencia, aunque el empleo de escalas generales para la evaluación de la resiliencia –como la *Brief Resilience Scale*– puede ser adecuado cuando se desee obtener un indicador del nivel de resiliencia general de un individuo, la utilización de escalas que incluyan distintas situaciones puede proporcionarnos más información, ya que nos podría informar tanto acerca del grado en que una persona es resiliente en distintos contextos, como del grado en que es resiliente de forma general. Estas escalas situacionales, además, podrían predecir cómo un individuo se adaptará a amenazas específicas mejor que una escala

general. Consecuentemente, pensamos que su utilización puede ser recomendable tanto en contextos clínicos como de investigación, aunque, como ya se ha indicado con anterioridad, somos conscientes de que es necesario en el futuro aportar más evidencias sobre sus propiedades psicométricas.

El conjunto de los estudios incluidos en esta tesis doctoral, ofrece pistas interesantes sobre cómo desarrollar intervenciones destinadas a promover la resiliencia y la adaptación positiva tras las situaciones potencialmente traumáticas a las que se enfrentan los padres de los niños críticamente enfermos y el personal de cuidados intensivos pediátricos. En el próximo apartado presentaremos de forma resumida las implicaciones de cara a la intervención que se derivan de nuestros estudios.

## **5.5.2. Implicaciones para la intervención**

### **5.5.2.1. Orientaciones generales para promover la resiliencia**

Tal y como nuestros estudios han mostrado, las estrategias de afrontamiento afectan a los factores de *resiliency*, lo que a su vez influye en el nivel de resiliencia subjetiva. En consecuencia, modificando las estrategias de afrontamiento que una persona utiliza para hacer frente a sus dificultades, su resiliencia percibida podría incrementarse.

Las estrategias que se han mostrado asociadas más consistentemente con mejor adaptación son las incluidas en el estilo de afrontamiento centrado en el problema, y principalmente pensamiento positivo y búsqueda de soluciones. Estas estrategias debieran por tanto ser promovidas por los profesionales (ej. psicólogos, trabajadores sociales), mientras que el utilización del estilo de afrontamiento centrado en la emoción debiera ser, en términos generales, evitado.

Haciendo esto, esperamos que los recursos internos del individuo (factores de *resiliency*) en términos de sentido de dominio se incrementarían (y, por lo tanto la persona mostraría mayor optimismo, autoeficacia y adaptabilidad), mientras que su reactividad emocional se disminuiría



(y, por lo tanto, la persona sería capaz de autorregular mejor sus emociones). Con respecto a la estrategia específica de afrontamiento consistente en buscar ayuda de los demás, debería promoverse únicamente cuando la persona ha intentado resolver el problema por sí misma sin éxito, dado que una utilización predominante de esta estrategia junto con altos niveles de recursos externos y habilidades para manejarlos (sentido de relación) podría llevar a una disminución en el nivel de resiliencia.

En cualquier caso, es importante destacar nuevamente que no todas las estrategias de afrontamiento son igualmente efectivas para hacer frente todo tipo de situaciones. Así, por ejemplo, en los estudios de la parte III de esta tesis se ha encontrado que los profesionales de UCIP que utilizan más un estilo de afrontamiento centrado en la emoción (además del centrado en el problema) muestran más CPT que aquellos que lo utilizan menos. En consecuencia, debería promoverse la flexibilidad en la utilización de diferentes estrategias de afrontamiento.

#### ***5.5.2.2. Implicaciones para el desarrollo de futuros programas de intervención con padres de niños críticamente enfermos***

Las implicaciones más relevantes para la intervención con padres de niños críticamente enfermos derivadas de nuestros estudios, así como la evidencia que las apoya se encuentran resumidas en la Tabla 5.2. Posteriormente describiremos dichas implicaciones en mayor profundidad ofreciendo sugerencias basadas en la literatura previa sobre cómo podría llevarse a cabo de forma efectiva cada una de las intervenciones propuestas.

Tabla 5.2.

Resumen de las implicaciones para la intervención con padres de niños críticamente enfermos.

Propuesta de intervención	Datos que apoyan esta propuesta
Evaluar sistemáticamente en los padres los niveles de resiliencia y estrés durante el ingreso de su hijo en UCIP.	Resiliencia subjetiva, y los niveles de estrés experimentados durante el ingreso son las variables que contribuyen a predecir en mayor medida la salud mental de los padres meses después del ingreso de su hijo en UCIP.
Promover la participación de los padres en el cuidado de su hijo durante la hospitalización para reducir sus niveles de estrés.	La pérdida del rol parental es uno de los aspectos más estresantes para los padres. Niveles más elevados de estrés se asocian a peor salud mental meses después.
Evaluar si existe discrepancia entre la percepción de gravedad del niño por parte de los padres y su gravedad objetiva. En caso de existir, proporcionar información ajustada que ayude a que se reduzca.	Es frecuente que exista discrepancia entre la gravedad objetiva del niño y la percibida por los padres, en el sentido de que los padres perciben la situación como más grave de lo que es objetivamente. En nuestros estudios sólo la percepción parental de la gravedad (no la gravedad objetiva) se relaciona con salud mental.
Reconocer y normalizar la ocurrencia de CPT.	CPT es un fenómeno frecuente para estos padres tras la hospitalización de su hijo en UCIP.
Promover un estilo de afrontamiento centrado en el problema.	Los estudios de las partes I y III muestran que un estilo de afrontamiento centrado en el problema se asocia a niveles mayores de resiliencia, lo que, a su vez, se asocia con mejor salud mental post-trauma.
Reducir el uso de un estilo de afrontamiento centrado en la emoción. Promover la autorregulación emocional y las emociones positivas durante el ingreso en UCIP.	El modelo mostrado en la Figura 5.1 muestra que un estilo de afrontamiento centrado en la emoción se asocia a niveles menores de resiliencia, lo que, a su vez, está relacionado con peor salud mental post-trauma. Además, mayores niveles de emociones positivas durante el ingreso se asocian a mayores niveles de CPT meses después del alta del niño de la UCIP.

Tal y como muestra la Tabla 5.2, de los estudios incluidos en esta tesis se derivan varias implicaciones prácticas para la intervención psicológica con padres de niños críticamente enfermos. Nuestros estudios han mostrado que el nivel de resiliencia subjetiva parental, así como de su nivel de estrés percibido evaluados en el momento en que el niño es dado de alta de la UCIP, son capaces de predecir de forma muy significativa el nivel de psicopatología que los padres mostrarán meses después. En consecuencia, estas variables deberían ser sistemáticamente evaluadas en los padres durante el ingreso o justamente después del alta de su hijo con el objetivo de detectar lo antes posible a los padres con alto riesgo de desarrollar problemas psicológicos tras la hospitalización. Esta detección temprana podría conducir a la implementación de intervenciones psicológicas preventivas llevadas a cabo por profesionales especializados que permitiesen prevenir el problema antes de que apareciese, o reducir su incidencia. Esta idea que ha sido apoyada por un estudio reciente (Samuel, Colville, Goodwin, Ryninks & Dean, 2015), que indica también que es necesaria más investigación de cara a saber cómo proporcionar el seguimiento más adecuado a estas familias tras el alta.

En cualquier caso, dado que todos los padres cuyo hijo ha sido hospitalizado en UCIP pasan por una situación difícil, asociada a altos niveles de sufrimiento, hay ciertas intervenciones que podrían llevarse a cabo durante el ingreso, que de acuerdo con nuestros resultados podrían beneficiar a todos ellos. De llevarse a cabo, el riesgo potencial de los padres de sufrir reacciones negativas tras el ingreso se reduciría, mientras que sus posibilidades de percibir CPT se incrementarían. Esta idea es consistente tanto con el modelo de Estrés Traumático Pediátrico de Kazak et al. (2006), como con el modelo de Crecimiento Postraumático tras Enfermedades Pediátricas Severas de Picoraro et al. (2014), que enfatizan la importancia de intervenir con las familias en el período peri-traumático para mejorar su salud mental posterior. A continuación describimos pautas específicas que conformarían estas intervenciones.

En primer lugar, dado que de acuerdo con nuestros estudios uno de los aspectos que resultan más estresantes para los padres es la pérdida de su rol parental, la participación de los padres en los cuidados del niño debería promoverse. Además, de acuerdo con estudios previos es importante que los padres de cada niño reciban información suficiente y comprensible, tanto sobre la situación de su hijo como (en la medida de lo posible) sobre lo que le va a ocurrir posteriormente para reducir sus niveles de incertidumbre (Board and Ryan Wenger, 2002). Nuestros estudios también han mostrado que existe una discrepancia entre la gravedad objetiva del niño y la percibida por los padres. Dado que en nuestros estudios, al igual que en estudios previos (Colville & Pierce, 2012; Balluffi et al., 2004; Bronner et al., 2010; Rees, Gledhill, Garralda & Nadel, 2004), solo la percepción parental de la gravedad se relaciona con salud mental, debería evaluarse si dicha discrepancia existe, y, en caso afirmativo, proporcionar información ajustada que ayude a que se reduzca.

Estas intervenciones tendrían como objetivo final reducir el grado en que los padres perciben la UCIP como un entorno amenazante y cargado de incertidumbre, y, en consecuencia conducirían a una reducción de los niveles de estrés parental durante el ingreso. Esto, de acuerdo con nuestros resultados, podría llevar a una reducción en los niveles de ansiedad, depresión y TEPT posterior. Las pocas intervenciones de este tipo que, hasta la fecha, se han implementado en UCIP – el Modelo de Participación Mutua en el Cuidado de Enfermería (NMPMC por sus siglas en inglés; Curley & Wallace, 1988, 1992), y el programa Creando Oportunidades para el Empoderamiento Parental (COPE; Melnyk et al., 2004) – han mostrado ser de gran utilidad para reducir distrés parental.

Desde nuestra perspectiva, intervenciones como las mencionadas, más que consistir en programas específicos, tendrían que proporcionarse a todos los padres a través de la interacción cotidiana de los profesionales (médicos, personal de enfermería, etc.) con las familias. A este respecto, un paso previo necesario sería dotar a los profesionales de la formación necesaria

para que éstos pudiesen incorporar estas pautas en el cuidado al paciente y su familia. Dicha formación debería ser impartida por profesionales especializados y consistir al menos en: 1) proporcionar formación sobre las reacciones peri y post- trauma más frecuentes que suelen experimentar el niño y su familia (*trauma-informed care training*), 2) proporcionarles entrenamiento en habilidades de comunicación con el paciente y sus familiares, y 3) disminuir las barreras que actualmente dificultan que los padres estén implicados en el cuidado de su hijo críticamente enfermo.

Además de estas recomendaciones, en la UCIP deberían promoverse y ofrecerse programas de intervención psicológica específicos destinados a facilitar que los padres afronten el ingreso de su hijo de la forma que conduzca a mejor salud mental. Dichos programas tendrían como objetivos más concretos los siguientes.

- 1) Promover la utilización de las estrategias incluidas en el estilo de afrontamiento centrado en el problema. Tal y como se muestra en la Figura 5.1, el empleo de estas estrategias (ej. pensamiento positivo, búsqueda de soluciones a los problemas) se relaciona con un mayor nivel de resiliencia, por lo tanto sería esperable que fomentarlas repercutiera en una mejora de la salud mental parental, así como en un mayor CPT.
- 2) Considerando la relación inversa entre reactividad emocional y resiliencia, y entre afrontamiento centrado en la emoción y resiliencia que han emergido en la parte I, además de la importancia de las emociones positivas en la predicción de CPT que ha surgido en la parte II, sería conveniente entrenar a los padres en autorregulación emocional, con el objetivo de reducir el empleo de las estrategias incluidas en el estilo de afrontamiento centrado en la emoción, y promover que experimenten emociones positivas.

- 3) Otro foco de intervención importante sería el reconocer y normalizar el crecimiento postraumático interpersonal, intrapersonal y transpersonal, dado que es un fenómeno frecuente tras la experiencia que viven estos padres.

Desde nuestra perspectiva, este tipo de intervenciones especializadas deberían ser llevadas a cabo por psicólogos de la salud, y estar basadas en técnicas cognitivo- conductuales, ya que son las que más evidencia han recibido en los programas de intervención con padres de niños con enfermedades (ej. Stehl et al., 2009).

Hasta donde nosotros sabemos, a día de hoy no se ha desarrollado ningún programa de intervención psicológica específico para padres cuyos hijos están ingresados en cuidados intensivos. Sin embargo, sí se han desarrollado e implementado este tipo de programas en padres de niños con cáncer. Dos ejemplos son el Programa de Intervención Sobreviviendo al Cáncer Competentemente para Niños Recientemente Diagnosticados (SCCIP-ND por sus siglas en inglés; Stehl et al., 2009) y el Entrenamiento en Habilidades de Solución de Problemas (PSST por sus siglas en inglés; Sahler et al., 2005). El SCCIP-ND se basa principalmente en entrenar a los padres en reestructuración cognitiva utilizando en modelo A-B-C desarrollado por Ellis (2001), que, en este caso, consiste en identificar las creencias parentales con respecto a las adversidades relacionadas con el cáncer y reformularlas para alterar las consecuencias no deseadas. Por otro lado el PSST se basa en la estrategia de solución de problemas desarrollada por D'Zurilla y Chang (1995) para ayudar a los padres a resolver los problemas asociados a la enfermedad de su hijo de un modo más efectivo. Ambos programas han mostrado su efectividad para mejorar la adaptación parental al cáncer de su hijo.

Aunque esta tesis proporciona información únicamente sobre los componentes que deberían formar parte de estas intervenciones (afrontamiento, regulación emocional, etc.) pero no sobre cómo deberían ser aplicadas, basándonos en literatura en el área del cáncer (Stehl et al., 2009; Sahler et al., 2005) y en nuestra experiencia en UCIP, pensamos que un formato

breve (unas tres o cuatro sesiones) sería adecuado para este contexto crítico, con independencia de que los padres que lo necesitasen pudiesen recibir una atención más prolongada. Además, pensamos que una intervención grupal que supusiese reunir a padres de distintos niños podría tener beneficios, como la posibilidad de que aprendiesen mutuamente de sus experiencias. Sin embargo, dada la heterogeneidad de esta población, este formato de intervención podría tener consecuencias no deseadas en este período tan crítico, y podría dificultar ofrecer a cada familia la atención específica que necesita. Por ello, pensamos que en este caso sería más recomendable proporcionar una intervención individualizada a cada familia, en la que se encontrasen dos o más cuidadores de cada niño si fuese posible. Otra alternativa podría ser combinar sesiones de grupo con intervenciones individualizadas. Por otro lado, pensamos que al igual que el programa COPE o el SCCIP-ND, este tipo de programas debería incluir recordatorios post-intervención para facilitar que los padres tuviesen presente lo aprendido en el día a día, para explorar su estado actual y para proporcionarles refuerzo positivo.

Finalmente, es importante destacar que para proporcionar un cuidado óptimo al niño con enfermedades críticas y a su familia es imprescindible un esfuerzo coordinado por parte de todos los profesionales encargados de su cuidado, incluyendo personal de enfermería, médicos de distintas especialidades, psicólogos e investigadores, entre otros. Aunque somos conscientes de que este enfoque interdisciplinar requiere un esfuerzo considerable en un entorno tan complejo, si consideramos las altas tasas de psicopatología parental parece esencial el desarrollo e implementación de intervenciones coordinadas para que los padres sean capaces de tener un papel durante el ingreso que sea terapéutico tanto para ellos mismos como para sus hijos críticamente enfermos.

### 5.5.2.3 Implicaciones para el desarrollo de futuros programas de intervención con personal de cuidados intensivos pediátricos

Las implicaciones para la intervención derivadas de nuestros estudios con profesionales sanitarios, así como la evidencia que las apoya se encuentran resumidas en la Tabla 5.3. Posteriormente las describiremos en mayor profundidad ofreciendo sugerencias sobre cómo podría llevarse a cabo cada una de las intervenciones propuestas basadas en la literatura previa.

Tabla 5.3.

*Resumen de las implicaciones para la intervención con personal de cuidados intensivos pediátricos.*

Propuesta de intervención	Datos que apoyan esta propuesta
Realizar evaluaciones breves de rutina para detectar a los profesionales que sufren elevados niveles de estrés y ofrecerles un tratamiento especializado.	Más de la mitad de los profesionales de pediatría tienen niveles elevados en alguna de las dimensiones de burnout. Además, alrededor del 20% sufren niveles clínicamente significativos de TEPT.
Reducir estilo de afrontamiento centrado en la emoción, y principalmente promover la autorregulación emocional.	Los profesionales que utilizan más el estilo de afrontamiento centrado en la emoción muestran mayor burnout y TEPT.
Incrementar estilo de afrontamiento centrado en el problema.	Los profesionales que utilizan más el estilo de afrontamiento centrado en el problema muestran menor burnout, TEPT y mayor CPT.
Reconocer y normalizar la ocurrencia de CPT.	El CPT es un fenómeno muy frecuente en profesionales de UCIP, y puede ayudar a compensar el efecto negativo de las experiencias traumáticas que se viven en este contexto sobre la satisfacción con la vida.
Regulación de la implicación emocional con el paciente y su familia.	En profesionales de UCIP niveles mayores de despersonalización se asocian a mayor resiliencia.
Reducción del estrés.	Según el modelo propuesto (figura 5.1) el estrés media la relación entre resiliencia y adaptación a largo plazo.



Manejo efectivo de los conflictos interpersonales.	Los niveles de distrés de los profesionales son mayores cuando han ocurrido recientemente conflictos con compañeros de trabajo o pacientes/familias.
Incrementar habilidades para afrontar el fallecimiento de los pacientes.	Los niveles de distrés de los profesionales son mayores cuando ha ocurrido recientemente algún fallecimiento en la unidad.
Formación en reacciones post-trauma ( <i>trauma informed care</i> ).	La alta exposición a eventos traumáticos de estos profesionales hace necesario que reconozcan y sepan cómo actuar ante los síntomas que pueden desencadenarse tras estas situaciones. Esto que podrá repercutir en la salud mental de sus pacientes y en la suya propia.

En primer lugar, dado el alto riesgo de desarrollar burnout y TEPT que tiene el personal de UCIP y de otras unidades de pediatría, la primera implicación de nuestros estudios es que los trabajadores que ya tienen este tipo de problemas deberían ser detectados con el fin de ofrecerles un tratamiento específico. Para lograr este propósito sería muy recomendable realizar evaluaciones breves de rutina en estos profesionales para detectar a aquellos que puedan requerir dichas intervenciones. Sin embargo, una implicación incluso más importante que la anterior es que todos los profesionales deberían recibir programas específicos de prevención destinados a evitar la aparición o reducir la incidencia de estos problemas. De acuerdo con los resultados de nuestros estudios, estos programas deberían centrarse al menos en los siguientes aspectos.

- 1) Entrenar en el uso de estrategias que impliquen un procesamiento emocional activo de las experiencias traumáticas que viven en el trabajo, reduciendo el uso de estrategias que forman parte de un estilo de afrontamiento centrado en la emoción, como la autculpabilización, que se asocian a mayor psicopatología. La idea de mejorar el bienestar de los profesionales a partir de la modificación de sus estrategias de afrontamiento es coherente con estudios previos (Mealer et al., 2014; Siu, Cooper &

Phillips, 2014), que se han centrado en promover estilos de afrontamiento adaptativos desde un enfoque cognitivo-conductual. De acuerdo con nuestros estudios, esto podría conducir a reducir los niveles de burnout y TEPT en este grupo, dado que un mayor uso de un estilo de afrontamiento centrado en la emoción se ha encontrado relacionado con mayores niveles de distrés.

- 2) Promover la utilización de un estilo de afrontamiento centrado en el problema, como el pensamiento positivo o la búsqueda de soluciones. De acuerdo con nuestros estudios, esto podría conducir a reducir los niveles de burnout y TEPT en este grupo, y a aumentar sus niveles de PTG.
- 3) En línea con el punto anterior, se debe reconocer y normalizar la ocurrencia de PTG en los profesionales expuestos a acontecimientos traumáticos. Dado que un elevado nivel de CPT puede contribuir a compensar el impacto negativo sobre la satisfacción con la vida de las experiencias difíciles que estos profesionales viven en su trabajo, pensamos que incluir el fomento del CPT como uno de los objetivos de nuestras intervenciones podría ayudar a mejorar su calidad de vida.
- 4) Nuestros estudios han mostrado que en el grupo de profesionales de UCIP resiliencia está positivamente relacionada con despersonalización (uno de los componentes del burnout). De este resultado podemos deducir que en profesionales que se enfrentan a situaciones potencialmente traumáticas con mayor frecuencia (personal de UCIP), ser capaces de autorregular su relación con el paciente puede favorecer su resiliencia. En consecuencia, entrenar las habilidades de los profesionales de UCIP para autorregular su relación con sus pacientes puede ser una intervención recomendable, ya que les podría ayudar a encontrar un balance entre la compasión y el distanciamiento emocional necesarios (Baverstock & Finlay, 2015).

- 5) De acuerdo con el modelo presentado en la figura 5.1, el estrés parece ser una de las variables que median la relación entre resiliencia subjetiva y adaptación a largo plazo, por lo que las intervenciones para reducir el estrés podrían ser de ayuda en la reducción de los niveles de TEPT y burnout. En este sentido, el entrenamiento en *mindfulness* ha mostrado ser efectivo para reducir el estrés y fomentar la resiliencia en diferentes grupos de profesionales sanitarios (Foureur, Besley, Burton, Yu & Crisp, 2013), incluyendo de UCIP (Mealer et al., 2014). En esta línea, Goldhagen, Kingsolver, Stinnett y Rosdahl (2015) desarrollaron recientemente lo que se conoce como “actividades de resiliencia basadas en mindfulness”, que introduce el concepto de conciencia plena e incluye ejercicios prácticos para fomentar la resiliencia, como exploración de valores y cultivo de la positividad. Este programa ha demostrado su utilidad para reducir estrés y burnout en los médicos residentes de sexo femenino que percibían los niveles más elevados de estrés antes de la intervención. Otra intervención coherente con esta idea que ha mostrado ser de utilidad para mejorar resiliencia, estrés ansiedad, y calidad de vida en general es el programa de Manejo del Estrés Y Entrenamiento en Resiliencia (SMART por sus siglas en inglés; Sood, Prasad, Schroeder & Varkey, 2011). El SMART se basa en la idea de que la atención tiende a estar enfocada en el pasado o el presente, lo que predispone a pensar excesivamente, tratar de suprimir pensamientos de forma inefectiva, y respuesta de evitación, todo lo cual genera estrés. En consecuencia esta intervención enseña a los profesionales a centrarse en el presente para reducir el estrés y fomentar su resiliencia, con lo que sería coherente con las ideas que se derivan de nuestros estudios.
- 6) Nuestros estudios también han mostrado que los niveles de distrés de los profesionales son mayores cuando han ocurrido recientemente conflictos con compañeros de trabajo o pacientes/familias. Desde nuestra perspectiva, los conflictos son inevitables en un

entorno de trabajo tan complejo y de por sí estresante como la UCIP. Por ello, pensamos que las intervenciones en este sentido no deberían estar orientadas a eliminar los conflictos, sino a ayudar a los profesionales a manejarlos de una forma más efectiva. En este sentido, y de forma coherente con hallazgos de estudios previos (ej. Siu et al., 2014), pensamos que este objetivo podría lograrse entrenando a los profesionales en la utilización de habilidades de comunicación efectivas.

- 7) Dado que nuestros estudios también han mostrado que el personal de UCIP y otras unidades de pediatría es más vulnerable a sufrir burnout y TEPT cuando el fallecimiento de un niño había ocurrido recientemente en la unidad, es posible que las intervenciones destinadas a proporcionarles entrenamiento en cuidado del paciente y su familia al final de la vida resultasen de utilidad para reducir estos niveles. En este sentido, estudios previos confirman que mejorar la comunicación sobre los cuidados al final de la vida y ofrecer a los profesionales la oportunidad de discutir y compartir sus experiencias tras el fallecimiento de un paciente puede ayudarles a reducir sus síntomas de burnout y TEPT (Hough et al., 2005).

Con respecto al formato, pensamos que intervenciones grupales serían más efectivas y factibles, ya que varios profesionales podrían recibir el programa al mismo tiempo, y, además podrían beneficiarse de sus experiencias mutuas. Este formato de intervención grupal ha sido, además, el empleado en la mayor parte de las intervenciones enfocadas a reducir distrés en profesionales sanitarios (Foureur et al., 2013; Goldhagen et al., 2015, Siu et al., 2014), aunque, otros han utilizado sesiones individuales como el programa SMART (Mealer et al., 2014). En cualquier caso, el formato de la intervención dependerá de las condiciones que ofrezca el contexto (ej. tiempo que los profesionales pueden dedicar a la formación, disponibilidad de recursos, etc.).

Para que fuesen realmente efectivas, pensamos que estas intervenciones no deberían ser acciones aisladas, sino periódicas (ej. con carácter semestral o anual). Además, al igual que los programas para padres, estas intervenciones deberían incluir recordatorios para ayudar a los profesionales a tener presente en su día a día lo aprendido y que actuasen como refuerzo positivo. Adicionalmente, tras la ocurrencia de un evento particularmente traumático en la unidad (ej. un fallecimiento inesperado) sería adecuado proporcionar a los profesionales un apoyo extra, como reunirse para compartir experiencias sobre lo ocurrido, ya que en estos momentos son probablemente más vulnerables a sufrir problemas psicológicos.

Por último, consideramos que para implementar estas intervenciones con efectividad, sería necesario que todo el personal tuviese formación en trauma (*trauma informed care*) para que conociesen cuáles son las reacciones habituales tras un evento traumático (ej. pensamientos intrusivos) y pudiesen reconocerlas en sí mismos además de en sus pacientes. Dado que los profesionales de otras unidades pediátricas han mostrado tener niveles similares de distrés que los de cuidados intensivos, pensamos que esta formación debería implantarse en todas las unidades de pediatría.

Desde nuestra perspectiva, únicamente existiendo conciencia en el propio personal y en la gerencia de los centros hospitalarios sobre la importancia de atender a la salud mental de los profesionales serán posibles intervenciones como las planteadas, ya que este tipo de acciones deberían ser parte de una cultura hospitalaria que dedica esfuerzos al cuidado del bienestar integral de pacientes, familias y profesionales.

---

## **6. GENERAL DISCUSSION (BIS)**

---

## 5.1. MAIN FINDINGS

For summarizing and clarification purposes, the objectives and main results of each of the studies conforming this dissertation are presented in Table 5.1.

Table 5.1.

*Objectives and main results of each of the studies conforming this dissertation.*

	<b>Title of the study</b>	<b>Main goals</b>	<b>Results &amp; Discussion</b>
<b>PART I</b>	<b>Reliability and Validity of the Brief Resilience Scale (BRS) Spanish Version.</b>	To adapt the BRS, which assesses resilience as the ability to bounce back from stress, to Spanish language and to analyze the reliability and validity of its scores.	The BRS scores showed adequate reliability. Confirmatory factor analyses (CFA) showed that the Spanish BRS is mono-factorial. The BRS scores also showed adequate convergent, concurrent and predictive validity. The Spanish BRS is a reliable and valid resilience measure.
	<b>Coping assessment from the perspective of the person-situation interaction. Development and validation of the Situated Coping Questionnaire for Adults (SCQA).</b>	To develop and validate the Situated Coping Questionnaire for Adults (SCQA), which takes into account the situational dimension of coping, and to analyze its reliability and validity.	A CFA showed that the situation influences the degree in which people use particular coping strategies; however, coping is also stable to some extent. Regression analyses showed that coping strategies contribute to predict resilience in the expected direction, supporting the validity of the SCQA. The SCQA is deemed a reliable and valid means of situated coping assessment.
	<b>Personality factors underlying resilience: Development and validation of the Resiliency Questionnaire for Adults (RQA).</b>	To develop and validate the Resiliency Questionnaire for Adults, which understands resiliency as two protective factors –sense of mastery (SM) and sense of relatedness (SR)–, and one risk factor –emotional reactivity (ER).	CFA showed that both the three- and two-factor models fitted the data. Path analysis with latent variables showed that resiliency factors predict two thirds of the variance of resilience. SM was a protective factor for resilience, and ER and –contrary to our expectations– SR were risk factors. The RQA is a reliable and valid measure.
	<b>Development and validation of the Situated Subjective Resilience Questionnaire for Adults (SSRQA).</b>	To develop and validate the Situated Subjective-Resilience Questionnaire for Adults (SSRQA), which assesses Resilience towards different adverse situations.	Situations influence the degree in which persons perceive themselves to be resilient, but resilience also generalize across situations to a certain degree. The SSRQA is a reliable and valid situated resilience measure.
	<b>Prediction of subjective resilience from coping strategies and protective personality factors.</b>	To explore whether resilience can be predicted from coping styles –problem-focused coping (PFC) and emotion-focused coping (EFC) – and resiliency factors –sense of mastery (SM), sense of relatedness (SR) and emotional reactivity (ER).	Coping strategies affected resilience through resiliency. Individuals reporting higher PFC and lower EFC scored higher in SM and SR, and lower in ER. While SM predicted higher resilience, ER and –contrary to our expectation– SR predicted lower resilience. Interventions aimed at fostering resilience should focus on avoiding the EFC style and promoting the PFC style, avoiding that people exclusively rely on social support to face difficulties.

<b>PART II</b>	<b>Development of a Screening Measure of Stress for Parents of Children Hospitalized in a Pediatric Intensive Care Unit.</b>	<ol style="list-style-type: none"> <li>1) To develop and validate the Abbreviated parental stress scale for PICU (A-PSS:PICU), which assesses the degree in which the PICU stimuli are stressful for parents.</li> <li>2) To study which environmental factors of the PICU are more stressful in a sample of Spanish parents</li> <li>3) To study which medical and socio-demographic variables are related to stress.</li> </ol>	<ol style="list-style-type: none"> <li>1) The scale showed a 2-factor structure, as well as adequate reliability and convergent and predictive validity.</li> <li>2) The most stressful aspects were the behaviors and emotional responses of the child and the loss of their parental role.</li> <li>3) Age, gender, child's condition, length of admission, spiritual beliefs, and mechanical ventilation were associated to parental stress scores.</li> </ol>
	<b>The Factor Structure of the Posttraumatic Growth Inventory in Parents of Critically Ill Children.</b>	<ol style="list-style-type: none"> <li>1) To analyze the factor structure of the Posttraumatic Growth Inventory (PTGI) in parents whose children were hospitalized in PICU in order to consider the construct validity of the PTGI for this population</li> <li>2) To inform our understanding of PTG as a construct.</li> </ol>	<ol style="list-style-type: none"> <li>1) Three components emerged that explained 73.41% of the variance: personal growth, interpersonal growth and transpersonal growth.</li> <li>2) Even though the PTGI has shown slightly different factor structures among different populations, the three dimensions originally theorized by Tedeschi and Calhoun appear to be robust, which speaks in favor of the construct validity of this measure.</li> </ol>
	<b>The role of resilience in the prediction of parental distress after a child's hospitalization in intensive care: a longitudinal study.</b>	<ol style="list-style-type: none"> <li>1) To explore the degree in which parents experience anxiety, depression and PTSD following their child's admission to intensive care.</li> <li>2) To study the role of resilience, positive and negative emotions, stress and perception of child's severity in the degree of psychopathology.</li> <li>3) To explore the relation between socio-demographic and medical variables with parental distress.</li> </ol>	<ol style="list-style-type: none"> <li>1) Six months post-discharge, 23.1% of parents reported clinically significant PTSD, 21% reported moderate-severe anxiety, and 9.1% reported moderate-severe depression. These rates were equivalent at three months.</li> <li>2) Path analyses indicated that 48% of the total variance in psychopathology six months post-discharge could be predicted from the psychological variables assessed at discharge. Resilience had a strong and negative total effect on psychopathology but such effect was mostly indirect, mainly through the stress that parents experience during hospitalization.</li> <li>3) Parents who perceived economic difficulties, who have had previous mental health issues, and whose child had been previously admitted to PICU showed the highest distress.</li> </ol>
	<b>Resilience and Posttraumatic growth in mothers and fathers of critically ill children: a longitudinal study</b>	<ol style="list-style-type: none"> <li>1) To explore the degree in which parents report posttraumatic growth (PTG) six months after their child's discharge from a PICU.</li> <li>2) To study the role of parental resilience, positive and negative emotions and stress in predicting the degree of parental posttraumatic growth after having a critically ill child.</li> </ol>	<ol style="list-style-type: none"> <li>1) Six months post-discharge almost 40% of parents reported PTG to a great or very great degree in at least one of the dimensions of the PTGI</li> <li>2) The degree in which parents experienced positive emotions during admission was the only variable directly related to PTG, but it was influenced by resilience. Interventions to encourage PTG should focus on fostering resilience and positive emotions while the child is in the PICU, which could be made by fostering the utilization of adaptive coping strategies.</li> </ol>



	<b>Relation between parental psychopathology and posttraumatic growth after a child's admission to intensive care: Two faces of the same coin?</b>	To explore the relation between psychopathology (PTSD, anxiety and depression) and PTG in parents six months after their child's critical treatment in a PICU.	The higher the scores are in anxiety, depression and PTSD, the higher the parental level of PTG is. Positive and negative outcomes after a child's critical admission tend to co-occur, so parents who indicate growth do not tend to deny the difficulties.
<b>PART III</b>	<b>Burnout and Posttraumatic stress in PICU staff. Its relation with Resilience and Coping strategies.</b>	<p>4) To study the prevalence of burnout and PTSD in a sample PICU staff, and to compare these rates with a sample of general pediatric staff</p> <p>5) To explore in which degree and how resilience and coping strategies contribute to predict burnout and PTSD</p> <p>6) To explore the association between sociodemographic and work-related variables with burnout and PTSD.</p>	<p>4) 56% of PICU staff reported burnout on at least one dimension and 20.1% reported PTSD. There were no differences between PICU and non-PICU professionals.</p> <p>5) Around 30% of the variance in the subscales of burnout and in PTSD is predicted by a frequent use of the emotion-focused coping style and an infrequent use of the problem-focused coping style.</p> <p>6) Higher burnout and PTSD rates emerged when the death of a child and/or conflicts with patients/families or colleagues occurred in the previous week.</p>
	<b>Posttraumatic growth in PICU personnel, and its dependence of resilience and coping strategies.</b>	<p>4) To explore the degree of PTG in PICU staff for the first time, and to compare it with PTG scores of staff from other pediatric units.</p> <p>5) To explore the role of resilience and coping strategies in predicting PTG.</p> <p>6) To explore the association of PTG with demographic and work-related variables.</p>	<p>4) Around 70% of PICU staff reported PTG to a great or very great degree in at least one of the dimensions of the PTGI. There were no differences with non-PICU staff.</p> <p>5) A total of 11% of the variance in PTG was predicted from coping and resilience. Resilience was unrelated to PTG. Emotion-focused coping was related to PTG only for PICU staff, while problem-focused coping was related to PTG for both groups.</p> <p>6) Workers reported higher PTG when the death of a child and/or conflicts with patients/families or colleagues occurred in the previous week.</p>
	<b>Prediction of life satisfaction in pediatric critical personnel from burnout, posttraumatic stress and posttraumatic growth.</b>	<p>4) To explore the levels of satisfaction with life in PICU staff</p> <p>5) To study the association of sociodemographic and work-related variables with SWL.</p> <p>6) To study how positive (PTG) and negative (burnout and PTSD) outcomes derived from working in the PICU relate to each other and contribute to predict how satisfied they are with their lives.</p>	<p>8) More than 50% of PICU staff were satisfied or very satisfied with their lives, and 14.8% were below average. These percentages were not significantly different in not-PICU workers.</p> <p>9) Women reported lower SWL, and physicians reported the highest SWL.</p> <p>10) PTSD and PTG were positively correlated, so positive and negative consequences of working in the PICU coexists. A total of 27% of the variance in SWL was positively predicted from PTG and negatively predicted from burnout and PTSD. Interventions aimed at reducing distress and fostering PTG in professionals could impact in an improvement in their SWL.</p>

## 5.2. GENERAL CONCLUSIONS

In the next lines we will present the main general conclusions derived from the set of studies included in this dissertation. Later on we will describe the implications of such findings, as well as the limitations of our studies and future lines of research.

### 5.2.1. The determinants of resilience

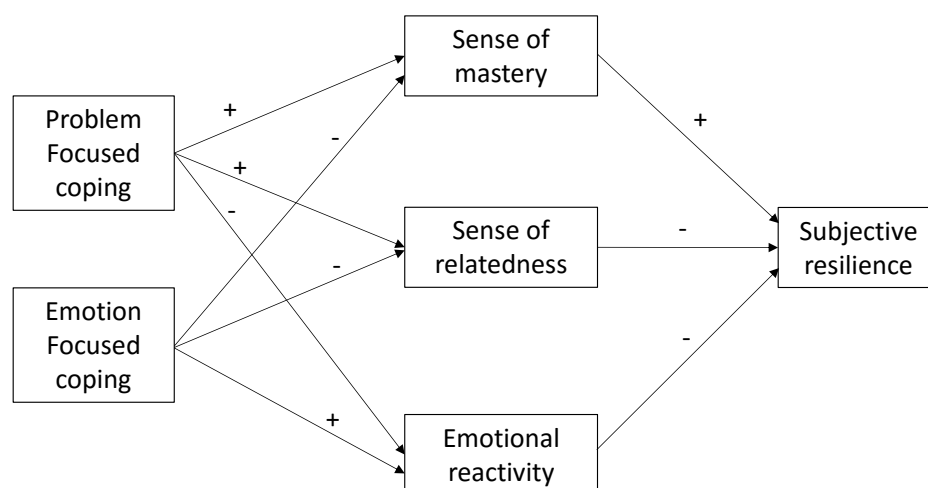
The first section of this thesis (part I) casts some light on the factors that may determine an individual's resilience, understanding resilience as the ability to bounce back from stress. Based on previous literature, we had hypothesized that an individual's perceived level of resilience would depend on the used coping styles and strategies (e.g., Leipold & Greeve, 2009), and on protective personality factors (e.g., Prince-Embury & Courville, 2008), which is confirmed by our results. Thus, in accordance with previous literature, resilience is multi-determined and depends, among other factors, on personal characteristics of the individual ("Reaching In... Reaching out", 2010).

Regarding the direction of the relation among coping, resiliency factors and subjective resilience, our studies found that it seems to follow the direction which is represented in the next chart:

Coping strategies → Protective personal factors (resiliency) → Subjective resilience

As the above chart shows, the relation between coping and subjective resilience is mediated by the resiliency factors. Therefore, by modifying the coping strategies that the individuals use to face problems, they might change their self-perception of their personal characteristics, which could impact their perceived ability to bounce back from adversities (subjective resilience).

With regards to the specific coping styles and resiliency factors which are related to resilience, our results showed that the *problem-focused coping style* is related to higher perceived resilience, as well as all the coping strategies conforming such coping style (e.g., problem solving, positive thinking), with the exception of help seeking, which is unrelated to resilience. On the contrary, the *emotion-focused coping style* is related to lower resilience, as well as all the coping strategies conforming it (e.g., rumination, self-blame). However, the relation between coping and resilience, as we have previously mentioned, is not direct but mediated by the resiliency factors *Sense of Mastery* (SM), *Sense of Relatedness* (SR) and *Emotional Reactivity* (ER). The relations found in our studies are summarized in the next diagram. Positive relations are represented with the sign “+” and negative relations with the sign “-”.



As the diagram shows, individuals who score higher in problem-focused coping and lower in emotion-focused coping, show higher scores in SM and SR, but lower scores in ER. Thus, these individuals: 1) show higher optimism, self-efficacy and adaptability (components of SM), 2) trust others more, perceive higher support and feel more comfortable in their relationships (components of SR), and 3) the intensity of their negative emotional response is lower and are able to self-regulate their emotions (components of ER).

Regarding the relation between resiliency factors and resilience, SM is related to higher resilience, while ER and SR are associated to lower resilience scores. The positive relation of resilience to SM and the negative one to ER were expected results, since having high SM implies that the person has more internal resources to face problems (e.g., optimism), while scoring high in ER indicates a lack of emotional self-regulation abilities. However, the fact that SR is negatively related to resilience was an unexpected result, as it was supposed to be a protective factor. It might imply that looking for support when confronted with adversity may be an index of resilience, but only if the person has previously tried to cope with adversity and has not found a way to overcome it. However, if the person seeks help instead of confronting the problem by him/herself first, this might be an index of lack of resilience. All of this has important implications for intervention that we will describe later in the implications section.

An additional finding is that the degree in which specific coping strategies and resiliency factors are related to resilience tends to vary across situations (for example, the coping strategy “problem solving” is significantly related to resilience towards all kinds of problems with the exception of the health problem of a close person). This fact indicates that some coping strategies are adaptive for some contexts but not for others, so flexibility in the use of the most adaptive coping strategies across contexts seems to be an important aspect to consider.

To finish describing our findings about the personal factors related to resilience, we would like to mention that, apart from coping strategies and personality factors, our studies confirmed that there are some demographic characteristics that are related to resilience. Consistently with previous studies (Smith et al., 2008; Bonanno et al., 2007), we found that women showed lower resilience scores. This is consistent with the fact that in trauma studies women consistently show the highest levels of psychopathology (Brewin et al., 2000). Although the current dissertation does not offer insights into the reason why female gender was associated with a reduced likelihood of resilience, it might be explained by differences in

emotion regulation between men and women. The term “emotion regulation” refers to the range of activities that allow an individual to monitor, evaluate, and modify the nature and course of an emotional response, in order to pursue his or her goals and respond to environmental demands (Cole, Martin, Dennis, 2004). According to a review (Nolen-Hoeksema, 2012) women use more internally focused, passive responses to their emotions (e.g., rumination) than men do, which is associated to higher prevalence of psychopathology. Consequently, this tendency might also explain why women tend to show lower resilience.

Additionally, our studies confirmed that, coherently with previous research (Brewin et al., 2000; Bonanno et al., 2007; Smith et al., 2010), younger people showed lower resilience. This might be a consequence of age differences in the experiencing and processing of emotions, as literature has consistently found that older individuals experience fewer negative emotions, exhibit a higher level of positive emotions, and have better emotional control than their younger counterparts (e.g., Yeung, Wong & Lok, 2011). Finally, coherently with previous studies (Frankenberg et al., 2013), and contrary to others (Bonanno & Galea, 2007a), participants with higher education levels showed higher resilience scores, which suggests a protective effect of education.

### **5.2.2. Coping and resilience: Stable or context-dependent characteristics?**

Studies in part I aimed, among other objectives, to explore in which degree resilience and coping are stable characteristics of the individual, or characteristics which tend to vary across situations.

Starting with coping styles, situations play an important role in determining the degree in which persons use them, as confirmatory factor analyses (CFA) using bi-factor analysis techniques have shown. Thus, coherently with literature, coping is not a stable trait, as it implies a response to specific external and internal demands (Lazarus & Folkman, 1984) which may change across situations. Consequently, individuals do not face all the situations using the same

coping strategies. Nevertheless, our studies also support the idea that the coping strategies used by an individual tend to generalize in some degree (Schwarzer & Schwarzer, 1996; Steed, 1998), as an individual may tend to consistently use the same coping strategies to face different situations.

The same is true for resilience, as it depends on both the individual and the situation. Thus, agreeing with Luthar (2006), our studies confirm that an individual may be resilient when facing a particular adversity but not a different one. However, resilience also tends to generalize across contexts to some degree.

### **5.2.3. The PICU as a high-risk context susceptible to cause psychopathology**

The studies of parts II and III aimed at exploring the effects of subjective resilience on the psychological outcomes derived from facing a particularly difficult context: the Pediatric Intensive Care Unit (PICU).

The percentages of the sample of parents who reported significant symptoms of PTSD (23.1%), moderate-severe anxiety (21%) and moderate-severe depression (9.1%) six months post-discharge, as well as the high prevalence of burnout (56% in at least one of its dimensions) and PTSD (20.1%) in PICU staff confirm that the PICU is a high-risk context both groups.

The rates of psychopathology that have emerged in our study with Spanish samples are similar to those found in previous studies with parents (Balluffi et al., 2004; Bronner et al., 2008; Bronner et al., 2010; Colville & Gracey, 2006; Colville & Pierce, 2012; Fauman et al., 2011) and critical care staff (Colville et al., 2014; Galván et al., 2014; Fields et al., 1995; Mealer et al., 2007), most of them conducted in Anglo-Saxon samples. Consequently, although there could be cultural differences, the PICU environment is a context as threatening for the Spanish population as it is for people from other countries.

The high prevalence of distress in parents and PICU staff evidences the importance of researching resilience in the context of pediatric intensive care.

#### **5.2.4. PTG as a common phenomenon after potentially traumatic situations**

Even though PICU is a high risk context susceptible of causing psychopathology, our studies confirm that, in agreement with trauma literature (e.g., Tedeschi & Calhoun, 1995; Lee et al., 2010; Polatinsky & Esprey, 2000; Picoraro et al., 2014), PTG is a common phenomenon which may occur after dealing with a potentially traumatic condition, such as a child's hospitalization in the PICU.

Furthermore, part III of this dissertation has shown that PTG is also very common among individuals who are exposed to trauma in their work environment, consistently with the studies conducted with emergency ambulance personnel (Shakespeare-Finch, Smith, Gow, Embelton & Baird, 2003; Shakespeare-Finch, Gow & Smith, 2005).

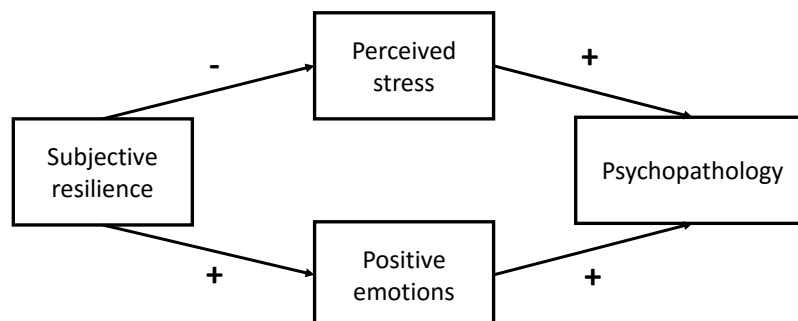
Although PTG is a common phenomenon for both parents of critically ill children and PICU staff, the latter are almost twice more likely to show it.

#### **5.2.5. The effect of subjective resilience in predicting psychopathology in parents of critically ill children and PICU workers**

Our studies showed that resilience understood as the perceived own ability to bounce back from adversities is a relevant variable for people who are already dealing with health-related difficulties, as other authors have claimed (Smith et al., 2008). Thus, consistently with the literature on the effect of resilience in adults suffering from different illnesses (e.g., Dale et al., 2014; Eicher et al., 2015; Maestas et al., 2014; et al., 2012) and in parents of children with cancer (e.g., Rosenberg, Wolfe, Syrjala et al., 2014; Rosenberg Wolfe, Bradford et al., 2014; Gudmundsdottir et al., 2011), our studies showed that subjective resilience is a protective factor for mental health in parents of critically ill children following their child's medical treatment in intensive care.

However, a new finding has emerged from the studies conducted with parents: the protective effect of subjective resilience in mental health is not direct, but mostly indirect,

through the degree in which parents experience stress during their child’s critical hospitalization. This finding implies an approximation to understanding the mechanism by which subjective resilience acts as a protective factor. Consistently with previous studies (Bonanno et al., 2011), more resilient individuals experienced lower stress at the time of the adverse event (in this case, the child’s critical admission). Their lower stress rates in the peri-trauma period led them to better mental health outcomes months later (Balluffi et al., 2004). Even though higher resilience is also positively associated with positive emotions, the extent to which parents experience positive emotions is –contradicting our expectations– weakly but positively associated to psychopathology. As this the first time that the relation between peri-trauma degree of experience of positive emotions and psychopathology is studied in this sample, and this result contradicts previous literature (Fredrickson et al., 2003), we consider that this study should be replicated before drawing further conclusions. The above mentioned relations are represented in the following diagram.



The direction of this relation has important implications for interventions aimed to reduce psychopathology among parents of critically ill children that will be described in the implications section.

On the other hand, in the sample of health care providers, higher resilience correlated significantly with lower burnout and PTSD; however, when the prediction of burnout dimensions and PTSD from coping and resilience was tested through a PALV, resilience was only related to depersonalization (one of the dimensions of burnout) in the group of staff

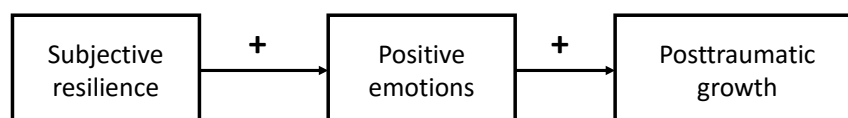


working in the PICU. Thus, it might be that in people constantly exposed to traumatic events such as PICU staff, resilient individuals are more able to moderate their compassion for others, by developing a sense of “detached concern” (Cadge & Hammonds, 2012). The PALV predicting burnout dimensions and PTSD from coping and resilience also showed that a frequent usage of the problem-focused coping style and an infrequent utilization of the emotion-focused coping style are related to lower psychopathology, which is consistent with the findings of part I. This also has relevant implications for intervention which we will later comment on.

### **5.2.6. The effect of subjective resilience in predicting PTG in parents of critically ill children and PICU workers**

From our perspective, resilience and PTG are two different phenomena although literature has frequently considered them equivalent, or even has assumed that PTG is an outcome superior to resilience (Westphal & Bonanno, 2007). However, even though these phenomena are not the same, we expected that they might be related, and exploring such relation has been one of the objectives of parts II and III of this thesis.

Results have shown that the direct relation between subjective resilience and subsequent PTG is not significant, as it wasn't the direct relation between subjective resilience and distress. However, the studies conducted with the sample of parents have evidenced that resilience can impact positive post-trauma outcomes through the degree in which parents experience positive emotions during the adverse event of their child's critical hospitalization. Thus the relation between resilience, positive emotions and PTG is as follows:



As the above diagram shows, subjective resilience might influence PTG through positive emotions. The positive relation between resilience and positive emotions might be explained by the more adaptive coping strategies used by resilient individuals (e.g., positive thinking). The influence of positive emotions on PTG can be explained by the broaden-and-build theory developed by Fredrickson (2000), which posits that positive emotions broaden habitual modes of thinking or acting, which can lead to a perceived growth that persists over time. Thus, even though our studies have not supported the beneficial effects of experiencing positive emotions in terms of psychopathology reduction, its positive effect has been supported in terms of contributing to increase PTG after a child's critical hospitalization.

Results from the health care staff studies regarding the predictive factors for PTG showed that resilience is unrelated to PTG. Nevertheless, this study also showed that coping strategies were able to predict PTG. As expected (Kirby et al., 2011), problem-focused coping was related to higher PTG. However, emotion-focused coping was also positively related to PTG for the PICU group, but unrelated for the non-PICU group. That is to say, using strategies which might be maladaptive to face most of everyday situations (e.g., rumination) might result in growth for individuals daily exposed to potentially traumatic situations such as PICU staff. These results support the idea that coping strategies are not adaptive or maladaptive *per se*, but that any particular strategy can be either adaptive or maladaptive depending on the circumstance.

### **5.2.7. The relation between positive and negative post-trauma outcomes**

As we have previously stated, our studies have evidenced that both psychopathology and PTG are common phenomena which may occur when individuals face a traumatic situation. A relevant finding that has consistently emerged from the studies that we have conducted with parents of critically ill children and with pediatric staff is the positive association between these positive and negative post-trauma outcomes. In particular, our

studies have shown that, in the sample of parents of critically ill children, PTSD, anxiety and depression were related to higher PTG, and in the sample of PICU staff, PTSD was also related to higher PTG. These positive relations are consistent with some of the previous trauma literature (Helgeson et al., 2006; Levine et al., 2009; Morris et al., 2005; Taku et al., 2007; Jin et al., 2014).

Thus, our studies consistently show that the positive and the negative consequences derived from experiencing an adverse situation tend to coexist in the same person. The fact that individuals who have suffered the worst consequences of facing the traumatic experience are also those who have reported more growth is an apparently contradictory result whose explanation might help to better understand the PTG phenomenon. A first possible explanation is that, for PTG to occur, the event needs to be upsetting enough to cause considerable disruption to individuals' assumptions about how the world operates and how they fit into it (Janoff-Bulman, 2004). Consequently, it is likely that individuals who have been more negatively impacted by the traumatic experience have more opportunities for growth, while individuals who face the situation more easily are less likely to engage in the kind of meaning-making process which may lead to PTG. This explanation could be summarized by the quotation "A smooth sea never made a skilled sailor". This is coherent with the ideas of Helgeson et al. (2006), who suggested that experiencing intrusive thoughts reflects a cognitive processing aimed at understanding and upprocessing the traumatic event more than a marker of mental health. So, experiencing PTSD may be a signal that people are working through the implications of the stressor for their lives, which could lead to growth.

A second possibility is that measures of PTG taken soon after the event reflect a cognitive strategy to face distress, or an illusory growth more than an actual growth (McFarland & Alvaro, 2000; Sumalla et al., 2009). According to this idea, "real PTG" needs time to emerge, so it is possible that six months were not enough time for parents in our study to build real

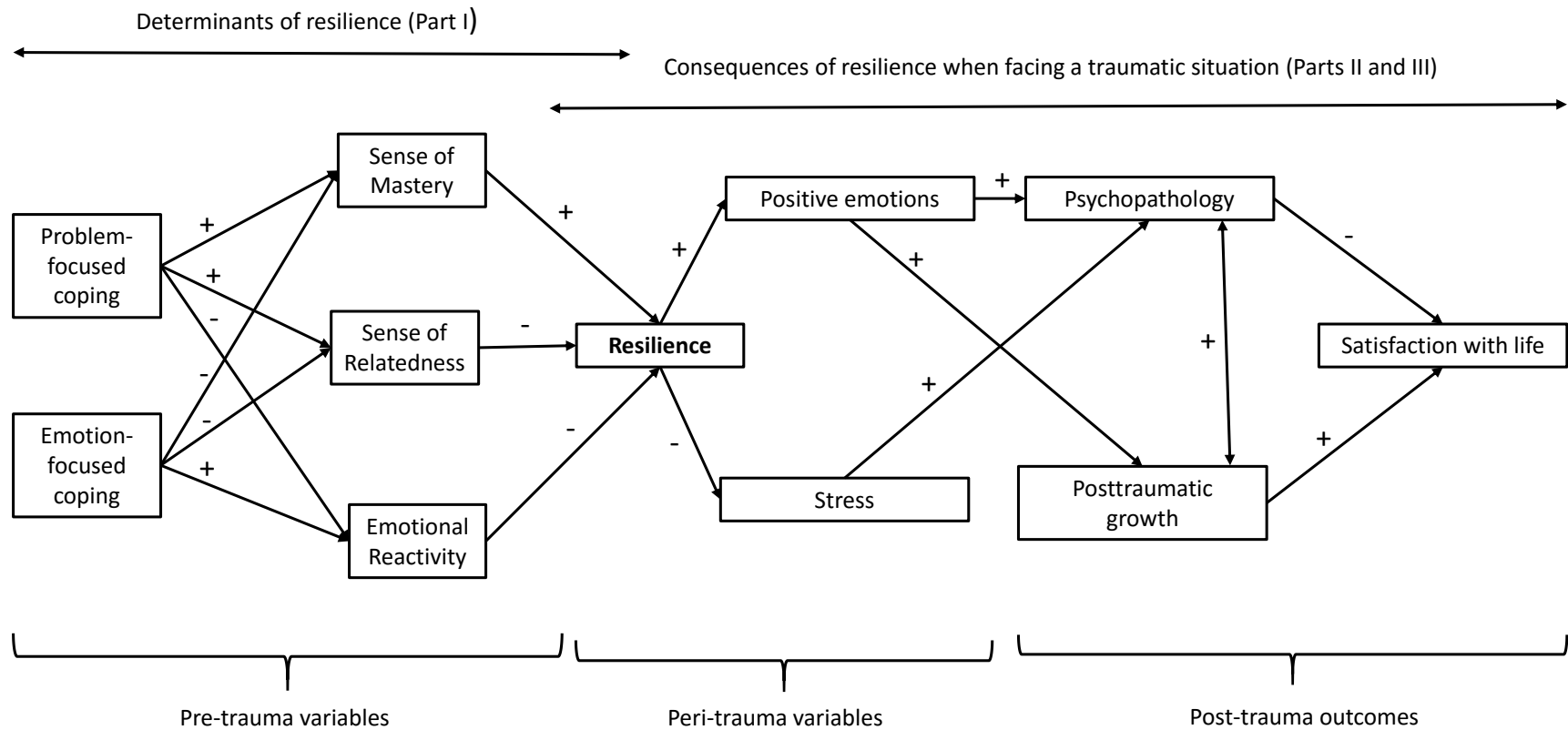
growth. This would be coherent with data from a meta-analytic review which indicated that benefit finding was more strongly related to better outcomes when more than 2 years had passed since the traumatic event (Helgeson et al., 2006). This second possibility may explain the positive association between psychopathology and PTG that emerged in the study conducted with parents, but it does not explain the positive association between PTSD and PTG found in the study conducted with PICU workers. In this study, the average time that the individuals had been working in the PICU was almost 10 years. Consequently, they had been facing potentially traumatic situations for enough time to build real PTG. Additionally, the years of experience did not influence their PTG levels, which should have been affected according to the previous explanation. In conclusion, we believe that the first explanation provides a better understanding of the positive relation between negative and positive consequences of facing difficult situations.

To conclude, we also explored how these positive and negative outcomes predicted professional's satisfaction with life (SWL) in our PICU staff study. We found that both positive and negative post-trauma outcomes contributed significantly to predict SWL in our sample. The effect of negative outcomes was negative (the higher the PTSD and the burnout, the lower the SWL), and the effect of PTG was positive (and thus, the higher the PTG, the higher the SWL). As positive and negative effects of the traumatic experiences coexists in the same individual, PTG might compensate the adverse effect of distress on SWL.

#### **5.2.8. Summary of the relations between the main variables included on this dissertation**

For clarification purposes, we include in the next page a diagram which summarizes the main findings of the current dissertation.

Figure 5.1. Diagram summarizing the main relations among the variables explored along this dissertation.



### **5.3. LIMITATIONS OF THE STUDIES CONFORMING THIS THESIS**

As noted, the studies proposed for this doctoral thesis have a number of strengths and thus can be considered relevant for the advancement of research in the area of resilience from a theoretical, methodological, and applied viewpoint. However, our studies have some limitations which restrict the scope of our findings. What follows is a description of them. Specifically, we refer to the following: research design, representativeness of the samples used, study variables, and measurement instruments.

#### **5.3.1. Research design**

One of the most important methodological limitations of our work has to do with the cross-sectional designs of the studies contained in part I and part III, which make it impossible to establish causal relationships. Consequently, even though we have hypothesized sequential relationships between the variables studied (e.g., coping, resiliency factors and resilience), we cannot affirm that one variable is the cause of the other.

We have partially overcome such limitation in the studies included in part II by using a prospective and longitudinal design, which included measures at three time-points. However, as a consequence of the difficulties in recruiting people in such an extremely delicate moment, along with the difficulties in maintaining them in the study, the sample size was smaller than those of the studies in parts I and III, which prevented the use of multi-group analyses to cross-validate the tested models.

#### **5.3.2. Representativeness of the samples used**

To conduct the studies included in part I, we have used a sample comprising three different sub-samples: “general population”, “people experiencing health-related conditions” and “parents of a child who has a health-related condition”. For convenience sampling reasons, the sample of “general population” was mainly composed of university professors and students,

which might not represent the general population well in terms of educational and socioeconomic level. The second subsample was composed of adults who were suffering from VIH or cancer, and the third by parents of children with different conditions (e.g., cancer, autism). As some of the conditions were underrepresented in our sample, we were not able to study differences among people with different specific conditions (e.g., parents of children with cancer versus parents of children with disabilities). As there could be important differences, it would be interesting to explore this aspect in the future.

Regarding studies in part II, we included parents from only one PICU, which may limit the generalizability of the results. Additionally, even though we made important efforts to avoid participant attrition (see the protocol of data collection included in Annex B, page 450), slightly more than a quarter of the sample did not complete all the measurements. It might be that parents with PTSD are under-represented in our sample, as refusal to complete or continue in the study might be a symptom of avoidance, one of the components of a PTSD diagnosis.

Regarding the sample of professionals of the studies in part III, efforts have been made to ensure representativeness by using a multi-centric design, including nine hospitals. However, there is also a potential for bias. More distressed clinicians might be more motivated to participate, as a way to express their dissatisfaction, but it is also possible that individuals with severe burnout or PTSD may be less likely to participate (Curtis & Puntillo, 2007). Nevertheless, we cannot think of a solution to avoid such bias, neither in parents nor in clinicians, as respecting the decisions of the potential participants regarding their collaboration in the studies has to be a priority in the ethical code of the researchers.

### **5.3.3. Study variables**

Diverse variables have been included in the different studies conforming this dissertation, with a main focus on resilience. Although we proposed, based on the results of our different studies, the general model shown in Figure 5.1, none of our studies included all

the variables depicted in that model (coping, resiliency, resilience, emotions, stress, positive outcomes, negative outcomes and satisfaction with life). Thus, for example, in the studies conducted with parents, we included subjective resilience, stress and emotions as baseline measures, and PTSD, anxiety, depression and PTG as outcome measures. However, we did not include the determinants of resilience (coping and resiliency), assuming that data from part I would be applicable to parents of critically ill children. This assumption, however, should be confirmed in future studies.

#### **5.3.4. Measurement instruments**

All the measurement instruments included along this dissertation are self-reported questionnaires, which might have limitations that we have tried to overcome by taking great care over their psychometric properties. However, some of the used questionnaires have been especially developed for the purposes of our studies (e.g., the Situated Coping Questionnaire for Adults, the Situated Subjective-Resilience Questionnaire for Adults), and thus their psychometric properties could not be ascertained prior to instrument selection. Some other instruments have been adapted to Spanish samples in our studies for the first time (i.e., the Brief Resilience Scale), with the same limitation, and, finally, the psychometric properties of some other measures have been tested in parents of critically ill children and PICU staff for the first time in our studies (e.g., the Posttraumatic Growth Inventory).

Consequently, even though all the questionnaires worked well for the purposes of our studies, we are aware that most of them would benefit from further validation in different samples and populations.



## 5.4. FUTURE LINES OF RESEARCH

The studies included in this dissertation may lead to potentially interesting future lines of research. In the next lines, we will describe the most relevant ones.

The first future line of research is derived from the studies in which the situational coping and resilience questionnaires (the Situated Coping Questionnaire for Adults and the Situated Subjective Resilience Questionnaire for Adults) have been developed. These questionnaires represent an innovation in terms of coping and resilience measurement, since they take into account the stable tendencies of the individual, and also his/her changes across different situations. However, we could only include a small number of situations in our scales –five–, as adding more would have resulted in lengthy questionnaires. As a consequence of this, the situations that we included were limited, and also nonspecific. Nevertheless, as the person-situation model worked well, these studies open up the possibility of including more specific problematic situations for assessing coping or resilience towards different difficult situations. For example, in specific groups of people facing different stressful situations like PICU staff, we could assess their degree of subjective resilience in front of the various difficult situations that they typically have to face. By doing that, we would have a general indicator of resilience in the context of PICU, but also indicators of resilience towards the different difficult situations involved in that context (e.g., communicating bad news, the unexpected death of a patient), which would potentially improve the prediction of adaptation to those specific threats.

As we previously stated, none of our studies have included all the variables which conform our sequential model (Figure 5.1). Thus, a second future line of research would be to test this model with people facing different adversities, including all its variables. To do so, a longitudinal approach should be used, preferably with a sample big enough to cross validate the results. We also believe that the usage of mix methods, combining quantitative and qualitative approaches, would help us to better understand this process of bouncing back, as

some of the variables in the model (e.g., coping strategies) could be better measured with more idiosyncratic approaches (such as open questions about what people do to cope with certain difficulties). Likewise, qualitative methodologies could add detailed and comprehensive information not provided by the usage of questionnaires to complement the model.

Additionally, there is evidence that the variables which come to play once the adverse situation has finished (e.g., the affective post-trauma processing of the event) also affect positive and negative post-trauma outcomes, as has been suggested by Picoraro et al. (2014) and Kazak et al. (2006). However, we have not included these variables in our predictive models. Thus, in the case of parents of critically ill children, it would be interesting to explore the processes occurring after the child's discharge which lead to different levels of adaptation. Likewise, in the case of pediatric professionals, it would be interesting to explore the processes following specific work-related traumatic situations.

A third possible line of research would be to explore resilience and how it impacts adaptation in children following a critical admission. In this dissertation we have included studies with parents and with clinicians, however we believe that exploring the factors which lead to negative outcomes (e.g., PTSD, anxiety) and positive outcomes (i.e., PTG) after the experience of a critical admission in children would be crucial to help them face the situation in the most resilient way. To do so, and especially in the case of younger children, different approaches should be used to ensure their adequacy to the kind of population.

Finally, we believe that the probably most interesting path for future research would be conducting intervention studies to test the validity of the model developed. These interventions could help people facing potentially traumatic situations in terms of maximizing positive outcomes and minimizing negative ones. In the next section, we will describe the implications for intervention derived from the results of our studies. These recommendations will guide the intervention studies that we think will be interesting to conduct in the future.

## **5.5. IMPLICATIONS FOR PRACTICE: ASSESSMENT AND INTERVENTION.**

This dissertation has several theoretical and practical implications for measurement and intervention purposes. The most relevant ones will be presented along the following sections.

### **5.5.1. Implications for assessment**

This dissertation has several implications for psychological assessment. Firstly, it has provided the Spanish-speaking scientific community with validated instruments to assess resilience, resiliency and coping in multiple samples. Furthermore, it has provided clinicians and researchers with a new brief scale to assess the degree in which the PICU stimuli are stressful for parents. This dissertation has also provided information about how to interpret the most used scale to assess PTG (the PTGI) in parents of critically ill children.

However, the most relevant implications for measurement are derived from the studies included in part I. These studies showed that resilience and coping strategies depend on both the difficult situation and the individual. Consequently, even though the utilization of general resilience measures –such as the Brief Resilience Scale– may be adequate, the utilization of measurement instruments including different situations can provide more accurate information about the degree in which an individual is resilient in different contexts, as well as the degree in which he/she shows general resilience across situations. Moreover, these situational instruments might predict the adaptation of an individual to a specific threat better than the general ones. Thus, their use is recommended in research and clinical settings, although more research regarding their psychometric properties is needed.

The whole body of research developed along this dissertation offers certain clues to promote resilience and positive adaptation in parents of critically ill children and PICU staff. In the next section, we will summarize the implications for intervention derived from our studies.

## **5.5.2. Implications for intervention**

### ***5.5.2.1. General guidelines to foster resilience***

As our studies have shown, coping strategies influence resiliency factors, which in turn influence subjective resilience. Thus, by modifying the coping strategies that a person uses to face adversities, their perceived resilience might increase. The coping strategies that appear to be related to better adaptation are the ones comprised in the problem-focused coping style, and above all positive thinking and looking for a solution. These strategies should be promoted by professionals, while the usage of the emotion-focused coping style should be avoided. By doing that, we expect that the internal resources of the individual, in terms of sense of mastery, will increase (and thus, the person will show higher optimism, self-efficacy and adaptability), while their emotional reactivity will decrease (and thus, the person will be able to better self-regulate his/her emotions). Regarding the specific coping strategy of help seeking, it should be promoted only when the person has tried to solve the problem by him/herself with no success, as a predominant usage of this strategy along with high levels of external resources (sense of relatedness) might lead to lower resilience.

In any case, not all the coping strategies are equally effective for all kinds of situations. For example, studies in part III have shown that PICU professionals who use more the emotion-focused coping style report more PTG than those who uses it less. Consequently, flexibility in the use of different coping strategies should also be promoted, and professionals should learn and teach those strategies most adequate for each kind of problem.

### ***5.5.2.2. Implications for the development of future intervention programs with parents of critically ill children***

The most relevant implications for intervention with parents of critically ill children derived from our studies are summarized in Table 5.2, along with the evidence that supports

each implication. Later, we will describe such implications in depth, offering suggestions based in the literature about how each intervention could be effectively applied.

Table 5.2.

Summary of the implications for intervention with parents of critically ill children.

Intervention proposed	Data supporting the intervention
To assess parental subjective resilience and stress during their child's critical admission.	Subjective resilience and the levels of stress experienced during the child's are the most relevant variables contributing to predict psychopathology months after the child's discharge from the PICU.
To promote parent's involvement in their child's care during hospitalization to reduce their stress levels.	The loss of the parental role is one of the most stressing aspect for parents. Higher stress levels during hospitalization are associated to an impairment in mental health months after the child's discharge from the PICU.
To evaluate whether there is discrepancy between parental perception of severity of their child and the objective severity. If such discrepancy exists, professionals should provide realistic information to reduce it.	Parents tend to perceive their child's condition as more severe than it really is. In our studies what is related to parental mental health is their perception about the severity of their child's medical condition, not the objective severity of their child's condition.
To recognize and normalize the occurrence of PTG.	PTG is a frequent outcome for parents after their child's critical hospitalization.
Promoting the utilization of the problem-focused coping style.	Studies in parts I and II have shown that the problem focused coping style is associated to higher resilience scores, which predicts better post-trauma mental health.
To reduce the utilization of the emotion-focused coping style. To promote emotional regulation and positive emotions during the child's hospitalization.	The model in Figure 5.1 shows that the emotion-focused coping style is associated to lower resilience level, which is related to higher post-trauma psychopathology levels. Furthermore, having experienced positive emotions during admission in a higher degree is related to higher PTG months after the child's discharge.

As Table 5.2 shows, our studies have some relevant clinical implications for intervention with parents of critically ill children. First, our studies have shown that by assessing parental subjective resilience and perceived stress at child's discharge, a significant percentage of the variance in psychopathology and PTG can be predicted. Consequently, these variables should be systematically evaluated in parents during or right after their child's admission to a PICU in order to detect those who are at high risk of developing problems in the aftermath of the event. This detection would allow to conduct preventive interventions on them by adequate professionals (e.g., psychologists), an idea supported by a recent study (Samuel, Colville, Goodwin, Ryninks & Dean, 2015). However, further research is needed on how to best provide effective follow-up interventions for families.

In any case, as all parents whose child is critically ill are at risk of developing psychological problems, we suggest that some interventions should be applied to all parents while their child is admitted to PICU. By doing that, their risk of suffering negative post-trauma reactions would be diminished, and their possibilities of experiencing growth increased. This is consistent with Kazak's Pediatric Traumatic Stress model (2006) and Picoraro's model of PTG following serious pediatric illness (2014), which emphasize the importance of mobilizing coping in the acute peri-trauma period to improve parental outcomes. The specific recommendations and guidelines for such interventions derived from this dissertation are described in the following lines.

In the first place, as the loss of their parental role is one of the most stressing aspects of having a child admitted to the PICU, parents' participation in their child's care should be promoted while the child is hospitalized. Furthermore, as according to our results and to previous studies parent's perceptions of child's severity are more strongly associated with subsequent distress than objective aspects of the experience (Colville & Pierce, 2012; Balluffi et al., 2004; Bronner et al., 2010; Rees, Gledhill, Garralda & Nadel, 2004), it may be helpful

in some cases, where it is established that a parent has unrealistically pessimistic beliefs about prognosis, to challenge these gently. Additionally, as far as possible, parents should be provided with information and anticipatory guidance about what is going to happen to their child, as it has proved to be useful in reducing parental stress (Board and Ryan Wenger, 2002).

These interventions are aimed at reducing the degree in which parents experience the PICU as a threatening context full of uncertainty, and thus their ultimate aim is to reduce the levels of stress and subsequent likelihood of PTSD, anxiety and depression. The few interventions of this kind which have been applied in the PICU –the Nursing Mutual Participation Model of Care (NMPMC; Curley & Wallace, 1988, 1992), and the Creating Opportunities for Parent Empowerment program (COPE; Melnyk et al., 2004) – have proved to be useful in reducing parental distress.

We believe that interventions such as the above mentioned would be easier and more naturally provided through the daily professionals-parents interaction. A previous necessary step would be providing all the PICU staff with the necessary training, which should be focused in the following aspects: 1) providing trauma-informed care training, so that they could know the most common reactions in these children and their families, 2) training them in communication skills with the patients and their families, and 3) breaking down their barriers to promote parents' implication in their children's care.

In the second place, specific psychological interventions programs aimed at improving parental positive adaptation to this difficult context should be promoted. Such programs would be aimed at:

- 1) Promoting the utilization of the strategies included in the problem-focused coping style.

As Figure 5.1 shows, the utilization of such strategies (e.g., positive thinking, problem solving) is associated to higher resilience scores, thus we expect that by fostering them parental mental health and PTG would increase.

- 2) Considering the inverse association between emotional reactivity and resilience, and between the emotion-focused coping and resilience which have emerged in part I, and the importance of positive emotions in the prediction of PTG which have emerged in part II, it would be convenient to train parents in emotional self-regulation. The aim would be to reduce the utilization of the emotion-focused coping style and to promote positive emotions.
- 3) Another important focus of intervention would be recognizing and normalizing personal, interpersonal and transpersonal PTG after the child's critical treatment, as this is a frequent phenomenon after this potentially traumatic experience.

Such interventions should be applied by specialized health psychologists, and be based on cognitive behavioral techniques. To our knowledge, no intervention of these kinds has been applied in the PICU to date. However, some interventions have been developed and evaluated in parents of children with cancer, such as the Surviving Cancer Competently Intervention Program for Newly Diagnosed children (SCCIP-ND; Stehl et al., 2009) and the Problem Solving Skills Training (PSST; Sahler et al., 2005). The SCCIP-ND has used cognitive restructuring within the A-B-C model (Ellis, 2001), consisting in identifying beliefs about the adversities associated with cancer and reframing them to alter unwanted consequences. The PSST has used problem solving strategy developed by D'Zurilla & Chang (1995) to help parents solve the problems associated with their child's illness more effectively. Both programs have shown promising results in improving parental adaptation to their child's cancer.

Although this dissertation does not provide information about how these programs should be applied, but only about its components (e.g., coping, emotional self-regulation), based on the literature (Stehl et al., 2009; Sahler et al., 2005) and in our own clinical experience in this unit we believe that a brief format (three to four sessions) would be appropriate for this critical context. Additionally, we think that a group intervention including parents of different



children would have some benefits, as parents could learn from each other's experiences. However, it might have negative undesired effects if implemented in this acute period, and it also would make individualized attention difficult. Thus we propose individualized interventions for each family, including two or more caregivers when possible. Another possibility would be combining group sessions with individualized interventions. Additionally, this program should include boosters after the intervention (e.g., phone calls), such as the COPE or the SCCIP-ND programs, in order to remind the parents about the intervention, to explore how they are doing and to provide them with positive reinforcement.

Finally, it is important to point out that from our perspective an optimal care of the critically ill children and their families require a coordinate effort for all personnel working in the PICU, including nursing staff, physicians, psychologists and researchers among others. Even though we are aware that this interdisciplinary approach would require a considerable effort in such a complex context, considering the high rates of distress in these parents, it seems essential to develop and implement coordinate interventions so that parents are able to function in a role that is therapeutic to them and their critically ill child.

#### ***5.5.2.3. Implications for the development of future intervention programs with PICU staff and pediatric staff working in other pediatric units***

Implications for our studies conducted in health care providers, and the evidence supporting them are summarized in Table 5.3. Later we will describe such implications in depth, offering suggestions based in the literature about how to conduct the interventions proposed.

Table 5.3.

Summary of the implications for intervention with pediatric critical care staff.

Intervention proposed	Data supporting the intervention
To conduct routine screening order to detect those with higher distress and to offer them specific interventions.	More than a half of pediatric professionals have high scores in at least one burnout dimension. Furthermore, around 20% of these professionals show clinically significant PTSD levels.
To promote the problem-focused coping style.	Professionals who use more the problem-focused coping style show lower burnout, PTSD and PTG.
To reduce the utilization of the problem-focused coping style and to promote emotional self-regulation.	Professionals who use more the emotion-focused coping style show higher burnout and PTSD.
Recognizing and normalizing the occurrence of PTG.	PTG is a frequent outcome in PICU professionals. It might contribute to compensate the negative impact of experiencing work-related traumatic events on the professionals' satisfaction with life.
Regulation of emotional implication with patients and families.	In PICU staff higher depersonalization is associated to higher resilience.
Stress reduction.	According to the proposed model (figure 5.1) stress mediated the relation between resilience and long-term adaptation.
Interventions aimed at helping professionals to manage interpersonal conflicts more effectively.	Distress levels in professionals are higher when they have had conflicts with work colleagues or families the week before.
Provide clinicians with an adequate training in end-of-life care.	Professionals are especially vulnerable to suffer from burnout and PTSD when the death of a child had occurred in the previous week.
To establish a trauma informed care framework.	The high exposure of potentially traumatic events of PICU staff makes it necessary to increase professionals' awareness of the frequent reactions of trauma so that they can recognize these reactions. This might impact in better mental health outcomes in themselves and their patients/families.

As Table 5.3 shows, given the high risk for PICU staff and pediatric staff working in other units of developing burnout and PTSD, the first implication of our studies is that professionals who already have such problems should be detected and offered specific treatment. For that purpose, it would be highly recommendable to conduct routine screening assessments on these professionals in order to detect those in need of such specific interventions. However, an even more important implication is that all professionals should receive specific intervention programs aimed at preventing these psychological problems before they appear, or at least at reducing its incidence. According to the results of our studies, these programs should include at least the following components:

- 1) Training in the use of strategies which might involve an active emotional processing of traumatic experiences at work and diminishing of the use of strategies conforming the emotion-focused coping style, such as self-blaming, which are related to higher psychopathology. The idea of fostering professionals' well-being by modifying their coping strategies is coherent with previous studies (Mealer et al., 2014; Siu, Cooper & Phillips, 2014), which aimed to promote adaptive coping strategies by using a cognitive behavioral approach.
- 2) Promoting the use of the strategies conforming the problem-focused coping style (e.g., positive thinking), which according to our results might impact in lower burnout and PTSD rates and also in higher PTG.
- 3) Recognizing and normalizing the occurrence of PTG in pediatric professionals should be another objective of psychological interventions. This is also an important and necessary intervention because, as our last study in part III has shown, PTG might contribute to compensate the negative impact of experiencing work-related traumatic events on the professionals' satisfaction with life.

- 4) Our studies have shown that, in the group of PICU staff, resilience is related to depersonalization. Thus, for professionals working in particularly high-risk contexts, being able to regulate their relation with their patients might favor their resilience. Consequently, training professionals' abilities for self-regulating their relations with their patients might be a helpful intervention for PICU staff, as this could help them find a balance between compassion and the necessary detachment (Baverstock & Finlay, 2015).
- 5) According to our results, stress seems to be one of the variables mediating the relation between subjective resilience and longer-term adaptation, thus interventions to reduce stress could be helpful in reducing professionals' PTSD and burnout and should be implemented. In that sense, mindfulness training has proved to be an effective intervention to reduce stress and build resilience in different health care providers (Foureur, Besley, Burton, Yu & Crisp, 2013), including intensive care workers (Mealer et al., 2014). Consistently, Goldhagen, Kingsolver, Stinnett and Rosdahl (2015) developed what they termed "mindfulness-based resilience activities", which introduced mindful-awareness and included practical exercises for nurturing resilience, such as value exploration, and cultivation of positivity. This program has proved to be useful in reducing stress and burnout in female residents who perceived higher stress. Another intervention coherent with this idea that proved to be useful for improving resilience, stress, anxiety, and overall quality of life is the Stress Management And Resilience Training (SMART) program (Sood, Prasad, Schroeder & Varkey, 2011). The SMART is based on the idea that attention tends to focus on the past or the present, and this predisposes to excessive thinking, ineffective efforts toward thought suppression, and avoidant response, all of which leads to stress. Consequently, this intervention guides learners to focus on the present to reduce stress and foster resilience.

- 6) Our studies have shown that the levels of distress in professionals are higher when conflicts with work colleagues or patients had occurred in the previous week. We consider that these conflicts are inevitable in a workplace as complex and stressful as the PICU. Therefore, we believe that interventions shouldn't be aimed at eliminating conflicts, but at helping professionals to manage them more effectively. In that sense, consistently with findings of previous studies (e.g., Siu et al., 2014), we believe that this objective could be accomplished by training the professionals in the utilization of more efficient communication strategies.
- 7) Interventions should aim to provide clinicians with an adequate training in end-of-life care, as, according to our results, professionals are especially vulnerable to suffer from burnout and PTSD when the death of a child had occurred in the previous week. In this line, previous studies suggest that improving communication about end-of-life care and offering clinicians the opportunity to discuss their experiences after the death of a patient may help to address their symptoms of burnout and PTSD (Hough et al., 2005).

Regarding the format of a possible intervention comprising all these aims, we think that group interventions would be more effective and also more feasible, as many professionals could receive the program at the same time, and they could benefit from each other's experiences. This is coherent with most of previous interventions aimed at reducing distress in health care providers (Foureur et al., 2013; Goldhagen et al., 2015, Siu et al., 2014), although some of them, such as the SMART program, have used one-by-one sessions (Sood et al., 2011), and others have combined group sessions with individual sessions (Mealer et al., 2014). In any case, the format of the intervention would depend on the context (e.g., time that the professionals can dedicate to training, availability of resources, etc.).

Furthermore, from our perspective, these interventions shouldn't be isolated actions, but they should be periodical (e.g., every six months, every year). Moreover, it would be

convenient that professionals receive boosters, which would act as reminders of the training, and as positive reinforcement. Additionally, interventions when a particularly traumatic or difficult situation occurs (such as the death of a patient) could provide the staff with extra support when they are more vulnerable to suffer from psychological problems.

Finally, we consider that, in order to implement these interventions effectively, it would be first necessary to establish a trauma informed care framework which contributes to professional awareness of the frequent reactions of trauma (e.g., intrusive thoughts, hyper-activation) so that they can recognize these reactions in themselves. We consider that this framework should be established in all the wards because, as our studies have shown, professionals working in other pediatric units have similar levels of distress than those working in PICU. From our point of view, only existing awareness from both the intensive care staff and hospital administrators about the importance of taking care of professionals' mental health in their work setting can make it possible to implement the necessary preventive interventions such as the ones we have described. Again, these interventions should not be isolated actions, but part of a culture that cares about the patients' and professionals' mental health.

---

## REFERENCES

---

- Aamir, M., Mittal, K., Kaushik, J.S., Kashyap, H. & Kaur, G. (2014). Predictors of stress among parents in pediatric intensive care unit: A prospective observational study. *The Indian Journal of Pediatrics*, *81*(11), 1167-1170. doi:10.1007/s12098-014-1415-6
- Affleck, G., Tennen, H., & Gershman, K. (1985). Cognitive adaptations to high-risk infants: The search for mastery, meaning, and protection from future harm. *American Journal of Mental Deficiency*, *89*(6), 653-656.
- Agazio, J. B., & Buckley, K. M. (2012). Revision of a parental stress scale for use on a pediatric general care unit. *Pediatric Nursing*, *38*(2), 82-87.
- Agnes, M. (Ed.). (2005). *Webster's new college dictionary*. Cleveland, OH: Wiley.
- Aguado, J, Luciano, J. V., Cebolla, A., Serrano-Blanco, A., Soler, J. & García-Campayo, J. (2015). Bifactor analysis and construct validity of the five facet mindfulness questionnaire (FFMQ) in non-clinical Spanish samples. *Frontiers in Psychology*, *6*, 404. doi: 10.3389/fpsyg.2015.00404
- Aguayo, R., Vargas, C., Emilia I. de la Fuente, & Lozano, L. M. (2011). A meta-analytic reliability generalization study of the Maslach burnout inventory. *International Journal of Clinical and Health Psychology*, *11*(2), 343-361.
- Alderfer, M. A., & Kazak, A. E. (2006). Family issues when a child is on treatment for cancer. In R. T. Brown (Ed.), *Comprehensive handbook of childhood cancer and sickle cell disease: A biopsychosocial approach*. New York: Oxford University Press.
- Alderfer, M. A., Long, K. A., Lown, E. A., Marsland, A. L., Ostrowski, N. L., Hock, J. M., & Ewing, L. J. (2010). Psychosocial adjustment of siblings of children with cancer: A systematic review. *Psycho-Oncology*, *19*(8), 789-805. doi:10.1002/pon.1638

- Aldridge, M. D. (2005). Decreasing parental stress in the pediatric intensive care unit: One unit's experience. *Critical Care Nurse*, 25(6), 40-50. doi:10.1002/9781444345186.ch37
- Alok, R., Das, S., Agarwal, G., Tiwari, S., Salwahan, L., & Srivastava, R. (2014). Problem-focused coping and self-efficacy as correlates of quality of life and severity of fibromyalgia in primary fibromyalgia patients. *Journal of Clinical Rheumatology*, 20(6), 314-316. doi:10.1097/RHU.0000000000000130
- Alonso-Tapia J., Nieto, C., & Ruiz, M. A. (2013). Measuring subjective resilience despite adversity due to family, peers and teachers. *The Spanish Journal of Psychology*, 16(19), 1–13. doi:10.1017/sjp.2013.33
- Alonso-Tapia, J., & Villasana, M. (2014). Assessment of subjective resilience: Cross-cultural validity and educational implications. *Infancia y Aprendizaje - Journal for the Study of Education and Development*. English: pp. 1–17 / Spanish: pp. 18–35. doi:10.1080/02103702.2014.965462
- Alonso-Tapia, J., Hernansaiz-Garrido, H., Rodríguez-Rey, R., Ruiz, M., & Nieto, C. (2016). Personality factors underlying resilience: Development and validation of the Resiliency Questionnaire for Adults (RQA). *Manuscript submitted for publication*. Madrid: Universidad Autónoma.
- Alonso-Tapia, J., Rodríguez-Rey, R., Hernansaiz-Garrido, H., Ruiz, M., & Nieto, C. (2016a). Coping assessment from the perspective of ‘Person-situation interaction’: The Situated Coping Questionnaire for Adults (SCQA). *Manuscript submitted for publication*. Madrid: Universidad Autónoma.
- Alonso-Tapia, J., Rodríguez-Rey, R., Hernansaiz-Garrido, H., Ruiz, M., & Nieto, C. (2016b). Development and validation of the Situated Subjective Resilience Questionnaire for Adults (SSRQA). *Manuscript submitted for publication*. Madrid: Universidad Autónoma.



- Alonso-Tapia, J., Rodríguez-Rey, R., Hernansaiz-Garrido, H., Ruiz, M., & Nieto, C. (2016c). Prediction of subjective resilience from coping strategies and protective personality factors. *Manuscript submitted for publication*. Madrid: Universidad Autónoma.
- Aluja, A., Blanch, A., Blanco, E., & Balada, F. (2012). Affective modulation of the startle reflex and the Reinforcement Sensitivity Theory of personality: The role of sensitivity to reward. *Physiology and Behavior*, *138*, 332–339. doi:10.1016/j.physbeh.2014.09.009
- Amat, S., Subhan, M., Jaafar, W. M. W., Mahmud, Z., & Johari, K. S. K. (2014). Evaluation and Psychometric Status of the Brief Resilience Scale in a Sample of Malaysian International Students. *Asian Social Science*, *10*(18), 240–245. doi:10.5539/ass.v10n18p240
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2011). *Diagnostic and statistical: Manual of disorders: DSM-IV-TR* (4th, text rev. ed.). Washington DC, London: American Psychiatric Publishing.
- Anderson, W. P., Jr, & Lopez-Baez, S. I. (2008). Measuring growth with the posttraumatic growth inventory. *Measurement and Evaluation in Counseling and Development*, *40*(4), 215-227.
- Arnedt, J.T., Owens, J., Crouch, M., et al. (2005). Neurobehavioral performance of residents after heavy night call vs after alcohol ingestion. *Journal of the American Medical Association*, *294*, 1025–1033.
- Atkins, E., Colville, G., & John, M. (2012). A 'biopsychosocial' model for recovery: A grounded theory study of families' journeys after a paediatric intensive care admission. *Intensive and Critical Care Nursing*, *28*(3), 133-140. doi:10.1016/j.iccn.2011.12.002

- Balluffi, A., Kassam-Adams, N., Kazak, A., Tucker, M., Dominguez, T., & Helfaer, M. (2004). Traumatic stress in parents of children admitted to the pediatric intensive care unit. *Pediatric critical care medicine*, 5(6), 547-553. doi:10.1097/01.PCC.0000137354.19807.44
- Bandura A. (1997). *Self-efficacy: the exercise of control*. New York, NY: Freeman.
- Barakat, L.P., Alderfer, M.A., Kazak, A.E. (2006) Posttraumatic growth in adolescent survivors of cancer and their mothers and fathers. *Journal of Pediatric Psychology*, 31, 413- 419.
- Bartone, P. T. (2007). Test-retest reliability of the dispositional resilience scale-15. A brief hardiness scale. *Psychological Reports*, 101, 943-944. <http://dx.doi.org/10.2466/pr0.101.3.943-944>
- Baruth, K.E., & Carroll, J.J. (2002). A formal assessment of resilience: The Baruth Protective Factors. *Journal of Individual Psychology*, 58, 235-244.
- Baverstock, A.C., Finlay, F.O. (2015). Maintaining compassion and preventing compassion fatigue: a practical guide. *Archives of Disease in Childhood - Education and Practice*, 0, 1–5. doi:10.1136/archdischild-2015-308582
- Bensimon, M. (2012). Elaboration on the association between trauma, PTSD and posttraumatic growth: The role of trait resilience. *Personality and Individual Differences*, 52(7), 782-787. doi:10.1016/j.paid.2012.01.011
- Berenbaum, J., & Hatcher, J. (1992). Emotional distress of mothers of hospitalized children. *Journal of Pediatric Psychology*. 17, 359–372.
- Betancourt, T. S., Meyers-Ohki, S. E., Charrow, A., & Hansen, N. (2013). Annual research review: Mental health and resilience in HIV/AIDS-affected children – a review of the literature and recommendations for future research. *Journal of Child Psychology and Psychiatry*, 54(4), 423-444. doi:10.1111/j.1469-7610.2012.02613.x

- Beauducel, A. & Herzberg, P.Y. (2006). On the performance of Maximum Likelihood versus Mean and Variance Adjusted Weighted Least Squares estimation in CFA. *Structural Equation Modeling*, 13(2), 186-203. doi: 10.1207/s15328007sem1302\_2
- Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the hospital anxiety and depression scale: An updated literature review. *Journal of Psychosomatic Research*, 52(2), 69-77. doi:10.1016/S0022-3999(01)00296-3
- Block, J., & Kremen, A. M. (1996). IQ and ego-resilience: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, 70, 349–361. <http://dx.doi.org/10.1037/0022-3514.70.2.349>
- Bloomer, M. J., O'Connor, M., Copnell, B., & Endacott, R. (2015). Nursing care for the families of the dying child/infant in paediatric and neonatal ICU: Nurses' emotional talk and sources of discomfort. A mixed methods study. *Australian Critical Care*, 28(2), 87-92. doi:10.1016/j.aucc.2015.01.002
- Board, R. (2004). Father stress during a child's critical care hospitalization. *Journal of Pediatric Health Care*, 18(5), 244-249. doi:10.1016/j.pedhc.2004.06.003
- Board, R., & Ryan-Wenger, N. (2002). Long-term effects of pediatric intensive care unit hospitalization on families with young children. *Heart & Lung*, 31(1), 53-66. doi:10.1067/mhl.2002.121246
- Bobes, J., Calcedo-Barba, A., García, M., François, M., Rico-Villademoros, F., González, M. P.,..., Grupo Español de Trabajo para el Estudio del Trastorno por Estrés Postraumático. (2000). Evaluation of the psychometric properties of the Spanish version of 5 questionnaires for the evaluation of post-traumatic stress syndrome. *Actas Españolas de Psiquiatría*, 28(4), 207-218.
- Bonanno, G. A, Brewin, C. R, Kaniasty, K. & La Greca, A. M. (2010). Weighing the costs of disaster: consequences, risks, and resilience in individuals, families and communities.

- Psychological Science in the Public Interest*, 11(1), 1–49.  
doi:10.1177/1529100610387086
- Bonanno, G. A. (2005). Resilience in the face of potential trauma. *Current Directions in Psychological Science*, 4(3), 135-138. doi:10.1111/j.0963-7214.2005.00347.x
- Bonanno, G. A., & Keltner, D. (1997). Facial expressions of emotion and the course of conjugal bereavement. *Journal of Abnormal Psychology*, 106(1), 126-137. doi:10.1037/0021-843X.106.1.126
- Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology*, 75(5), 671-682. doi:10.1037/0022-006X.75.5.671
- Bonanno, G. A., Westphal, M., & Mancini, A. D. (2011). Resilience to loss and potential trauma. *Annual Review of Clinical Psychology*, 7, 511-535. doi:10.1146/annurev-clinpsy-032210-104526
- Bonanno, G.A. (2005). Clarifying and extending the construct of adult resilience. *American Psychologist* 60, 265–267. doi:10.1037/0003-066X.60.3.265b
- Bonanno, G.A. & Diminich, A.D. (2013). Annual Research Review: Positive adjustment to adversity – trajectories of minimal–impact resilience and emergent resilience. *Journal of Child Psychology and Psychiatry*, 54(4), 378–401. doi:10.1111/jcpp.12021
- Boyce, W.T. & Ellis, B.J. (2005). Biological sensitivity to context: I. An evolutionary–developmental theory of the origins and functions of stress reactivity. *Development and Psychopathology*, 17, 271–301. doi: 10.1017/S0954579405050145
- Brewin, C. R. (2005). Systematic review of screening instruments for the detection of posttraumatic stress disorder in adults. *Journal of Traumatic Stress*, 18, 53

- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*(5), 748-766. doi:10.1037/0022-006X.68.5.748
- Brewin, C.R., Rose, S., Andrews, B., Green, J., Tata, P., McEvedy, C., Turner, S. & Foa, E.B. (2002). Brief screening instrument for post-traumatic stress disorder. *British Journal of Psychiatry, 181*, 158–162. doi:10.1192/bjp.181.2.158
- Bromley, E., Johnson, J. G., & Cohen, P. (2006). Personality strengths in adolescence and decreased risk of developing mental health problems in early adulthood. *Comprehensive Psychiatry, 47*(4), 315-324. doi:10.1016/j.comppsy.2005.11.003
- Bronner, M., Knoester, H., Bos, A., Last, B., & Grootenhuis, M. (2008). Follow-up after paediatric intensive care treatment: Parental posttraumatic stress. *Acta Paediatrica, 97*(2), 181-186. doi:10.1111/1.1651-2227.200700600.x
- Bronner, M.B., Peek, N., Knoester, H., Bos, A.P., Last, B.F. & Grootenhuis, M.A. (2010). Course and predictors of posttraumatic stress disorder in parents after pediatric intensive care treatment of their child. *Journal of Pediatric Psychology, 35*(9), 966-974. doi:10.1093/jpepsy/jsq004
- Busse, M., Stromgren, K., Thorngate, L., & Thomas, K. A. (2013). Parents' responses to stress in the neonatal intensive care unit. *Critical Care Nurse, 33*(4), 52-60. doi:10.4037/ccn2013715
- Cadge, W., & Hammonds, C. (2012). Reconsidering detached concern: The case of intensive-care nurses. *Perspectives in Biology and Medicine, 55*(2), 266-282. doi:10.1353/pbm.2012.0021
- Calhoun, L., Vishnevsky, T., Taku, K., Danhauer, S., Tedeschi, R., Triplett, K., & Cann, A. (2010). A short form of the posttraumatic growth inventory. *Anxiety, Stress & Coping, 23*(2), 127-137. doi:10.1080/10615800903094273

- Campbell-Sills, L., & Stein, M.B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): validation of a 10-item measure of resilience. *Journal of Traumatic Stress, 20*, 1019-1028. doi:10.1002/jts.20271
- Cárdenas, M., Barrientos, J. & Rovira, D. (2015). Spanish adaptation and validation of the posttraumatic growth inventory-short form. *Violence and Victims, 30*(5), 756-769. doi:10.1891/0886-6708.VV-D-13-00165
- Carter, M. C., & Miles, M. S. (1989). The parental stressor scale: Pediatric intensive care unit. *Maternal-Child Nursing Journal, 18*(3), 187-198.
- Carter, M.C., Miles, M.S., Buford, T.H., & Hassanein, R.S. (1985). Parental environmental stress in pediatric intensive care units. *Dimensions of Critical Care Nursing, 14* (3), 181-188.
- Carty, J., O'Donnell, M. L., & Creamer, M. (2006). Delayed-onset PTSD: A prospective study of injury survivors. *Journal of Affective Disorders, 90*(2), 257-261. doi:10.1016/j.jad.2005.11.011
- Carver, C.S. & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology, 61*, 679-704. doi: 10.1146/annurev.psych.093008.100352
- Casanueva, L. (2013). El papel del pediatra intensivista ante la muerte de sus pacientes en la unidad de cuidados intensivos pediátricos. [The role of pediatric intensivists towards the death of their patients in the pediatric intensive care unit]. *Anales De Pediatría Continuada, 11*(2), 117-121. doi:10.1016/S1696-2818(13)70127-6
- Casanueva, L., Ruiz, P., Sánchez, J.I., Ramos, V., Belda, S., Llorente, A., & Mar, F. (2007). Cuidados al final de la vida en la unidad de cuidados intensivos pediátricos. Empleo de técnicas de investigación cualitativa para el análisis del afrontamiento de la muerte y situaciones críticas. [End-of-life care in the pediatric intensive care unit. Use of

- qualitative research techniques for analyzing coping with death and critical situations]. *Revista Calidad Asistencial*, 22(1), 36-43.
- Casanueva, L., Ruiz, P., Sánchez, J. I., Ramos, M. V., Belda, S., Llorente, A., & Mar, F. (2005). Cuidados al final de la vida en la unidad de cuidados intensivos pediátrica. Revisión de la bibliografía [End-of-life-care in the Pediatric Intensive Care Unit. A review of the literature]. *Anales De Pediatría*, 63(2), 152-159. doi:10.1157/13077458
- Chen, S.M., McMurray, A. (2001). Burnout in intensive care nurses. *Journal of Nursing Research*, 9, 152–164.
- Clogg, C. C., Petkova, E., & Haritou, A. (1995). Statistical methods for comparing regression coefficients between models. *American Journal of Sociology*, 100(5), 1261-1293. doi:10.1086/230638
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.
- Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion*, 9(3), 361-368. doi:10.1037/a0015952
- Cole, P.M., Martin, S.E., Dennis, T.A. (2004). Emotion regulation as a scientific construct: methodological challenges and directions for child development research. *Child Development*, 75, 317–33. doi:10.1111/j.1467-8624.2004.00673.x
- Colville, G. (*in press*). Supporting pediatric patients and their families during and after intensive care treatment.
- Colville, G.A. (2015). Psychological aspects of care of the critically ill child. *Journal of Pediatric Intensive Care*, 4, 182–187. doi: 10.1055/s-0035-1563542

- Colville, G., & Cream, P. (2009). Post-traumatic growth in parents after a child's admission to intensive care: Maybe Nietzsche was right? *Intensive Care Medicine*, 35(5), 919-923. doi:10.1007/s00134-009-1444-1
- Colville, G., & Gracey, D. (2006). Mother's recollection of the Paediatric Intensive Care Unit: Associations with psychopathology and views on follow up. *Intensive Critical Care Nursing*, 22, 49-55. doi:10.1016/j.ccn.2005.04.002
- Colville, G., & Pierce, C. (2012). Patterns of post-traumatic stress symptoms in families after paediatric intensive care. *Intensive Care Medicine*, 38(9), 1523-1531. doi:10.1007/s00134-012-2612-2
- Colville, G., Dalia, C., Brierley, J., Abbas, K., Morgan, H. & Perkins-Porras, L. (2014). Burnout and traumatic stress in staff working in paediatric intensive care: associations with resilience and coping strategies. *Intensive Care Medicine*, 41(2), 364-365. doi:10.1007/s00134-014-3559-2
- Colville, G., Darkins, J., Hesketh, J., Bennett, V., Alcock, J. & Noyes, J. (2009). The impact on parents on a child's admission to intensive care: Integration of qualitative findings from a cross-sectional study. *Intensive Critical Care Nursing*, 25, 72-79. doi:10.1016/j.iccn.2008.10.002
- Connor, K.M. & Davidson, J.R.T. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18, 71-82. doi:10.1002/da.10113
- Constantine, N. A., & Benard, B. (2001). California Healthy Kids Survey Resilience Assessment Module: Technical report. Berkeley, CA: Public Health Institute. [http://ies.ed.gov/ncee/edlabs/regions/west/pdf/REL\\_2007034.pdf](http://ies.ed.gov/ncee/edlabs/regions/west/pdf/REL_2007034.pdf)
- Cooley, W.W., Lohnes, P.R. (1971). *Multivariate data analysis*. New York: Willey.



- Costa-Requena, G. & Gil Moncayo, F.L. (2007). Crecimiento postraumático en pacientes oncológicos. [Post-traumatic growth in oncological patients]. *Análisis y Modificación de Conducta*, 33(148), 229-250. doi:10.5751/ES-05377-180216
- Cronbach, L.J. (1950). Further evidence on response sets and test design. *Educational and Psychological Measurement*, 10, 3–31.
- Cummings, E. M., Davies, P. T., & Campbell, S. B. (2000). *Developmental psychopathology and family process*. New York: Guilford Press.
- Curley, M.A.Q. (1988). Effects of the nursing mutual participation model of care on parental stress in the pediatric intensive care unit. *Heart and Lung*, 17(6), 682-688.
- Curley, M.A.Q., & Wallace, J. (1992). Effects of the nursing mutual participation model of care on parental stress in the pediatric intensive care unit: A replication. *Journal of Pediatric Nursing*, 17(6), 377-385.
- Curtis, J.R. & Puntillo, K. (2007). Is there an epidemic of burnout and post-traumatic stress in critical care clinicians? *American Journal of Respiratory Critical Care Medicine*, 175, 634–636. doi:10.1164/rccm.200702-194ED
- D’Zurilla, T. J., & Chang, E. C. (1995). The relations between social problem solving and coping. *Cognitive Therapy & Research*, 19, 547–562.
- da Silva, S., Moreira, H., Pinto, S., Sousa, M., & Canavarro, P. (2009). Cancro da mama e desenvolvimento pessoal e relacional: Estudo das características psicométricas do Inventário de Desenvolvimento Pós-Traumático numa amostra de mulheres da população Portuguesa [Breast cancer and personal and relational growth: Psychometric characteristics of the Portuguese version of the Posttraumatic Growth Inventory in a sample of Portuguese women]. *Revista Iberoamericana de Diagnóstico e Avaliação Psicológica*, 2(28), 105–133.

- Dale, S. K., Cohen, M. H., Kelso, G. A., Cruise, R. C., Weber, K. M., Watson, C. . Brody, L. R. (2014). Resilience among women with HIV: Impact of silencing the self and socioeconomic factors. *Sex Roles, 70*(5), 221-231. doi:10.1007/s11199-014-0348-x
- Davidson, J. R. T., Book, S. W., Colket, J. T., Tupler, L. A., Roth, S., David, D., Hertzberg, M., Mellman, T., Beckham, J. C., Smith, R., Davison, R. M., Katz, R., & Feldman, M. (1997). Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine, 27*, 153-160. doi:10.1017/S0033291796004229
- Del Rincón, C., Remor E., Arranz, P. (2007) Estudio psicométrico preliminar de la versión española del Pediatric Inventory for Parents (PIP). *International Journal of Clinical and Health Psychology, 7* (2), 435- 452.
- Demerouti, E., Bakker, A.B., Nachreiner, F. & Schaufeli, W.B . (2000). A model of burnout and life satisfaction amongst nurses. *Journal of Advanced Nursing, 32*(2), 454-464. doi:10.1046/j.1365-2648.2000.01496.x
- Diener, E.D., Emmons, R.A., Larsen, R.J. & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*, 71-75.
- Donnon, T. & Hammond, W. (2007). A psychometric assessment of the self-reported youth resilience: Assessing Developmental Strengths Questionnaire. *Psychological Reports, 100*, 963-978. <http://dx.doi.org/10.2466/pr0.100.3.963-978>
- Eberly, T.W., Miles, M.S., Carter, M.C., Hennessey, J., & Riddle, I. (1985). Parental stress after the unexpected admission of a child to the intensive care unit. *Critical Care Quarterly, 8*(1), 57-65. doi:10.1007/s10880-012-9328-x
- Eicher, M., Matzka, M., Dubey, C., & White, K. (2015). Resilience in adult cancer care: An integrative literature review. *Oncology Nursing Forum, 42*(1), E3-E16. doi:10.1188/15.ONF.E3-E16

- Ellis, A. (2001). *Overcoming destructive beliefs, feelings and behaviors: New directions for rational emotive therapy*. New York: Prometheus Books.
- Embriaco, N., Azoulay, E., Barrau, K., Kentish, N., Pochard, F., Loundou, A., & Papazian, L. (2007). High level of burnout in intensivists: Prevalence and associated factors. *American Journal of Respiratory and Critical Care Medicine*, *175*(7), 686-692. doi:10.1164/rccm.200608-1184OC
- Embriaco, N., Papazian, L., Kentish-Barnes, N., Pochard, F. & Azoulay, E. (2007). Burnout syndrome among critical care healthcare workers. *Current Opinion in Critical Care*, *13*, 482-488. doi:10.1097/MCC.0b013e3282efd28a
- Farber, J. M., Weinerman, B. H. & Kuypers, J. A. (1983). Psychosocial distress in oncology outpatients. *Journal of Psychosocial Oncology*, *2*, 109–118.
- Fauman, K. R., Pituch, K. J., Han, Y. Y., Niedner, M. F., Reske, J., & LeVine, A. M. (2011). Predictors of depressive symptoms in parents of chronically ill children admitted to the pediatric intensive care unit. *American Journal of Hospice and Palliative Medicine*, *28*(8), 556-563. doi:10.1177/1049909111403465
- Feudtner, C., Silveira, M.J. & Christakis, D.A. (2002). Where do children with complex chronic conditions die? Patterns in Whashington State 1980-1998. *Pediatrics*, *12*, 9-12.
- Fields, A. I., Cuerdon, T. T., Brasseux, C. O., Getson, P. R., Thompson, A. E., Orłowski, J. P., & Youngner, S. J. (1995). Physician burnout in pediatric critical care medicine. *Critical Care Medicine*, *23*(8), 1425-1429. doi:10.1097/00003246-199508000-00018
- Folkman, S. & Moscovitz, J.T. (2004). Coping pitfalls and promise. *Annual Review of Psychology*, *55*, 745-774. doi: 10.1146/annurev.psych.55.090902.142040
- Foureur, M., Besley, K., Burton, G., Yu, N., & Crisp, J. (2013). Enhancing the resilience of nurses and midwives: Pilot of a mindfulness-based program for increased health, sense

- of coherence and decreased depression, anxiety and stress. *Contemporary Nurse*, 45, 1, 114.
- Frade-Mera, M. J., Vinagre-Gaspar, R., Zaragoza-García, I., Viñas-Sánchez, S., Antúnez-Melero, E., Álvarez-González, S., & Malpartida-Martín, P. (2009). Síndrome de burnout en distintas unidades de cuidados intensivos. *Enfermería Intensiva*, 20(4), 131-140. doi:10.1016/S1130-2399(09)73221-3
- Franck, L., Wray, J., Gay, C., Dearmun, A., Lee, K., & Cooper, B. (2015). Predictors of parent post-traumatic stress symptoms after child hospitalization on general pediatric wards: A prospective cohort study. *International Journal of Nursing Studies*, 52(1), 10-21. doi:10.1016/j.ijnurstu.2014.06.011
- Franck, L.S., Mcquillan, A., Wray, J., Grocott, M.P.W. & Goldman, A. (2010). Parent stress levels during Children's hospital recovery after congenital heart surgery. *Pediatric Cardiology*, 31(7), 961-968. doi:10.1007/s00246-010-9726-5
- Frankenberg, E., Sikoki, B., Sumantri, C., Suriastini, W. & Thomas, D. (2013). Education, vulnerability, and resilience after a natural disaster. *Ecology and Society*, 18(2), 16-28. doi:10.5751/ES-05377-180216
- Frazier, P., Tashiro, T., Berman, M., Steger, M., & Long, J. (2004). Correlates of levels and patterns of positive life changes following sexual assault. *Journal of Consulting and Clinical Psychology*, 72, 19–30. doi:10.1037/0022-006X.72.1.19
- Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention & Treatment*, 3 (1). doi:10.1037/1522-3736.3.1.31a
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95(5), 1045-1062. doi:10.1037/a0013262

- Fredrickson, B.L. (2001). The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218-226. doi:10.1037/0003-066X.56.3.218
- Fredrickson, B.L., Tugade, M.M., Waugh, C.E., & Larkin, G. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*. *84*, 365–376. doi:10.1037/0022-3514.84.2.365
- Freedman, H.S. & Kern, M. L. (2014). Personality, Well-Being, and Health. *Annual Review of Psychology*, *65*, 719–742. doi:10.1146/annurev-psych-010213-115123
- Friborg, O., Barlaug, D., Martinussen, M., Rosenvinge, J.H. & Hjemdal, O. (2005). Resilience in relation to personality and intelligence. *International Journal of Methods in Psychiatric Research*, *14*(1), 29-42. doi:10.1002/mpr.15
- Friborg, O., Hjemdal, O., Rosenvinge, J. H. & Martinussen, M. (2003). A new rating scale for adult resilience: What are the central protective resources behind healthy adjustment? *International Journal of Methods in Psychiatric Research*, *12*, 65-76. doi:10.1002/mpr.143
- Galván, M. E., Vassallo, J. C., Rodríguez, S. P., Otero, P., Montonati, M. M., Cardigni, G. . Sarli, M. (2014). Síndrome de desgaste profesional (burnout) en médicos de unidades de cuidados intensivos pediátricos en la Argentina. [Physician's burnout in pediatric intensive care units from Argentina]. *Archivos Argentinos de Pediatría*, *110*(6), 466-473.
- Gannoni, A. F., & Shute, R. H. (2010). Parental and child perspectives on adaptation to childhood chronic illness: A qualitative study. *Clinical Child Psychology and Psychiatry*, *15*(1), 39-53. doi:10.1177/1359104509338432

- Gartland, D., Bond, L., Olsson, C., Buzwell, S. & Sawyer, S. (2006). The Adolescent Resilience Questionnaire (ARQ)-revised. Centre for Adolescent Health, Royal Children's Hospital, Melbourne, Australia.  
[www.ahda.org/downloads/ISSBD2006Gartland.pdf](http://www.ahda.org/downloads/ISSBD2006Gartland.pdf)
- Gerhardt, C.A., Gutzwiller, J., Huiet, K.A., Fischer, S., Noll, R.B., Vannatta, K. (2007). Parental adjustment to childhood cancer: A replication study. *Families, Systems, & Health*, 25, 3, 263-275. doi:10.1037/1091-7527.25.3.263
- Goldhagen, B.E., Kingsolver, K., Stinnett, S.S. & Rosdahl, J.A. (2015). Stress and burnout in residents: Impact of mindfulness-based resilience training. *Advances in Medical Education and Practice*, 6, 525-532.
- Goldstein, G. & Kenet, G. (2002). The impact of chronic disease on the family. *Haemophilia*, 8, 461-465. doi:10.1046/j.1365-2516.2002.00642.x
- Graham, R. J., Pemstein, D. M., & Curley, M. A. Q. (2009). Experiencing the pediatric intensive care unit: Perspective from parents of children with severe antecedent disabilities. *Critical Care Medicine*, 37(6), 2064-2070. doi:10.1097/CCM.0b013e3181a00578
- Gudmundsdottir, E., Schirren, M., Boman, K. K. (2011). Psychological resilience and long-term distress in Swedish and Icelandic parents' adjustment to childhood cancer. *Acta Oncologica*, 50(3), 373-380. doi:10.3109/0284186X.2010.489572
- Guftafsson, J.E. & Åberg-Bengtsson, L. (2010). Unidimensionality and interpretability of psychological instruments. In S.E. Embretson, (Ed.), *Measuring Psychological Constructs: Advances in Model-Based Approaches*. (p. 97-121). Washington: American Psychological Association.
- Haglund, M.E.M., Nestadt, P. S., Cooper, N. S., Southwick, S. M., & Charney, D. S. (2007). Psychobiological mechanisms of resilience: Relevance to revention and treatment of

- stress-related psychopathology. *Development and Psychopathology*, 19(3), 889 -920.  
doi:10.1017/S0954579407000430.
- Haines, C., Perger, C., & Nagy, S. (1995). A comparison of the stressors experienced by parents of intubated and non-intubated children. *Journal of Advanced Nursing*, 21(2), 350-355.  
doi:10.1111/j.1365-2648.1995.tb02533.x
- Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis*. Upper Saddle River, NJ: Pearson-Prentice Hall.
- Hamall, K. M., Heard, T. R., Inder, K. J., McGill, K. M., & Kay-Lambkin, F. (2014). The child illness and resilience program (CHiRP): A study protocol of a stepped care intervention to improve the resilience and wellbeing of families living with childhood chronic illness. *BMC Psychology*, 2(1), 5-5. doi:10.1186/2050-7283-2-5
- Hayes, V.E., & Knox, J.E. (1984). The experience of stress in parents of children hospitalized with long-term disabilities. *Journal of Advanced Nursing*, 9, 333-341.
- Helgeson, V.S., Reynolds, K.A., & Tomich, P.L. (2006). A Meta-Analytic Review of Benefit Finding and Growth. *Journal of Consulting and Clinical Psychology*, 74(5), 797- 816.  
doi:10.1037/0022-006X.74.5.797
- Herman, J. L., & Tetrick, L. E. (2009). Problem-focused versus emotion-focused coping strategies and repatriation adjustment. *Human Resource Management*, 48(1), 69-88.  
doi:10.1002/hrm.20267
- Hjemdal, O., Friberg, O., Stiles, T. C., Martinussen, M. & Rosenvinge, J. H. (2006). A new scale for adolescent resilience: Grasping the central protective resources behind healthy development. *Measurement and Evaluation in Counselling and Development*, 39, 84-96.
- Ho, S. M. Y., Chan, C. L. W., & Ho, R. T. H. (2004). Posttraumatic growth in Chinese cancer survivors. *Psycho-Oncology*, 13(6), 377-389. doi:10.1002/pon.758

- Hough, C. L., Hudson, L. D., Salud, A., Lahey, T., & Curtis, J. R. (2005). Death rounds: End-of-life discussions among medical residents in the intensive care unit. *Journal of Critical Care, 20*(1), 20-25. doi:10.1016/j.jcrc.2004.09.006
- Howard Sharp, K. M., Willard, V. W., Okado, Y., Tillery, R., Barnes, S., Long, A., & Phipps, S. (2015). Profiles of connectedness: Processes of resilience and growth in children with cancer. *Journal of Pediatric Psychology, 40*(9), 904-913. doi:10.1093/jpepsy/jsv036
- Hurtes, K. P. & Allen, L. R. (2001). Measuring resilience in youth: The Resilience Attitudes and Skills Profile. *Therapeutic Recreation Journal, 35*, 333-347.
- Jaarsma, T. A., Pool, G., Sanderman, R., & Ranchor, A. V. (2006). Psychometric properties of the Dutch version of the posttraumatic growth inventory among cancer patients. *Psycho-Oncology, 15*(10), 911-920. doi:10.1002/pon.1026
- Janoff-Bulman, R. (1992). *Shattered assumptions*. New York: The Free Press.
- Janoff-Bulman, R. (2004). Posttraumatic growth: Three explanatory models. *Psychological Inquiry, 15*(1), 30-34.
- Jee, R.A., Shepherd, J.R., Boyles, C.E., Marsh, M.J., Thomas, P.W. & Ross, O.C. (2012). Evaluation and comparison of parental needs, stressors, and coping strategies in a pediatric intensive care unit. *Pediatric Critical Care Medicine, 13*(3): e166-e175. doi:10.1097/PCC.0b013e31823893ad
- Jew, C. J., Green, K. E. & Kroger, J. (1999). Development and validation of a measure of resilience. *Measurement and Evaluation in Counseling and Development, 32*, 75-89.
- Jin, Y., Xu, J., & Liu, D. (2014). The relationship between posttraumatic stress disorder and post traumatic growth: Gender differences in PTG and PTSD subgroups. *Social Psychiatry and Psychiatric Epidemiology, 49*, 12, 1903-1910. doi:10.1007/s00127-014-0865-5



- Jorge, R. E. (2015). Posttraumatic stress disorder. *Continuum (Minneapolis, Minn.)*, 21(3 Behavioral Neurology and Neuropsychiatry), 789-805. doi:10.1212/01.CON.0000466667.20403.b1
- Joseph, S., Linley, P. A., & Harris, G. J. (2005). Understanding positive change following trauma and adversity: Structural clarification. *Journal of Loss and Trauma*, 10(1), 83–96. doi:10.1080/15325020490890741
- Kato, T. (2015). Frequently used coping scales: A Meta-Analysis. *Stress and Health*, 31(4), 315-323. doi:10.1002/smi.2557
- Katz, S. (2002). When the child's illness is life threatening: Impact on the parents. *Pediatric Nursing*, 28, 453-463.
- Kazak, A.E., Kassam-Adams, N., Schneider, S., Zelikovsky, N., Alderfer, M.A., Rourke, M. (2006). An integrative model of pediatric medical traumatic stress. *Journal of Pediatric Psychology*, 31, 343– 355. doi:10.1093/jpepsy/jsj054
- Kern de Castro, E. & Moreno-Jiménez, B. (2007). Resiliencia en niños enfermos crónicos: Aspectos teóricos. [Resilience in children with physical chronic illness: Theoretical aspects]. *Psicologia Em Estudo*, 12(1), 81-86. doi:10.1590/S1413-73722007000100010
- Kim, D. H., & Yoo, I. Y. (2010). Factors associated with resilience of school age children with cancer: Resilience of children with cancer. *Journal of Paediatrics and Child Health*, 46(7-8), 431-436. doi:10.1111/j.1440-1754.2010.01749.x
- Kirby, R., Shakespeare-Finch, J. & Palk, G. (2011). Adaptive and maladaptive coping strategies predict posttrauma outcomes in ambulance personnel. *Traumatology*, 17(4), 25-34. doi:10.1177/1534765610395623
- Klaghofer R, Stamm M, Buddeberg C, et al. (2011). Development of life satisfaction in young physicians: results of the prospective SwissMedCareer Study. *International Archives of*

*Occupational and Environmental Health*, 84,159-166. doi: 10.1007/s00420-010-0553-

z

Klohnen, E. C. (1996). Conceptual analysis and measurement of the construct of ego-resilience.

*Journal of Personality and Social Psychology*, 70, 1067-1079.

<http://dx.doi.org/10.1037/0022-3514.70.5.1067>

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study.

*Journal of Personality and Social Psychology*, 42, 168–177.

Kohlmann, C. (1993). Rigid and flexible modes of coping: Related to coping style? *Anxiety,*

*Stress and Coping*, 6, 107-123.

Konkolý Thege, B., Kovács, É., & Balog, P. (2014). A bifactor model of the posttraumatic growth inventory. *Health Psychology and Behavioral Medicine*, 2(1), 529-540.

doi:10.1080/21642850.2014.905208

LaMontagne, L.L., & Pawlak, R. (1990). Stress and coping of parents of children in a pediatric

intensive care unit. *Heart and Lung*, 19(4), 416-421.

Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Lazarus, R. S. (2006). Emotions and interpersonal relationships: Toward a person-centered conceptualization of emotions and coping. *Journal of Personality*, 74(1), 9-46. doi:

10.1111/j.1467-6494.2005.00368.x

Lazarus, R.S. (1999). *Stress and emotion: A new synthesis*. New York: Springer.

Lazarus, R.S., Launier, R. (1978). Stress-related transactions between person and environment.

In Pervinla O, Lewis M. (eds). *Perspectives in International Psychology* (pp. 287-327).

New York: Plenum Press.

LeBuffe, P. A., Shapiro, V. & Naglieri, J. A. (2011). *Devereux Student Strengths Assessment*

*Comprehensive System*. Devereux Foundation.

- Lee, E. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research*, 6(4), 121-127. doi:10.1016/j.anr.2012.08.004
- Lee, J. A., Luxton, D. D., Reger, G. M., & Gahm, G. A. (2010). Confirmatory factor analysis of the posttraumatic growth inventory with a sample of soldiers previously deployed in support of the Iraq and Afghanistan wars. *Journal of Clinical Psychology*, 66(7), 813-819. doi:10.1002/jclp.20692
- Lee, J.H, Nam, S.K., Kim, A., Kim, B, Lee, M.Y & Lee, S.M. (2013). Resilience: A Meta-Analytic Approach. *Journal of Counseling & Development*, 91(3), 269-279. doi: 10.1002/j.1556-6676.2013.00095.x
- Leipold, B., & Greeve, W. (2009). Resilience: A conceptual bridge between coping and development. *European Psychologist*, 14(1), 40–50. doi: 10.1027/1016-9040.14.1.40
- Leontjevas, R., de Beek, W. O., Lataster, J., & Jacobs, N. (2014). Resilience to affective disorders: A comparative validation of two resilience scales. *Journal of Affective Disorders*, 168, 262-268. doi:10.1016/j.jad.2014.07.010
- Levine, S. Z., Laufer, A., Stein, E., Hamama-Raz, Y., & Solomon, Z. (2009). Examining the relationship between resilience and posttraumatic growth. *Journal of Traumatic Stress*, 22(4), 282-286. doi:10.1002/jts.20409
- Liebenberg, L., Ungar, M., & LeBlanc, J. C. (2013). The CYRM-12: A brief measure of resilience. *Canadian Journal of Public Health*, 104(2), e131-e135.
- Limonero, J., Tomas-Sabado, J., Gomez-Romero, M., Mate-Mendez, J., Sinclair, V., Wallston, K., & Gomez-Benito, J. (2014). Evidence for validity of the brief resilient coping scale in a young Spanish sample. *Spanish Journal of Psychology*, 17(2), E34. doi:10.1017/sjp.2014.35

- Lindahl Norberg, A., & Boman, K. K. (2008). Parent distress in childhood cancer: A comparative evaluation of posttraumatic stress symptoms, depression and anxiety. *Acta Oncologica*, 47(2), 267-274. doi:10.1080/02841860701558773
- Linley, P. A., Andrews, L., & Joseph, S. (2007). Confirmatory factor analysis of the posttraumatic growth inventory. *Journal of Loss and Trauma*, 12(4), 321-332. doi:10.1080/15325020601162823
- Lockley, S. W., Cronin, J. W., Evans, E. E., Cade, B. E., Lee, C. J., Landrigan, C. P., . . . Harvard Work Hours, Hlth Safety Gr. (2004). Effect of reducing interns' weekly work hours on sleep and attentional failures. *The New England Journal of Medicine*, 351(18), 1829-1837. doi:10.1056/NEJMoa041404
- Long, K.A., Marsland, A.L. (2011) Family adjustment to childhood cancer: a systematic review. *Clin Child Fam Psychol Rev.*, 14, 1, 57-88. doi:10.1007/s10567-010-0082-z
- Luthar, S.S. (2006). Resilience in development: A synthesis of research across five decades. In: Cicchetti D, Cohen DJ, (Eds.). *Development Psychopathology: Risk, disorder and adaptation*. 2nd ed. (pp. 740-795). New York: Wiley.
- Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71(3), 543-562. doi:10.1111/1467-8624.00164
- Maestas, K., Sherer, M., Sander, A., Tulskey, D., & Nick, T. (2014). The role of resilience in predicting depression, anxiety and participation in persons with traumatic brain injury. *Brain Injury*, 28(5-6), 789-790.
- Magnus, K., Diener, E., Fujita, F., & Pavot W. (1993). Extraversion and neuroticism as predictors of objective life events: a longitudinal analysis. *Journal of Personality and Social Psychology*, 65, 1046-1053.

- Marsh, H. W. (1996). Positive and negative global self-esteem: Substantively meaningful distinction or artifacts? *Journal of Personality and Social Psychology*, *70*, 810–819.
- Martino, R., Casado, J., & Ruiz, M. A. (2007). Actitudes y necesidades de los intensivistas pediátricos ante la muerte de sus pacientes [Attitudes and needs of the pediatric intensivists when facing the death of their patients]. *Anales De Pediatría*, *66*(4), 351-356. doi:10.1157/13101238
- Marusak, A., Martin, K.R., Etkin, A. & Thomason, M.E. (2015). Childhood trauma exposure disrupts the automatic regulation of emotional processing. *Neuropsychopharmacology*, *40*, 1250–1258. doi:10.1038/npp.2014.311
- Maslach, C., Jackson, S.E., Leiter, M.P. (1996). *The Maslach burnout inventory: manual*. Palo Alto Consulting Psychologists, Palo Alto.
- Maslach, C., Schaufeli, W.B., Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, *52*, 397–422.
- Masten, A. S. (2007). Resilience in developing systems: Progress and promise as the fourth wave rises. *Development and Psychopathology*, *19*(3), 921-930. doi:10.1017/S0954579407000442
- Masten, A.S. & Narayan, A.J. (2012). Child development in the context of disaster, war, and terrorism: Pathways of risk and resilience. *Annual Review of Psychology*, *63*, 227–257. doi: 10.1146/annurev-psych-120710-100356
- Masten, A.S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity. In M.C. Wang & E.W. Gordon (Eds), *Educational resilience in inner-city America: Challenges and prospects* (pp. 5-25). Hillsdale, NJ: Erlbaum.
- Masten, A.S. (2001). Ordinary Magic: Resilience processes in development. *American Psychologist*, *56*(3), 227-238. doi:10.1037/0003-066X.56.3.227
- Matesanz, A. (1997) *Evaluación estructurada de la personalidad*. Madrid: Pirámide.

- Mattlin, J.A., Wethnigton, E. & Kessler, R.C. (1990). Situational determinants of coping and coping effectiveness. *Journal of Health and Social Behavior*, 31, 103-122.
- McCrae, R.R. (1984). Situational determinants of coping responses: Loss, trait, and challenge. *Journal of Personality and Social Psychology*, 46, 919-928.
- McDonald, S. D., Beckham, J. C., Morey, R. A., & Calhoun, P. S. (2009). The validity and diagnostic efficiency of the Davidson trauma scale in military veterans who have served since September 11th, 2001. *Journal of Anxiety Disorders*, 23(2), 247-255. doi:10.1016/j.janxdis.2008.07.007
- McFarland, C., & Alvaro, C. (2000). The impact of motivation on temporal comparisons: Coping with traumatic events by perceiving personal growth. *Journal of Personality and Social Psychology*, 79(3), 327-343. doi:10.1037//0022-3514.79.3.327
- McMurray, J. E., Linzer, M., Konrad, T. R., Douglas, J., Shugerman, R., Nelson, K., the SGIM Career Satisfaction Study Group. (2000). The work lives of women physicians: Results from the physician work life study. *Journal of General Internal Medicine*, 15(6), 372-380. doi:10.1046/j.1525-1497.2000.9908009.x
- Mealer, M., Conrad, D., Evans, J., Jooste, K., Solyntjes, J., Rothbaum, B., & Moss, M. (2014). Feasibility and acceptability of a resilience training program for intensive care unit nurses. *American Journal of Critical Care*, 23(6), e97-e105. doi:10.4037/ajcc2014747
- Mealer, M., Jones, J., Moss, M. A. (2012). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine*, 38, 1445-1451. doi:10.1007/s00134-012-2600-6
- Mealer, M., Jones, J., Newman, J., McFann, K.K., Rothbaum, B., & Moss, M. (2012). The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: Results of a national survey. *International Journal of Nursing Studies*, 49, 292-299. doi:10.1016/j.ijnurstu.2011.09.015

- Mealer, M. L., Shelton, A., Berg, B., Rothbaum, B., & Moss, M. (2007). Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *American Journal of Respiratory and Critical Care Medicine*, 175(7), 693-697. doi:10.1164/rccm.200606-735OC
- Meert, K. L., Eggly, S., Pollack, M., Anand, K. J. S., Zimmerman, J., Carcillo, J. . National Institute of Child Health and Human Development Collaborative Pediatric Critical Care Research Network. (2008). Parents' perspectives on physician-parent communication near the time of a child's death in the pediatric intensive care unit. *Pediatric Critical Care Medicine*, 9(1), 2-7. doi:10.1097/01.PCC.0000298644.13882.88.
- Melnyk, B. M., Alpert-Gillis, L., Feinstein, N. F., Crean, H. F., Johnson, J., Fairbanks, E. . . Corbo-Richert, B. (2004). Creating opportunities for parent empowerment: Program effects on the mental Health/Coping outcomes of critically ill young children and their mothers. *Pediatrics*, 113(6), e597-607. doi:10.1542/peds.113.6.e597
- Meltzer, L. J., & Moore, M. (2008). Sleep disruptions in parents of children and adolescents with chronic illnesses: Prevalence, causes, and consequences. *Journal of Pediatric Psychology*, 33(3), 279-291. doi:10.1093/jpepsy/jsm118
- Miles, M.S., & Carter, M.C. (1983). Assessing parental stress in intensive care units. *Journal of Maternal Child Nursing*, 8, 354-360.
- Miles, M.S., & Carter, M.C. (1985). Coping strategies used by parents during their child's hospitalization in an intensive care unit. *Children's Health Care*, 14(1), 14-21. doi:10.1207/s15326888chc1401\_5
- Miles, M.S., Carter, M.C., Hennessey, J., Eberly, T. W., & Riddle, I. (1989). Testing a theoretical model: Correlates of parental stress responses in the pediatric intensive care unit. *Maternal-Child Nursing Journal*, 18(3), 207-219.

- Miles, M.S., Carter, M.C., Riddle, I., Hennessey, J., & Eberly, T. W. (1989). The pediatric intensive care unit environment as a source of stress for parents. *Maternal-Child Nursing Journal*, *18*(3), 199-206.
- Miles, M.S., Funk, S.G., & Kasper, M.A. (1991). The neonatal intensive care unit environment: Sources of stress for parents. *AACN Clinical Issues in Critical Care Nursing*, *2*(2), 346-354.
- Moos, R.H. & Billings, A.G. (1982). Conceptualizing and measuring coping resources and processes. In Goldberger L, Bregnitz S. (eds.). *Handbook of Stress: Theoretical and Clinical Aspects*. New York: The free Press.
- Morris, B. A., Shakespeare-Finch, J., Rieck, M., & Newbery, J. (2005). Multidimensional nature of posttraumatic growth in an Australian population. *Journal of Traumatic Stress*, *18*(5), 575-585. doi:10.1002/jts.20067
- Muscara, F., McCarthy, M. C., Woolf, C., Hearps, S. J. C., Burke, K., & Anderson, V. A. (2015). Early psychological reactions in parents of children with a life threatening illness within a pediatric hospital setting. *European Psychiatry*, *30*(5), 555-561. doi:10.1016/j.eurpsy.2014.12.008
- Nelson, L. P., & Gold, J. I. (2012). Posttraumatic stress disorder in children and their parents following admission to the pediatric intensive care unit: A review. *Pediatric Critical Care Medicine*, *13*(3), 338-347. doi:10.1097/PCC.0b013e3182196a8f
- Nizan, M. & Norzila, M.Z. (2001). Stress Among Parents With Acutely Ill Children. *Med J Malaysia*, *56* (4), 428-434.
- Nolen-Hoeksema, S. (2012). Emotion regulation and psychopathology: The role of gender. *Annual Review of Clinical Psychology*, *8*, 161-187. doi:10.1146/annurev-clinpsy-032511-143109



- Notario-Pacheco, B., Martínez-Vizcaíno, V., Trillo-Calvo, E., Pérez-Yus, M.C., Serrano-Parra, D., & García-Campayo, J. (2014). Validity and reliability of the Spanish version of the 10-item CD-RISC in patients with fibromyalgia. *Health and Quality of Life Outcomes*, *12*(1), 14-22. doi:10.1186/1477-7525-12-14
- Notario-Pacheco, B., Solera-Martínez, M., Serrano-Parra, M. D., Bartolomé-Gutiérrez, R., García-Campayo, J., & Martínez-Vizcaíno, V. (2011). Reliability and validity of the Spanish version of the 10-item Connor-Davidson resilience scale (10-item CD-RISC) in young adults. *Health and Quality of Life Outcomes*, *9*(1), 63-68. doi:10.1186/1477-7525-9-63
- Nylenna M, Gulbrandsen P, Foerde R, Aasland OG (2005). Unhappy doctors? A longitudinal study of life and job satisfaction among Norwegian doctors 1994–2002. *BMC Health Services Research*, *5*, 44. doi:10.1186/1472-6963-5-44
- Odetola, F., Clark, S., Freed, G., Bratton, S., Davis, M. (2005). A national survey of pediatric critical care resources in the United States. *Pediatrics*, *115*(4), 1059.
- Ong, A.D., Zautra, A.J., & Reid, M.C. (2010). Psychological resilience predicts decreases in pain catastrophizing through positive emotions. *Psychological Aging*, *25*, 516-523. doi:10.1037/a0019384
- Oshio, A., Kaneko, H., Nagamine, S. & Nakaya, M. (2003). Construct validity of the Adolescent Resilience Scale. *Psychological Reports*, *93*, 1217-1222. <http://dx.doi.org/10.2466/pr0.2003.93.3f.1217>
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*(1), 52-73. doi:10.1037//0033-2909.129.1.52

- Paediatric Intensive Care Audit Network (2015). November 2015 Annual Report. Retrieved November 12, 2015, from [http://www.picanet.org.uk/Audit/Annual-Reporting/PICANet\\_2015\\_Annual\\_Report\\_Summary.pdf](http://www.picanet.org.uk/Audit/Annual-Reporting/PICANet_2015_Annual_Report_Summary.pdf)
- Páez, D. Bobowik, M. Carrera, P., & Bosco, S. (2011). Evaluación de Afectividad durante diferentes episodios emocionales. [Affectivity assessment during various emotional episodes]. In D. Páez, C. Martin Beristain, J. L. González-Castro, J. de Rivera, & N. Basabe (Eds.), *Superando la violencia colectiva y construyendo cultura de paz* (pp. 151-163). Madrid: Fundamentos.
- Palmer, G. A., Graca, J. J., & Occhietti, K. E. (2012). Confirmatory factor analysis of the posttraumatic growth inventory in a veteran sample with posttraumatic stress disorder. *Journal of Loss & Trauma, 17*(6), 545. doi:10.1080/15325024.2012.678779
- Papa, A., & Bonanno, G. A. (2008). Smiling in the face of adversity: The interpersonal and intrapersonal functions of smiling. *Emotion, 8*(1), 1-12. doi:10.1037/1528-3542.8.1.1
- Peer, J. W., & Hillman, S. B. (2014). Stress and resilience for parents of children with intellectual and developmental disabilities: A review of key factors and recommendations for practitioners. *Journal of Policy and Practice in Intellectual Disabilities, 11*(2), 92-98. doi:10.1111/jppi.12072
- Perry, S. W., Jacobsberg, L., Card, C., Ashman, T., Frances, A., Bobo, J., & Jacobsberg, B. K. (1990). Psychiatry diagnosis before serological test for the HIV virus. *American Journal of Psychiatry, 147*, 89-93.
- Philippe, F. L., Lecours, S., & Beaulieu-Pelletier, G. (2009). Resilience and positive emotions: Examining the role of emotional memories. *Journal of Personality, 77*(1), 139-176. doi:10.1111/j.1467-6494.2008.00541.x

- Phipps, S. (2007). Adaptive style in children with cancer: Implications for a positive psychology approach. *Journal of Pediatric Psychology, 32*(9), 1055-1066. doi:10.1093/jpepsy/jsm060
- Picoraro, J., Womer, J., Kazak, A., & Feudtner, C. (2014). Posttraumatic growth in parents and pediatric patients. *Journal of Palliative Medicine, 17*(2), 209-218. doi:10.1089/jpm.2013.0280
- Polatinsky, S., & Esprey, Y. (2000). An assessment of gender differences in the perception of benefit resulting from the loss of a child. *Journal of Traumatic Stress, 13*(4), 709-718. doi:10.1023/A:1007870419116
- Pollock, E. A., Litzelman, K., Wisk, L. E., & Witt, W. P. (2013). Correlates of physiological and psychological stress among parents of childhood cancer and brain tumor survivors. *Academic Pediatrics, 13*(2), 105-112. doi:10.1016/j.acap.2012.11.005
- Poncet, M. C., Toullic, P., Papazian, L., Kentish-Barnes, N., Timsit, J., Pochard, F., . . . Azoulay, E. (2007). Burnout syndrome in critical care nursing staff. *American Journal of Respiratory and Critical Care Medicine, 175*(7), 698-704. doi:10.1164/rccm.200606-806OC
- Pooni, P. A., Singh, D., Bains, H. S., Misra, B. P., & Soni, R. K. (2013). Parental stress in a paediatric intensive care unit in Punjab, India. *Journal of Paediatrics and Child Health, 49*(3), 204-209. doi:10.1111/jpc.12127
- Powell, S., Rosner, R., Butollo, W., Tedeschi, R. G., & Calhoun, L. G. (2003). Posttraumatic growth after war: A study with former refugees and displaced people in Sarajevo. *Journal of Clinical Psychology, 59*(1), 71-83. doi:10.1002/jclp.10117
- Prieto Espuñes, S., López-Herce Cid, J., Rey Galán, C., Medina Villanueva, A., Concha Torre, A., & Martínez Cambor, P. (2007). Prognostic indexes of mortality in pediatric intensive care units. *Anales De Pediatría, 66*(4), 345.

- Prince-Embury, S. (2007). *Resiliency Scales Manual: For Children & Adolescents: a Profile of Personal Strengths*. Bloomington, TX: Pearson.
- Prince-Embury, S. & Courville, T. (2008). Comparison of One-, Two-, and Three-Factor Models of Personal Resiliency Using the Resiliency Scales for Children and Adolescents. *Canadian Journal of School Psychology*, 23, 11-25. doi:10.1177/0829573508316589
- Prince-Embury, S., & Courville, T. (2008). Measurement invariance of the resiliency scales for children and adolescents with respect to sex and age cohorts. *Canadian Journal of School Psychology*, 23, 26-40. doi:10.1177/0829573508316590
- Prince-Embury, S., & Saklofske D.H. (Eds.) (2013), *Resilience in children, adolescent and adults: Translating research into practice*. New York: Springer.
- Prince-Embury, S., & Saklofske D.H. (Eds.) (2014), *Resilience interventions for youth in diverse populations*. New York: Springer.
- Quintana, J.M., Padierna, A., Esteban, C., Arostegui, I., Bilbao, A., & Ruiz, I. (2003). Evaluation of the psychometric characteristics of the Spanish version of the Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 107(3), 216-221. doi:10.1034/j.1600-0447.2003.00062.x
- R Core Team (2014). *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. <http://www.R-project.org>
- Reaching in... Reaching out (2010). *Resilience: Successful navigation through significant threat*. Report prepared for the Ontario Ministry of Children and Youth Services. Toronto: The Child and Family Partnership.
- Rees, G., Gledhill, J., Garralda, M. E., & Nadel, S. (2004). Psychiatric outcome following paediatric intensive care unit (PICU) admission: A cohort study. *Intensive Care Medicine*, 30(8), 1607-1614. doi:10.1007/s00134-004-2310-9

- Rei, R.M. & Fong, C. (1996). The Spanish Version of the Parental Stressor Scale: Pediatric Intensive Care Unit. *Journal of Pediatric Nursing*, 11 (1), 3-9. doi:10.1016/S0882-5963(96)80033-9
- Reig Ferrer, A., Orts Cortés, M. I., Cabañero Martínez, M. J., Richart Martínez, M., Cabrero, J., & Tosal Herrero, B. (2004). Fiabilidad y validez de la escala de satisfacción con la vida de Diener en una muestra de mujeres embarazadas y puérperas. [Reliability and validity of the satisfaction with life scale of Diener in pregnant and puerperium women]. *Psicothema*, 16(3), 448-455.
- Remor, E. (2006). Psychometric Properties of a European Spanish Version of the Perceived Stress Scale (PSS). *The Spanish Journal of Psychology*, 9(1), 86-93. doi:10.1017/S1138741600006004
- Rennick, J., Dougherty, G., Chambers, C., Stremmer, R., Childerhose, J., Stack, D., . . . Hutchison, J. (2014). Children's psychological and behavioral responses following pediatric intensive care unit hospitalization: The caring intensively study. *BMC Pediatrics*, 14(1), 276-11. doi:10.1186/1471-2431-14-276
- Ríos Rísquez, M.I., Peñalver Hernández, F, Godoy Fernández, C. (2008). Burnout y salud percibida en profesionales de enfermería de Cuidados Intensivos [Burnout and perceived health in Critical Care nursing professionals]. *Enfermería intensiva*, 19, 169-178. doi:10.1016/S1130-2399(08)75832-2
- Ríos-Rísquez, M. I., Sánchez-Meca, J., & Godoy-Fernández, C. (2010). Hardy personality, self-efficacy, and general health in nursing professionals of intensive and emergency services. *Psicothema*, 22(4), 600.
- Rodríguez-Rey, R. & Alonso-Tapia, J. (in press) Development of a screening measure of stress for parents of children hospitalised in a Paediatric Intensive Care Unit. *Australian Critical Care*. doi:10.1016/j.aucc.2015.11.002

- Rodríguez-Rey, R., Alonso-Tapia, J., & Hernansaiz-Garrido, H. (2015, October 26). Reliability and Validity of the Brief Resilience Scale (BRS) Spanish Version. *Psychological Assessment*. Advance online publication. doi:10.1037/pas0000191
- Rodríguez-Rey, R., García-Llana, H., Jareño, E.M., Górriz, J.L., Molina, P. & Selgas, R. (2015). Resilience is related to better psychological adaptation to hemodialysis treatment in patients with chronic kidney disease. Oral presentation at the Fourth World Congress on Positive Psychology. June 25-28 2015. Lake Buena Vista, Florida, USA. Fourth World Congress on Positive Psychology Program, page 170.
- Rosenberg, A. R., Baker, K. S., Syrjala, K. L., Back, A. L., & Wolfe, J. (2013). Promoting resilience among parents and caregivers of children with cancer. *Journal of Palliative Medicine*, 16(6), 645-652. doi:10.1089/jpm.2012.0494
- Rosenberg, A. R., Wolfe, J., Bradford, M. C., Shaffer, M. L., Yi-Frazier, J. P., Curtis, J. R., . . . Baker, K. S. (2014). Resilience and psychosocial outcomes in parents of children with cancer. *Pediatric Blood & Cancer*, 61(3), 552-557. doi:10.1002/pbc.24854
- Rosenberg, A., Wolfe, J., Syrjala, K., Yi-Frazier, J., Curtis, J., & Baker, S. (2014). The impact of personal resilience resources on psychosocial outcomes in parents of children with cancer. *Journal of Pain and Symptom Management*, 47(2), 451-452.
- Roy, S.C. (1976). *Introduction to nursing: An adaptational model*. Englewood Cliffs, NJ: Prentice Hall.
- Sahler, O. J. Z., Fairclough, D. L., Phipps, S., Mulhern, R. K., Dolgin, M. J., Noll, R. B., Butler, R. W. (2005). Using problem-solving skills training to reduce negative affectivity in mothers of children with newly diagnosed cancer: Report of a multisite randomized trial. *Journal of Consulting and Clinical Psychology*, 73(2), 272-283. doi:10.1037/0022-006X.73.2.272

- Salas, M., Gabaldón, O., Mayoral, J. L., Pérez-Yarza, E. G., & Amayra, I. (2005). El pediatra ante la muerte del niño: Integración de los cuidados paliativos en la unidad de cuidados intensivos pediátricos. *Anales De Pediatría*, *62*(5), 450-457. doi:10.1157/13074619
- Salo, J.A., Qouta, S., & Punamaki, R.L. (2005). Adult attachment, posttraumatic growth and negative emotions among former political prisoners. *Anxiety Stress & Coping*, *18*(4), 361–378. doi:10.1080/10615800500289524
- Salvador, Á., Crespo, C., Martins, A. R., Santos, S., & Canavarro, M. C. (2014). Parents' perceptions about their child's illness in pediatric cancer: Links with caregiving burden and quality of life. *Journal of Child and Family Studies*, *24*(4), 1-12. doi:10.1007/s10826-014-9921-8
- Samuel, V. M., Colville, G. A., Goodwin, S., Ryninks, K., & Dean, S. (2015). The value of screening parents for their risk of developing psychological symptoms after PICU: A feasibility study evaluating a pediatric intensive care follow-up clinic. *Pediatric Critical Care Medicine*, *16*(9), 808-813. doi:10.1097/PCC.0000000000000488
- Schroder, K. E. E., & Ollis, C. L. (2013). The coping competence questionnaire: A measure of resilience to helplessness and depression. *Motivation and Emotion*, *37*(2), 286-302. doi:10.1007/s11031-012-9311-8
- Schroevers, M.J., Kraaij, V., & Garnefski, N. (2011). Cancer patients' experience of positive and negative changes due to the illness: relationships with psychological well-being, coping, and goal reengagement. *Psycho-Oncology* *20*(2), 165–172. doi:10.1002/pon.1718
- Schumacher, J., Leppert, K., Gunzelmann, T., Strauss, B., & Brahler, E. (2005). The resilience scale - A questionnaire to assess resilience as a personality characteristic. *Zeitschrift Fur Klinische Psychologie Psychiatrie Und Psychotherapie*, *53*(1), 16-39.

- Schwarzer, R. & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N.S. Endler (Eds.), *Handbook of coping*. (pp. 107-132). New York, Wiley.
- Segovia, F., Moore, J. L., Linnville, S. E., Hoyt, R. E., & Hain, R. E. (2012). Optimism predicts resilience in repatriated prisoners of war: A 37-year longitudinal study. *Journal of Traumatic Stress, 25*(3), 330-336. doi:10.1002/jts.21691
- Seery, M. D., Holman, E. A., & Silver, R. C. (2010). Whatever does not kill us: Cumulative lifetime adversity, vulnerability, and resilience. *Journal of Personality and Social Psychology, 99*(6), 1025-1041. doi:10.1037/a0021344
- Seisdedos, N. (1997). *Adaptación española del MBI, Síndrome del quemado por estrés laboral asistencial*. Madrid: Editor TEA.
- Seligman, M.E.P. (1995). *The optimistic child*. New York: Houghton Mifflin.
- Seyedfatemi, N., Moshirabadi, Z., Borimnejad, L., & Haghani, H. (2014). Relationship between problem solving and assertiveness skills among nursing students. *Hayat Journal of Faculty of Nursing & Midwifery, 19*(3), 70-81.
- Seyle, H. (1956). *The Stress of Life*. New York: McGraw-Hill.
- Shakespeare-Finch J., Gow K. & Smith S. (2005). Personality, coping and posttraumatic growth in emergency ambulance personnel. *Traumatology, 11*(4), 325-334. doi:10.1177/153476560501100410
- Shakespeare-Finch, J.E., Smith, S.G., Gow, K.M., Embelton, G. & Baird, L. (2003). The prevalence of post-traumatic growth in emergency ambulance personnel. *Traumatology, 9*(1), 58-71. doi:10.1177/153476560300900104
- Shanafelt, T.D., Bradley, K.A., Wipf, J.E., & Back, A.L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine, 136*, 358–367.



- Shanafelt, T.D., Sloan, J.A., & Habermann, T.M. (2003). The wellbeing of physicians. *American Journal of Medicine, 114*, 513–519.
- Sheikh, A. I., & Marotta, S. A. (2005). A Cross-Validation Study of the Posttraumatic Growth Inventory. *Measurement and Evaluation in Counseling and Development, 38*(2), 66–77.
- Sinclair, V. G. & Wallston, K. A., (2004). The development and psychometric evaluation of the Brief Resilient Coping Scale. *Assessment, 11*, 94-101. doi:10.1177/1073191103258144
- Siu, O.L., Cooper, C.L. & Phillips, D.R. (2014). Intervention studies on enhancing work well-being, reducing burnout and improving recovery experiences among Hong Kong health care workers and teachers. *International Journal of Stress Management, 21*, 1, 69-84. doi:10.1037/a0033291
- Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The Development of Coping. *Annual Review of Psychology, 58*, 119-144. doi:10.1146/annurev.psych.58.110405.085705
- Skinner, E.A., Edge, K., Altman, J. & Sherwood, H. (2003). Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. *Psychological Bulletin, 129*, 216-269. doi:10.1037/0033-2909.129.2.216
- Slater, A., Shann, F., & Pearson, G., Paediatric Index of Mortality (PIM) Study Group, & PIM Study Grp. (2003). PIM2: A revised version of the paediatric index of mortality. *Intensive Care Medicine, 29*(2), 278-285. doi:10.1007/s00134-002-1601-2
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E. M, Christopher, P. J., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15*(3), 194-200. doi:10.1080/10705500802222972

- Smith, B. W., Tooley, E. M., Christopher, P. J., & Kay, V. S. (2010). Resilience as the ability to bounce back from stress: A neglected personal resource? *The Journal of Positive Psychology, 5*(3), 166–176. doi:10.1080/17439760.2010.482186
- Sociedad Española de Cuidados Intensivos Pediátricos (2015). *UCIPs en España* [PICUs in Spain]. Retrieved November 12, 2015, from <https://www.secip.com/nosotros/cip-en-espana/ucips-en-espana>
- Sood, A., Prasad, K., Schroeder, D., & Varkey, P. (2011). Stress management and resilience training among department of medicine faculty: A pilot randomized clinical trial. *Journal of General Internal Medicine, 26*(8), 858-861. doi:10.1007/s11606-011-1640-x
- Steed, L.G. (1998). A critique of coping scales. *Australian Psychologist, 33* (3), 193-202.
- Stehl, M. L., Kazak, A. E., Alderfer, M. A., Rodriguez, A., Hwang, W., Pai, A. L. H., . Reilly, A. (2009). Conducting a randomized clinical trial of a psychological intervention for Parents/Caregivers of children with cancer shortly after diagnosis. *Journal of Pediatric Psychology, 34* (8), 803-816. doi:10.1093/jpepsy/jsn130
- Stewart, D., & Yuen, T. (2011). A Systematic Review of Resilience in the Physically Ill. *Psychosomatics, 52*, 199-209. doi:10.1016/j.psych.2011.01.036
- Sumalla, E.C., Ochoa, C., & Blanco, I. (2009). Posttraumatic growth in cancer: Reality or illusion? *Clinical Psychology Review, 29*, 24– 33. doi:10.1016/j.cpr.2008.09.006
- Sun, J., & Stewart, D. (2007). Development of population-based resilience measures in the primary school setting. *Health Education, 7*(6), 575-599. doi:10.1108/09654280710827957
- Taku, K., Calhoun, L. G., Tedeschi, R. G., Gil-Rivas, V., Kilmer, R. P., & Cann, A. (2007). Examining posttraumatic growth among Japanese university students. *Anxiety, Stress & Coping, 20*(4), 353-367. doi:10.1080/1061580070129500

- Taku, K., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2008). The factor structure of the posttraumatic growth inventory: A comparison of five models using confirmatory factor analysis. *Journal of Traumatic Stress, 21*(2), 158-164. doi:10.1002/jts.20305
- Tamm, N., Obbarius, A., Nolte, S., Fischer, F., Engster, K., & Rose, M. (2015). What keeps us healthy in the face of adversity?-development of a new stress resilience questionnaire (StResQ). *Quality of Life Research, 24*, 43-44.
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. Thousand Oaks, CA: Sage.
- Tedeschi, R.G. (2011). Posttraumatic growth in combat veterans. *Journal of Clinical Psychology in Medical Settings, 18*, 137-144. doi:10.1007/s10880-011-9255-2
- Tedeschi, R.G., & Calhoun, L.G. (1996). The Posttraumatic Growth Inventory; Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*(3), 455-471. doi: 10.1002/jts.2490090305
- Teixeira, R. J., & Pereira, M. G. (2013). Growth and the cancer caregiving experience: Psychometric properties of the Portuguese posttraumatic growth inventory. *Families, Systems & Health, 31*(4), 382. doi:10.1037/a0032004
- Terol-Cantero, M. C., & Cabrera-Perona, V. (2015). Hospital anxiety and depression scale (HADS) review in Spanish samples. *Anales De Psicología, 31*(2), 494. doi:10.6018/analesps.31.2.172701
- Thomas, L.E., DiGiulio, R.C., & Sheehan, N.W. (1991). Identifying loss and psychological crisis in widowhood. *International Journal of Aging and Human Development, 26*, 279-295.
- Trivedi, R., Bosworth, H.B., & Jackson, G.A. (2011). Resilience in chronic illness. In B. Resnick, L.P. Gwyther & K.A. Roberto (Eds.). *Resilience in aging: concepts, research, and outcomes* (pp. 181-197). New York: Springer

- Tusaie, K., & Dyer, J. (2004). Resilience: A historical review of the construct. *Holistic Nursing Practice, 18*, 3–8. doi:10.1097/00004650-200401000-00002
- Ullrich, P. M., & Lutgendorf, S. K. (2002). Journaling about stressful events: Effects of cognitive processing and emotional expression. *Annals of Behavioral Medicine, 24*, 244–250. doi:10.1207/S15324796ABM2403\_10
- Ungar, M. (2008). Resilience across cultures. *British Journal of social Work, 38*, 218-235. doi:10.1093/bjsw/bcl343
- Ungar, M., & Liebenberg, L. (2009). Cross-cultural consultation leading to the development of a valid measure of youth resilience: The international resilience project. *Studia Psychologica, 51*(2-3), 259-269.
- Ungar, M., & Liebenberg, L. (2009). *Researching resilience*. Toronto: University of Toronto Press.
- Vaishnavi, S., Connor, K., & Davidson, J. R. T. (2007). An abbreviated version of the Connor-Davidson resilience scale (CD-RISC), the CD-RISC2: Psychometric properties and applications in psychopharmacological trials. *Psychiatry Research, 152*(2), 293-297. doi:10.1016/j.psychres.2007.01.006
- Van Schoors, M., Caes, L., Verhofstadt, L. L., Goubert, L., & Alderfer, M. A. (2015). Systematic review: Family resilience after pediatric cancer diagnosis. *Journal of Pediatric Psychology, 40*(9), 856-868. doi:10.1093/jpepsy/jsv055
- Vassar, M., Ridge, J. W., & Hill, A. D. (2008). Inducing score reliability from previous reports: An examination of life satisfaction studies. *Social Indicators Research, 87*(1), 27-45. doi:10.1007/s11205-007-9157-8
- Vázquez, C., Duque, A., & Hervás, G. (2013). Satisfaction with life scale in a representative sample of Spanish adults: Validation and normative data. *The Spanish Journal of Psychology, 16*, E82. doi:10.1017/sjp.2013.82

- Vázquez, C. & Páez, D. (2010) Posttraumatic Growth in Spain. In T. Weiss & R. Berger (Eds), *Posttraumatic Growth and Culturally Competent Practice: Lessons Learned from Around the Globe* (pp. 97-112) . Hoboken, N.J: John Wiley & Sons. doi:10.1002/9781118270028.ch8
- Villasana, M. & Alonso-Tapia, J., (2016). Personality factors underlying resilience in adolescence: Testing the Prince-Embury model in a Spanish Sample. *Paper submitted for publication*. Universidad Autónoma of Madrid.
- Villasana, M., Alonso-Tapia, J. & Ruiz, M. (2016). A model for assessing coping and its relation to resilience in adolescence, taking into account the person-situation interaction. *Paper submitted for publication*. Universidad Autónoma of Madrid.
- Vinaccia, S., Quiceno, J. M., & Remor, E. (2012). Resiliencia, percepción de enfermedad, creencias y afrontamiento espiritual-religioso en relación con la calidad de vida relacionada con la salud en enfermos crónicos colombianos [Resilience, illness perception of disease, beliefs and spiritual-religious coping in relation to the health-related quality of life in chronic colombian patients]. *Anales De Psicología*, 28(2), 366-377.
- von Eisenhart Rothe, A., Zenger, M., Lacruz, M. E., Emeny, R., Baumert, J., Haefner, S., & Ladwig, K. (2013). Validation and development of a shorter version of the resilience scale RS-11: Results from the population-based KORA-age study. *BMC Psychology*, 1(1), 25-25. doi:10.1186/2050-7283-1-25
- Vrijmoet-Wiersma, C. M. J., van Klink, J. M. M., Kolk, A. M., Koopman, H. M., Ball, L. M., & Maarten Egeler, R. (2008). Assessment of parental psychological stress in pediatric cancer: A review. *Journal of Pediatric Psychology*, 33(7), 694-706. doi:10.1093/jpepsy/jsn007

- Wagnild, G.M. (2009). *The Resilience Scale User's Guide for the US English Version of the Resilience Scale and the 14-Item Resilience Scale (RS-14)*. The Resilience Center, Montana.
- Wagnild, G. M., & Young, H. M. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement, 1*, 165-178.
- Wallin, D.J. (2007). *Attachment in psychotherapy*. New York, NY: Guilford Press.
- Wang, J. & Wang, X. (2012). *Structural equation modeling*. Chichester, UK: Wiley
- Ward-Begnoche, W. (2007). Posttraumatic stress symptoms in the pediatric intensive care unit. *Journal for Specialists in Pediatric Nursing, 12*(2): 84-92. doi:10.1111/j.1744-6155.2007.00097.x
- Weiss, T., & Berger, R. (2006). Reliability and Validity of a Spanish Version of the Posttraumatic Growth Inventory. *Research on Social Work Practice, 16*, 191-199. doi: 10.1177/1049731505281374
- Westphal, M., & Bonanno, G. A. (2007). Posttraumatic growth and resilience to trauma: Different sides of the same coin or different coins? *Applied Psychology, 56*, 417-427. doi:10.1111/j.1464-0597.2007.00298.x
- Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes, 9*(1), 8-8. doi:10.1186/1477-7525-9-8
- Windle, G., Markland, D. A., & Woods, B. (2008). Examination of a theoretical model of resilience in older age. *Aging and Mental Health, 12*(3), 285-292. doi:10.1080/13607860802120763
- Wu, C. (2008). An examination of the wording effect in the Rosenberg self-esteem scale among culturally Chinese people. *The Journal of Social Psychology, 148*(5), 535-551. doi:10.3200/SOCP.148.5.535-552

- Wu, K., Zhang, Y., Liu, Z., Zhou, P., & Wei, C. (2015). Coexistence and different determinants of posttraumatic stress disorder and posttraumatic growth among Chinese survivors after earthquake: Role of resilience and rumination. *Frontiers in Psychology, 6*, 1043. doi:10.3389/fpsyg.2015.01043
- Yam, B.M., Lopez, V., & Thompson, D.R. (2004). The Chinese version of the PSS:PICU. *Nursing Research, 53*(1), 19-27.
- Yeung, D. Y., Wong, C. K. M., & Lok, D. P. P. (2011). Emotion regulation mediates age differences in emotions. *Aging & Mental Health, 15*(3), 414-418. doi:10.1080/13607863.2010.536136
- Yu, Y., Peng, L., Tang, T., Chen, L., Li, M., & Wang, T. (2014). Effects of emotion regulation and general self-efficacy on posttraumatic growth in Chinese cancer survivors: Assessing the mediating effect of positive affect. *Psycho Oncology, 23*(4), 473-478. doi:10.1002/pon.343
- Zigmond, A.S., & Snaith, R.P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica, 67*, 361–370.

---

# ANNEXES

---

## A) QUESTIONNAIRES USED IN THE DIFFERENT STUDIES

Next, we are including the items for all the questionnaires used in the different studies of this dissertation. Both, the Spanish and the English forms are provided for all the instruments.

### BRIEF RESILIENCE SCALE

→ Original questionnaire (English) (Smith et al., 2008)

**Instructions:** Please indicate the extent to which you agree with each of the following statements by using the following scale:

**Response scale:**

1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
------------------------	---------------	--------------	------------	---------------------

**Items:**

1. I tend to bounce back quickly after hard times.
2. I have a hard time making it through stressful events.
3. It does not take me long to recover from a stressful event.
4. It is hard for me to snap back when something bad happens.
5. I usually come through difficult times with little trouble.
6. I tend to take a long time to get over set-backs in my life.

→ Spanish adaptation (Rodríguez-Rey, Alonso-Tapia & Hernansaiz-Garrido, 2015)

**Instrucciones:** Por favor, indique hasta qué punto está usted de acuerdo con las siguientes afirmaciones utilizando la siguiente escala.

**Escala de respuesta:**

1 Totalmente en desacuerdo	2 Bastante en desacuerdo	3 Indiferente	4 Bastante de acuerdo	5 Totalmente de acuerdo
----------------------------------	--------------------------------	------------------	-----------------------------	-------------------------------

**Ítems:**

1. Tiendo a recuperarme rápidamente después de haberlo pasado mal.
2. Lo paso mal cuando tengo que enfrentarme a situaciones estresantes.
3. No tardo mucho en recuperarme después de una situación estresante.



4. Es difícil para mí recuperarme cuando me ocurre algo malo.
5. Aunque pase por situaciones difíciles, normalmente no lo paso demasiado mal.
6. Suelo tardar mucho tiempo en recuperarme de los contratiempos que me ocurren en mi vida.

**RESILIENCY QUESTIONNAIRE FOR ADULTS (RQA) Alonso-Tapia, Hernansaiz-Garrido, Rodríguez-Rey, Ruiz & Nieto, 2016**

→ **Original questionnaire (Spanish)**

**Instrucciones:** A continuación encontrará una serie de afirmaciones sobre sí mismo/a con las que puede estar más o menos de acuerdo. Señale la opción que representa su grado de acuerdo con el contenido de la afirmación, según la siguiente escala:

**Escala de respuesta**

1 Nunca	2 Casi nunca	3 Alguna veces	4 A menudo	5 Casi siempre
------------	-----------------	-------------------	---------------	-------------------

**Ítems:**

***Optimismo***

1. En general, tiendo a pensar que las cosas me van a ir bien.
10. Si algo malo puede pasarme, lo más frecuente es que me ocurra.
19. Cuando tengo un problema, suelo pensar que se va a solucionar de forma satisfactoria.
28. A menudo pienso que las cosas tienden a ir a peor en la vida.

***Autoeficacia***

2. Cuando tomo decisiones, es muy frecuente que me equivoque.
11. En general creo que soy una persona capaz de superar mis problemas con éxito.
20. Suelo pensar cuando surge un problema que poco hay que pueda hacer yo al respecto.
29. Me veo una persona capaz de tomar decisiones acertadas en la mayoría de ocasiones.

***Adaptabilidad***

3. No me cuesta mucho adaptarme a los cambios.
12. Cada vez que tengo que enfrentarme a una situación nueva, lo paso fatal.
21. Por lo general, si me tengo que enfrentar a una situación nueva, me adapto bastante bien.
30. Lo paso mal cuando tengo que adaptarme a los cambios que me ocurren.

***Confianza***

4. Por lo general, los demás se aprovechan de ti a la menor oportunidad.
13. Las demás personas tienden a aceptarme tal y como soy.
22. No suelo caerle bien a la gente.
31. Creo que la gente es esencialmente buena.

### **Apoyo**

- 5. Tengo personas en las que apoyarme cuando tengo dificultades.
- 14. Generalmente, cuando me ocurre algo malo, no tengo a quién pedir ayuda.
- 23. Sé que puedo confiarle mis cosas a algunas personas.
- 32. Por lo general, cuando tengo problemas siento que no tengo nadie con quien contar.

### **Comodidad**

- 6. Me suele costar mucho entablar conversaciones con gente nueva.
- 15. Si he de tratar con alguien, por lo general, no me siento a disgusto.
- 24. Cuando estoy con otras personas, me suelo sentir incómodo.
- 33. Por lo general me siento a gusto cuando estoy con otras personas.

### **Tolerancia**

- 7. Normalmente soy capaz de perdonar después de una discusión.
- 16. No soy capaz de decirle a alguien con tranquilidad que no estoy de acuerdo con él.
- 25. Soy capaz de aceptar que otra persona tenga un punto de vista diferente al mío.
- 34. Cuando alguien me hace daño me cuesta mucho olvidarlo y seguir como antes.

### **Sensibilidad**

- 8. Cuando las cosas no salen como me gusta, enseguida me siento frustrado.
- 17. Hay pocas cosas en mi día a día que me hagan sentirme mal.
- 26. Si alguien se mete conmigo o me molesta, enseguida salto y me pongo a la defensiva.
- 35. La gente dice que no es fácil verme alterado.

### **Deterioro**

- 9. Por lo general no me bloqueo y puedo mantener mi ritmo si un problema me genera malestar.
- 18. Tiendo a cometer errores cuando me siento disgustado.
- 27. Aunque esté disgustado o preocupado, normalmente soy capaz de pensar con claridad.
- 36. Si algo me hace sentir mal no soy capaz de concentrarme y tomar decisiones normalmente.

### **→ English translation**

**Instructions:** Below are presented some affirmations about yourself. Please indicate in which degree you agree with each statement, using the following scale.

### **Response scale**

1 Never	2 Almost never	3 Sometimes	4 Fairly often	5 Very often
------------	-------------------	----------------	-------------------	-----------------

### **Items**

#### **Optimism**

- 1. In general, I tend to think that things will go well.
- 10. If anything *bad can happen to me*, it probably *will*.

- 19. When I have a problem, I tend to think that it will resolve satisfactorily.
- 28. I often think that things tend to get worse in life.

***Self-efficacy***

- 2. When I make decisions, I make mistakes very often.
- 11. In general, I think I am a person who can overcome problems successfully.
- 20. When a problem arises, I often think that there is little I can do about it.
- 29. I see myself as a person that can make the right decisions in most cases.

***Adaptability***

- 3. I do not find it very hard to adapt to changes.
- 12. Every time I have to face a new situation, I have a hard time.
- 21. I usually adapt quite well when I have to face a new situation.
- 30. I have a hard time when I have to adapt to changes.

***Trust***

- 4. People usually take advantage of me at every opportunity.
- 13. People tend to accept me as I am.
- 22. People don't usually like me.
- 31. I think people are essentially good.

***Support***

- 5. I have people to lean on when I have difficulties.
- 14. I generally have no one that I can ask for help when something bad happens.
- 23. There are some people to whom I can confide my things.
- 32. When I have problems, I usually feel that I have no one to count on.

***Comfort***

- 6. I usually find it difficult to carry a conversation with new people.
- 15. If I have to deal with someone, I don't usually feel uncomfortable.
- 24. When I am with others, I often feel uncomfortable.
- 33. I usually feel at ease when I am with other people.

***Tolerance***

- 7. I am usually able to forgive after an argument.
- 16. I can't tell somebody that I do not agree with him or her in a calm way.
- 25. I can accept that another person may have a different point of view.
- 34. When someone hurts me, I find it difficult to forget about it and carry on as before.

***Sensitivity***

- 8. When things do not go as I'd like them to, I immediately feel frustrated.
- 17. There are few things in my daily life that make me feel bad.

- 26. If anyone messes with me or upsets me, I easily lose my temper and get defensive.
- 35. People say that it's not easy to see me angry.

**Impairment**

- 9. I usually can think straight and keep pace when a problem makes me feel uneasy.
- 18. I tend to make mistakes when I am upset.
- 27. I usually can think clearly even if I'm upset or worried.
- 36. If something makes me feel bad, I am not able to concentrate and make decisions normally.

**SITUATED COPING QUESTIONNAIRE FOR ADULTS (SCQA) Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016a**

→ **Original questionnaire (Spanish)**

**Instrucciones:** Las personas a menudo experimentamos problemas serios en distintos ámbitos como el trabajo, la familia, o problemas económicos o de salud. Cuando esto ocurre, afrontamos los problemas de formas diferentes que pueden ser más o menos efectivas. Para conocer qué formas de enfrentarse a los problemas son las más frecuentes en usted, le pedimos que indique el grado en que actúa de acuerdo con lo que dicen las siguientes afirmaciones:

**Escala de respuesta:**

1 Nunca	2 Casi nunca	3 Alguna veces	4 A menudo	5 Casi siempre
------------	-----------------	-------------------	---------------	-------------------

**Ítems**

A) Si alguna vez he tenido problemas serios **en el trabajo** que me han creado profundo malestar:

- 1. He pensado reiteradamente en el problema, en que me gustaría que las cosas hubieran sido de otra manera.
- 2. He pensado en otras cosas o he hecho algo que me ayudase a no pensar en él problema.
- 3. Normalmente he buscado aislarme para no tener que comentar con nadie mis preocupaciones.
- 4. He procurado comentarlo con otra persona para que me ayudase a saber qué hacer.
- 5. He procurado buscar por mí mismo cómo resolver el problema, sin cejar en el empeño.
- 6. Me he dejado llevar de mis sentimientos y he actuado sin pensarlo apenas, según sentía o se me ocurría.
- 7. Me he culpado a mí mismo por no haber sabido prevenir los problemas.
- 8. He pensado en positivo, tratando de aprender de lo ocurrido para que no vuelva a pasar.

B) Cuando me he disgustado **con algún familiar, compañero o amigo por algo importante:**

- 9. He pensado reiteradamente en el problema, en que me gustaría que las cosas no hubieran ocurrido así.

10. He procurado Procurar pensar en otras cosas o hacer algo que me ayude a no pensar en el problema.
11. Normalmente he buscado aislarme para no tener que comentar con nadie mis preocupaciones.
12. He buscado comentar lo que me pasaba con otra persona para que me ayudase a saber qué hacer.
13. Procurar buscar por mí mismo/a qué puedo decirles o qué puedo hacer para remediar el problema.
14. Me he dejado llevar de mis sentimientos y he actuado sin pensarlo apenas, según sentía o se me ocurría.
15. Me he culpado a mí mismo por no haber sabido prevenir el problema
16. He pensado en positivo, tratando de aprender de lo ocurrido para que no vuelva a pasar.

C) Si alguna vez **yo** he tenido un **problema de salud** importante:

17. Normalmente le doy muchas vueltas a la cabeza, deseando que no hubiera ocurrido, antes de poner remedio.
18. Procurar pensar en otras cosas o hacer algo que me ayude a no pensar en él.
19. He procurado no hablar del problema con nadie.
20. Normalmente se lo he contado a otra persona para que me ayudase.
21. He procurado solucionarlo por mí mismo, poniendo todos los medios necesarios.
22. He actuado dejándome llevar de mi preocupación.
23. Me he culpado por no haber puesto los medios para prevenir el problema.
24. He pensado en positivo, tratando de aprender qué me aportaba que me pudiese servir en el futuro.

D) Si alguna vez me he sentido seriamente afectado porque uno de mis **familiares** ha tenido un **problema de salud** grave:

25. He pensado mucho en el problema deseando que no hubiera ocurrido, antes de poner remedio.
26. He procurado pensar en otras cosas o hacer algo que me ayudase a no pensar en el problema.
27. He procurado no hablar del problema con nadie para no darle publicidad.
28. En general, he buscado comentarlo con otras personas para que me ayudasen a saber qué hacer.
29. He procurado buscar por mí mismo/a la forma de remediar el problema de mi familiar.
30. He actuado dejándome llevar de mi preocupación y mis sentimientos sin poder controlarlos..
31. He tendido a culparme porque pienso que quizás hubiera podido hacer algo para evitar el problema o sus efectos.
32. Normalmente he pensado en positivo, tratando de aprender de lo ocurrido para saber qué hacer en otra ocasión.

E) Si alguna vez he tenido **problemas económicos** importantes que me han afectado seriamente:

33. He pensado reiteradamente en ellos, en que me gustaría que no hubieran sucedido.
34. He pensado en otras cosas o he hecho algo que me ayudase a no pensar en él problema.

35. Normalmente he buscado aislarme para no tener que comentar con nadie mis preocupaciones.
36. He procurado comentarlos con otra persona para que me ayudase a saber qué hacer.
37. He procurado buscar por mí mismo cómo resolver el problema, sin dejar de intentarlo.
38. Me he dejado llevar de mis sentimientos y he actuado sin pensarlo apenas, según sentía o se me ocurría.
39. Me he culpado a mí mismo por no haber sabido prevenir los problemas.
40. He pensado en positivo, tratando de aprender de lo ocurrido para que no vuelva a pasar.

→ **English translation**

**Instructions:** Frequently all of us experience serious problems in different areas such as the work, the family, as well as economic difficulties or health problems. When these difficulties happen, we face them in more or less effective ways. To know how you usually deal with difficult situations, please indicate the degree in which you act according to the following affirmations:

**Response Scale**

1 Never	2 Almost never	3 Sometimes	4 Fairly often	5 Very often
------------	-------------------	----------------	-------------------	-----------------

**Items:**

A) When I have had **problems at work** that made me feel very upset:

1. I have repeatedly thought about the problem, and about how much I wish that it would have been different.
2. I have tried to think in other things, or to do something which helped me not thinking about the problem.
3. I have isolated myself so that I did not have to share my concerns with anyone.
4. I have tried to tell my problem to someone else, so that he/she could help me.
5. I have tried to find a solution to the problem by myself, without giving up.
6. I have act impulsively, following my feelings or emotions.
7. I have blamed myself for not having be able to prevent the problem.
8. I have tried looking at the positives, trying to learn from what happened to avoid that it could happen again.

B) When I have had serious **problems in my relation with a relative, friend or colleague**.

9. I have repeatedly thought about the problem, and about how much I wish that it wouldn't have happened.
10. I have tried to think in other things, or to do something which helped me not thinking about the problem.
11. I have isolated myself so that I did not have to share my concerns with anyone.
12. I have tried to tell my problem to someone else, so that he/she could help me.
13. I have tried to find by myself what I can tell them or what I can do to in order to solve the problem.

14. I have act impulsively, following my feelings or emotions, without thinking twice.
15. I have blamed myself for not having be able to prevent the problem.
16. I have tried looking at the positives, trying to learn from what happened to avoid that it could happen again.

C) When I **have had myself a health issue** that afflicted me very much

17. I have repeatedly thought about the problem, and about how much I wish that it wouldn't have happened.
18. I have tried to think in other things, or to do something which helped me not thinking about it.
19. I haven't talked about it with anyone.
20. I have told it to someone in order to get his/her help.
21. I have tried to find a solution by myself in every possible way.
22. I have acted impulsively, motivated by my concern.
23. I have blamed myself for not having done anything to prevent the situation.
24. I have tried looking at the positives, trying to learn from the experience for future problems.

D) When a **family member or another close person has suffered from a serious health problem.**

25. I have repeatedly thought about the problem, and about how much I wish that it wouldn't have happened.
26. I have tried to think in other things, or to do something which helped me not thinking about it.
27. I haven't talked about it with anyone to keep it private.
28. I have told it to someone in order to get some help.
29. I have tried to find a solution for the problem of my loved one by myself.
30. I have acted impulsively, following my feelings or emotions, motivated by my concern.
31. I have blamed myself thinking about the possibility of having done something to prevent the problem or its consequences.
32. I have tried looking at the positives, trying to learn from the experience in order to know what to do in future occasions.

E) When I've had **an economic difficulty** that was a real problem for me.

33. I have repeatedly thought about it, wishing that it wouldn't have happened
34. I have tried to think in something different, or to do something which helped me not thinking about it.
35. I have isolated myself so that I didn't have to share my concerns with anyone.
36. I have told my situation to someone, searching for advice.
37. I have tried to find a solution to the problem by myself, without giving up.
38. I have acted impulsively, following my feelings or emotions and not thinking too much about it.
39. I have blamed myself for not having done anything to prevent the situation.
40. I have tried looking at the positives, trying to learn from the experience in order to try to avoid it in future occasions.

## SITUATED SUBJECTIVE RESILIENCE QUESTIONNAIRE FOR ADULTS (SSRQA)

Alonso-Tapia, Rodríguez-Rey, Hernansaiz-Garrido, Ruiz & Nieto, 2016b

### → Original questionnaire (Spanish)

**Instrucciones:** A continuación encontrará una serie de afirmaciones sobre sí mismo/a con las que puede estar más o menos de acuerdo. Señale la opción que representa su grado de acuerdo con el contenido de la afirmación, según la siguiente escala:

#### Escala de respuesta

1 Nunca	2 Casi nunca	3 Alguna veces	4 A menudo	5 Casi siempre
------------	-----------------	-------------------	---------------	-------------------

#### Ítems:

1. Cuando he tenido problemas en el trabajo que me han generado mucho malestar, el disgusto me ha durado mucho tiempo.
2. Cuando he tenido problemas (como discusiones, etc.) que me han afectado mucho con personas cercanas de mi entorno (familiares, amigos, etc.) me he recuperado rápidamente.
3. Me ha costado mucho dejar de sentirme mal cuando he tenido problemas importantes (como enfados, etc.) con personas cercanas (familiares, amigos, etc.).
4. Me he recuperado fácilmente del malestar cuando ha surgido algún problema relacionado con mi propia salud que me ha causado un disgusto importante.
5. Cuando un familiar u otra persona cercana ha tenido un problema de salud serio, me ha resultado difícil reponerme del impacto que me ha causado.
6. Cuando he tenido dificultades económicas que han supuesto un auténtico problema para mí, he tardado poco tiempo en superar el malestar.
7. Cuando he tenido problemas importantes en el trabajo, el disgusto se me ha pasado rápidamente.
8. Cuando he tenido problemas (como disputas, etc.) con personas cercanas de mi entorno (familiares, amigos, etc.), he tardado mucho tiempo en dejar de sentirme mal.
9. Cuando he tenido problemas importantes con personas cercanas de mi entorno (familiares, amigos, etc.) -por ejemplo, cuando hemos discutido- me he recuperado fácilmente del disgusto.
10. Cuando he tenido un problema de salud importante me ha resultado difícil superar el disgusto que me ha causado.
11. Cuando un familiar o persona cercana a mí han tenido un problema de salud serio, me he recuperado fácilmente del malestar que me producía esa situación.
12. En situaciones en que he tenido dificultades económicas que han supuesto un importante problema para mí, me ha sido muy difícil dejar de sentirme mal.
13. Me ha llevado mucho tiempo recuperarme cuando he tenido problemas en el trabajo que me han afectado fuertemente.



14. Cuando he tenido un problema de salud que me ha afectado psicológicamente, el malestar me ha durado poco tiempo.
15. He tardado mucho en superar el malestar cuando un familiar o alguien cercano a mí ha tenido un serio problema de salud que me ha generado mucho estrés.
16. En las situaciones en que he tenido dificultades económicas que han supuesto un serio problema para mí, no me ha costado mucho superar el malestar.
17. Cuando he tenido dificultades en el trabajo que me han supuesto un estrés importante me he repuesto fácilmente.
18. Cuando he tenido problemas de salud serios que me han afectado profundamente, no he dejado de sentirme mal hasta que ha pasado el problema de salud.
19. He sido capaz de reponerme rápidamente en los casos en que un familiar o persona cercana a mí ha tenido un problema de salud importante que me ha afectado.
20. Cuando he tenido dificultades económicas importantes que me han generado mucho malestar, no he dejado de sentir ese malestar hasta que la situación económica se ha estabilizado.

→ **English translation**

**Instructions:** Below are presented some affirmations about yourself. Please indicate in which degree you agree with each statement, using the following scale.

**Response Scale**

1 Never	2 Almost never	3 Sometimes	4 Fairly often	5 Very often
------------	-------------------	----------------	-------------------	-----------------

**Items**

1. When I have had problems at work that made me feel very upset, the uneasiness lasted a long time.
2. When I have had problems with close people (such as arguments with family or friends) that affected me deeply, I've quickly recovered.
3. I've found it difficult to stop feeling bad when I've had important problems (such as arguments) with close people (family or friends).
4. When I myself have had a health issue that afflicted me very much, I easily recovered from that uneasiness.
5. When a family member or another close person has suffered from a serious health problem, I've had a hard time recovering from the distress.
6. When I've had economic problems that were a real problem for me, it took me little time to overcome the uneasiness.
7. When I've had important problems at work, the uneasiness was quickly gone.
8. When I've had problems (such as arguments, etc.) with close people (family or friends), it took me a long time to stop feeling bad.

9. When I've had important problems with close people (family, friends, etc.), for instance when we have had an argument, I've easily recovered from the uneasiness.
10. When I myself have had an important health issue, I've had a hard time overcoming the distress that it caused me.
11. When a family member or a close person has had a serious health issue, I've quickly recovered from the uneasiness aroused by that situation.
12. When I've had an economic difficulty that was a real problem for me, it was difficult to stop feeling bad.
13. It took me a long time to recover when I have had problems at work that affected me deeply.
14. When I myself have had a health issue that has psychologically affected me, the uneasiness has lasted little time.
15. It took me a long time to overcome the distress when a family member or a close person has had a serious health issue that caused me great stress.
16. When I've had an economic difficulty that was a serious problem for me, it wasn't hard for me to overcome the uneasiness.
17. When I've had work difficulties that caused me great stress, I've easily recovered.
18. When I myself have had serious health problems that deeply affected me, I've felt bad until the health issue was gone.
19. I've been able to recover quickly when a family member or a close person has had an important health issue that disturbed me.
20. When I've had an important economic difficulty that caused me great uneasiness, I felt bad until the economic situation.

### **CONNOR-DAVIDSON RESILIENCE SCALE (10-ITEM VERSION)**

**Instructions:** Please, indicate in which degree you agree with the following statements during the last month. If any of the situations have not recently occur, please answer according to how you think that you would have felt. Please circle the number which best describes how you feel.

**Response scale:**

0 Never	1 Almost never	2 Sometimes	3 Fairly often	4 Almost always
------------	-------------------	----------------	-------------------	--------------------

→ **Original questionnaire (English) (Campbell-Sills & Stein, 2007)**

1. I am able to adapt to change.
2. I can deal with whatever comes.
3. I try to see humorous side of problems.
4. Coping with stress can strengthen me.
5. I tend to bounce back after illness or hardship.
6. I can achieve goals despite obstacles.

7. I can stay focused under pressure.
8. I am not easily discouraged by failure.
9. I think of myself as a strong person when facing the difficulties that occur in my life.
10. I can handle unpleasant feelings such as sadness, fear or anger.

→ **Spanish version (Notario-Pacheco et al, 2011)**

**Instrucciones:** Por favor, indique cuál es su grado de acuerdo con las siguientes frases en su caso durante el mes último. Si una situación particular no le ha ocurrido recientemente, responda de acuerdo a como cree que se habría sentido. Por favor, marque con un círculo el número que mejor describa como se siente.

**Escala de respuesta**

0 En absoluto	1 Rara vez	2 A veces	3 A menudo	4 Casi siempre
------------------	---------------	--------------	---------------	-------------------

**Ítems**

1. Soy capaz de adaptarme cuando ocurren cambios.
2. Puedo enfrentarme a cualquier cosa.
3. Intento ver el lado divertido de las cosas cuando me enfrento con problemas.
4. Enfrentarme a las dificultades puede hacerme más fuerte.
5. Tengo tendencia a recuperarme pronto tras enfermedades, heridas u otras privaciones.
6. Creo que puedo lograr mis objetivos, incluso si hay obstáculos.
7. Bajo presión me centro y pienso claramente.
8. No me desanimo fácilmente con el fracaso.
9. Creo que soy una persona fuerte cuando me enfrento a los retos y dificultades de la vida.
10. Soy capaz de manejar sentimientos desagradables y dolorosos como tristeza, temor y enfado.

**ABBREVIATED PEDIATRIC STRESS SCALE FOR PEDIATRIC INTENSIVE CARE UNIT (Rodríguez-Rey & Alonso-Tapia, in press. Adapted from Carter & Miles, 1989)**

→ **Original version (Spanish)**

**Instrucciones:** Las siguientes preguntas se refieren aspectos de la UCIP que pueden resultar estresantes para los padres durante el ingreso de su hijo. Con estresante, nos referimos a que la experiencia te ha hecho sentir ansioso, preocupado o tenso. Te pedimos que rodees el número que mejor exprese cuánto ha sido de estresante la experiencia para ti, utilizando la siguiente escala:

**Escala de respuesta:**

0 No he experimentado esta situación	1 No estresante	2 Mínimamente estresante	3 Moderadamente estresante	4 Muy estresante	5 Extremadamente estresante
---	--------------------	-----------------------------	-------------------------------	---------------------	--------------------------------

**Ítems:**

1. Aspecto físico del niño (heridas, cambios en el color de su piel, apariencia de estar frío, etc.)
2. Sonido de los monitores, ver los latidos del corazón en los monitores o escuchar pitidos de alarma repentinos.
3. Procedimientos médicos que le han hecho a mi hijo (inyecciones, tubos, incisiones, etc.)
4. No poder ver a mi hijo y estar con él y cuidarle y cogerle cuando yo quiera.
5. Ver a mi hijo llorando, confundido, teniendo dolor, incapaz de hablar o llorar, triste o enfadado.
6. Ver al personal de la UCIP comportándose de un modo que considero inadecuado (riendo, hablando muy alto, no diciéndome sus nombres, etc.)
7. Problemas de comunicación con los médicos (explicarme las cosas de un modo que no las entiendo, diciéndome opiniones contradictorias, hablando poco conmigo, etc.)

→ **English translation**

**Instructions:** The following items describe aspects of the PICU environment that might be stressful for parents during their child's hospitalization. "Stressful" means that the experience has made you feel anxious, worried or tense. We ask you to circle the number which better express how stressful each experience has been for you according to the following scale:

**Response scale:**

0 Not experienced	1 Not stressful	2 Minimally stressful	3 Moderately stressful	4 Very stressful	5 Extremely stressful
----------------------	--------------------	--------------------------	---------------------------	---------------------	--------------------------

**Items:**

1. Physical appearance of the child (wounds, changes in skin color, appearance to be cold, etc.)
2. Sounds of monitors, seeing the heart rate on monitors or hearing sudden alarm sounds.
3. Medical procedures conducted on my child (needles, tubes, incisions, etc.)
4. Not being able to see my child, being with my child and taking care of him and hold him whenever I wish.
5. Seeing my child crying confused, in pain, unable to speak, sad or angry.
6. Seeing the staff from PICU behaving in a way that I consider inadequate (e.g., laughing, speaking too loud, not telling me their names, etc.)
7. Communication problems with the doctors (explaining me the things in a way that I do not understand, expressing contradictory opinions, talking too little to me, etc.).

**PERCEIVED STRESS SCALE (PSS)**

→ **Original version (English) (Cohen, Kamarck & Mermelstein, 1983)**

**Instructions:** The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an "X" over the circle

representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

**Response scale:**

0 Never	1 Almost never	2 Sometimes	3 Fairly often	4 Very often
------------	-------------------	----------------	-------------------	-----------------

**Items:**

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

→ **Spanish adaptation (Remor, 2006)**

**Instrucciones:** Las preguntas en esta escala hacen referencia a sus sentimientos y pensamientos durante el último mes. En cada caso, por favor indique con una "X" cómo usted se ha sentido o ha pensado en cada situación.

**Escala de respuesta:**

0 Nunca	1 Casi nunca	2 De vez en cuando	3 A menudo	4 Muy a menudo
------------	-----------------	-----------------------	---------------	-------------------

1. En el último mes, ¿con qué frecuencia ha estado afectado por algo que ha ocurrido inesperadamente?
2. En el último mes, ¿con qué frecuencia se ha sentido incapaz de controlar las cosas importantes en su vida?
3. En el último mes, ¿con qué frecuencia se ha sentido nervioso o estresado?
4. En el último mes, ¿con qué frecuencia ha manejado con éxito los pequeños problemas irritantes de la vida?
5. En el último mes, ¿con qué frecuencia ha sentido que ha afrontado efectivamente los cambios importantes que han estado ocurriendo en su vida?
6. En el último mes, ¿con qué frecuencia ha estado seguro sobre su capacidad para manejar sus problemas personales?
7. En el último mes, ¿con qué frecuencia ha sentido que las cosas le van bien?
8. En el último mes, ¿con qué frecuencia ha sentido que podía afrontar todas las cosas que tenía que hacer?
9. En el último mes, ¿con qué frecuencia ha podido controlar las dificultades de su vida?
10. En el último mes, ¿con qué frecuencia se ha sentido al control de todo?
11. En el último mes, ¿con qué frecuencia ha estado enfadado porque las cosas que le han ocurrido estaban fuera de su control?
12. En el último mes, ¿con qué frecuencia ha pensado sobre las cosas que le quedan por lograr?
13. En el último mes, ¿con qué frecuencia ha podido controlar la forma de pasar el tiempo?
14. En el último mes, ¿con qué frecuencia ha sentido que las dificultades se acumulan tanto que no puede superarlas?

**MODIFIED DIFFERENTIAL EMOTIONS SCALE (mDES)**

→ **English version** (Based on Fredrickson, 2009 and Fredrickson, Tugade, Waugh, & Larkin, 2003.).

**Instructions:** Please think back to how you have felt during your child's admission to the PICU. Using the 0-4 scale below, indicate in which degree you've experienced each of the following feelings.

**Response scale:**

0 Not at all	1 A little bit	2 Moderately	3 Quite a bit	4 Extremely
-----------------	-------------------	-----------------	------------------	----------------

1. How amused, fun-loving, or silly you felt?
2. How angry, irritated, or annoyed you felt?
3. How ashamed, humiliated, or disgraced you felt?
4. How much awe, wonder, or amazement you felt?
5. How contemptuous, scornful, or disdainful you felt?
6. How much disgust, distaste, or revulsion you felt?
7. How embarrassed, self-conscious, or blushing you felt?
8. How grateful, appreciative, or thankful you felt?
9. How guilty, repentant, or blameworthy you felt?
10. How much hate, distrust, or suspicion you felt?
11. How hopeful, optimistic, or encouraged you felt?
12. How inspired, uplifted, or elevated you felt?
13. How interested, alert, or curious you felt?
14. How joyful, glad, or happy you felt?
15. How much love, closeness, or trust you felt?
16. How proud, confident, or self-assured you felt?
17. How sad, downhearted, or unhappy you felt?
18. How scared, fearful, or afraid you felt?
19. How serene, content, or peaceful you felt?
20. How stressed, nervous, or overwhelmed you felt?

➔ **Spanish translation (Páez, Bobowil, Carrera & Bosco, 2011)**

**Instrucciones:** Por favor, piense en cómo se ha sentido durante el ingreso de su hijo en la UCIP. Usando la escala de 0-4, indique, por favor cuánto ha experimentado los siguientes sentimientos:

**Escala de respuesta:**

0 Nada	1 Poco	2 Moderadamente	3 Bastante	4 Mucho
-----------	-----------	--------------------	---------------	------------

1. ¿Cuán enfadado, irritado o molesto te has sentido?
2. ¿Cuán avergonzado o humillado o ridiculizado te has sentido?
3. ¿Cuán maravillado, asombrado o sorprendido te has sentido?
4. ¿Cuán divertido, entretenido o chistoso te has sentido?
5. ¿Cuán despectivo, despreciativo o desdeñoso te has sentido?
6. ¿Cuánto asco, repugnancia o repulsión has sentido?
7. ¿Cuán cohibido, tímido, avergonzado o ruborizado te has sentido?
8. ¿Cuán agradecido te has sentido?
9. ¿Cuán culpable o arrepentido te has sentido?
10. ¿Cuánto odio, desconfianza o sospecha has sentido?

11. ¿Cuán esperanzado, optimista o alentado te has sentido?
12. ¿Cuán inspirado, iluminado o entusiasmado te has sentido?
13. ¿Cuán interesado, alerta o curioso te has sentido?
14. ¿Cuán alegre, contento o feliz te has sentido?
15. ¿Cuánto amor, cercanía o confianza has sentido?
16. ¿Cuán confiado, seguro de ti mismo u orgulloso te has sentido?
17. ¿Cuán triste, desanimado o infeliz te has sentido?
18. ¿Cuán asustado, temeroso o miedoso te has sentido?
19. ¿Cuán sereno, calmo o apacible te has sentido?
20. ¿Cuán estresado, nervioso o abrumado te has sentido?

## **PEDIATRIC INDEX OF MORTALITY II**

**As this scale was completed from the medical record of the children (and was not self-administered) we are not including the Spanish translation.**

1. Systolic blood pressure, mmHg (unknown=120) 1
2. Pupillary reactions to bright light (>3 mm and both fixed=1, other or unknown=0) 2
3. PaO<sub>2</sub>, mmHg (unknown=0) FIO<sub>2</sub> at the time of PaO<sub>2</sub> if oxygen via ETT or headbox (unknown=0)
4. Base excess in arterial or capillary blood, mmol/l (unknown=0)
5. Mechanical ventilation at any time during the first hour in ICU (no=0, yes=1) 3
6. Elective admission to ICU (no=0, yes=1) 4
7. Recovery from surgery or a procedure is the main reason for ICU admission (no=0, yes=1) 5
8. Admitted following cardiac bypass (no=0, yes=1) 6
9. High risk diagnosis. Record the number in brackets. If in doubt record 0.
  - [0] None
  - [1] Cardiac arrest preceding ICU admission 7
  - [2] Severe combined immune deficiency
  - [3] Leukaemia or lymphoma after first induction
  - [4] Spontaneous cerebral haemorrhage 8
  - [5] Cardiomyopathy or myocarditis
  - [6] Hypoplastic left heart syndrome 9
  - [7] HIV infection
  - [8] Liver failure is the main reason for ICU admission 10
  - [9] Neuro-degenerative disorder 11
10. Low risk diagnosis. Record the number in brackets. If in doubt record 0.
  - [0] None
  - [1] Asthma is the main reason for ICU admission
  - [2] Bronchiolitis is the main reason for ICU admission 12
  - [3] Croup is the main reason for ICU admission
  - [4] Obstructive sleep apnoea is the main reason for ICU admission 13
  - [5] Diabetic keto-acidosis is the main reason for ICU admission



## DAVIDSON TRAUMA SCALE

### → Original version (English) (Davidson, 1997)

**Instructions:** Reply the following question referring to your child's admission in the PICU. Each of the following questions refer to a specific symptom. Consider, for each question, how many times have you felt disturbed about the symptom, and with which intensity, in the last week.

#### Response scale:

<u>Frequency</u>	<u>Severity</u>
0= Not at all	0= Not at all distressing
1= Sometimes	1= Slightly distressing
2= 2-3 times	2= Moderately distressing
3= 4-6 times	3= Quite distressing
4= Everyday	4= Extremely distressing

#### Items:

- 1 Have you had painful images, memories or thoughts of the event?
- 2 Have you had distressing dreams of the event?
- 3 Have you felt as though the event was re-occurring?
- 4 Have you been upset by something which reminded you of the event
- 5 Have you been avoiding any thoughts or feelings about the event?
- 6 Have you been avoiding doing things or going into situations which things or going into situations which remind you about the event?
- 7 Have you found yourself unable to recall important parts of the event?
- 8 Have you had difficulty enjoying things?
- 9 Have you felt distant or cut off from other people?
- 10 Have you been unable to have sad or loving feelings?
- 11 Have you found it hard to imagine having a long life span fulfilling your goals?
- 12 Have you had trouble falling asleep or staying asleep?
- 13 Have you been irritable or had outbursts of anger?
- 14 Have you had difficulty concentrating?
- 15 Have you felt on edge, been easily distracted, or had to stay 'on distracted, or had to stay 'on guard'?
- 16 Have you been jumpy or easily startled?
- 17 Have you been physically upset by reminders of the event?

### → Spanish adaptation (Bobes et al., 2000)

**Instrucciones:** Responda a las siguientes preguntas en relación con el ingreso de su hijo en la UCIP. Cada una de las siguientes preguntas **se trata de un síntoma específico**. Considere, para cada pregunta, **cuántas veces le ha molestado el síntoma y con cuánta intensidad**, durante la última semana.

### Escala de respuesta

<u>Frecuencia</u>	<u>Gravedad</u>
0= nunca	0= nada
1= a veces	1= leve
2= 2-3 veces	2= moderada
3= 4-6 veces	3= marcada
4= a diario	4= extrema

### Ítems

1. ¿Ha tenido alguna vez imágenes, recuerdos o pensamientos dolorosos del acontecimiento?
2. ¿Ha tenido alguna vez pesadillas sobre el acontecimiento?
3. ¿Ha sentido que el acontecimiento estaba ocurriendo de nuevo? ¿Cómo si lo estuviera reviviendo?
4. ¿Le ha molestado alguna cosa que se lo haya recordado?
5. ¿Ha tenido manifestaciones físicas por recuerdos del acontecimiento? (Incluye sudores, temblores, taquicardia, dificultad para respirar, náuseas o diarrea).
6. ¿Ha estado evitando algún pensamiento o sentimiento sobre el acontecimiento?
7. ¿Ha estado evitando hacer cosas o estar en situaciones que le recordaran el acontecimiento?
8. ¿Ha sido incapaz de recordar partes importantes del acontecimiento?
9. ¿Ha tenido dificultad para disfrutar de las cosas?
10. ¿Se ha sentido distante o alejado de la gente?
11. ¿Ha sido incapaz de tener sentimientos de tristeza o afecto?
12. ¿Ha tenido dificultad para imaginar una vida larga y cumplir sus objetivos?
13. ¿Ha tenido dificultad para iniciar o mantener el sueño?
14. ¿Ha estado irritable o ha tenido accesos de ira?
15. ¿Ha tenido dificultades de concentración?
16. ¿Se ha sentido nervioso, fácilmente distraído o ha permanecido 'en guardia'?
17. ¿Ha estado nervioso o se ha asustado fácilmente?

### HOSPITAL ANXIETY AND DEPRESSION SCALE (HADS)

→ Original version (English) (Zigmond & Snaith, 1983).

**Instructions:** Tick the box beside the reply that is closest to how you have been feeling in the past week. Don't take too long over you replies: your immediate is best.

#### Response scale and items

1. I feel tense or 'wound up':

Most of the time	A lot of the time	From time to time, occasionally	Not at all
------------------	-------------------	---------------------------------	------------

2. I still enjoy the things I used to enjoy:

Definitely as much	Not quite so much	Only a little	Hardly at all
--------------------	-------------------	---------------	---------------

3. I get a sort of frightened feeling as if something awful is about to happen:

Definitely as much	Not quite so much	Only a little	Hardly at all
--------------------	-------------------	---------------	---------------

4. I can laugh and see the funny side of things:

As much as I always could	Not quite so much now	Definitely not so much now	Not at all
---------------------------	-----------------------	----------------------------	------------

5. Worrying thoughts go through my mind:

A great deal of the time	A lot of the time	From time to time, but not too often	Only occasionally
--------------------------	-------------------	--------------------------------------	-------------------

6. I feel cheerful:

Not at all	Not often	Sometimes	Most of the time
------------	-----------	-----------	------------------

7. I can sit at ease and feel relaxed:

Not at all	Not Often	Usually	Definitely
------------	-----------	---------	------------

8. I feel as if I am slowed down:

Nearly all the time	Very often	Sometimes	Not at all
---------------------	------------	-----------	------------

9. I get a sort of frightened feeling like 'butterflies' in the stomach:

Not at all	Occasionally	Quite Often	Very Often
------------	--------------	-------------	------------

10. I have lost interest in my appearance:

Definitely	I don't take as much care as I should	I may not take quite as much care	I take just as much care as ever
------------	---------------------------------------	-----------------------------------	----------------------------------

11. I feel restless as I have to be on the move:

Very much indeed	Quite a lot	Not very much	Not at all
------------------	-------------	---------------	------------

12. I look forward with enjoyment to things:

As much as I ever did	Rather less than I used to	Definitely less than I used to	Hardly at all
-----------------------	----------------------------	--------------------------------	---------------

13. I get sudden feelings of panic:

Very often indeed	Quite often	Not very often	Not at all
-------------------	-------------	----------------	------------

14. I can enjoy a good book or radio or TV program:

Often	Sometimes	Not often	Very seldom
-------	-----------	-----------	-------------

→ **Spanish adaptation (Quintana et al, 2003)**

**Instrucciones:** A continuación leerá unas frases que pueden describir cómo se siente usted. Lea cada frase y marque con una cruz la respuesta que coincida mejor con cómo se ha sentido usted en la última semana. No hay respuestas buenas ni malas. No es necesario que piense mucho tiempo cada respuesta.

**Escalas de respuesta e ítems**

1- Me siento tenso/a o nervioso/a:

Casi todo el día	Gran parte del día	De vez en cuando	Nunca
------------------	--------------------	------------------	-------

2- Sigo disfrutando con las mismas cosas de siempre:

Igual que antes	No tanto como antes	Solamente un poco	Ya no disfruto nada
-----------------	---------------------	-------------------	---------------------

3- Siento una especie de temor como si algo malo fuera a suceder:

Sí, muy intenso	Sí, pero no muy intenso	Sí, pero no me preocupa	No siento nada de eso
-----------------	-------------------------	-------------------------	-----------------------

4- Soy capaz de reírme y ver el lado gracioso de las cosas:

Igual que siempre	Actualmente algo menos	Actualmente mucho menos	Actualmente en absoluto
-------------------	------------------------	-------------------------	-------------------------

5- Tengo la cabeza llena de preocupaciones:

Casi todo el día	Gran parte del día	De vez en cuando	Nunca
------------------	--------------------	------------------	-------

6- Me siento alegre:

Nunca	Muy pocas veces	En algunas ocasiones	Gran parte del día
-------	-----------------	----------------------	--------------------

7- Soy capaz de permanecer sentado/a tranquilo/a y relajadamente:

Siempre	A menudo	Raras veces	Nunca
---------	----------	-------------	-------

8- Me siento lento/a y torpe:

Gran parte del día	A menudo	A veces	Nunca
--------------------	----------	---------	-------

9- Experimento una desagradable sensación de "nervios y hormigueos en el estómago":

Nunca	Sólo en algunas ocasiones	A menudo	Muy a menudo
-------	---------------------------	----------	--------------

10- He perdido en interés por mi aspecto personal:

Completamente	No me cuidó como debiera hacerlo	Es posible que no me cuidó como debiera	Me cuidó como siempre lo he hecho
---------------	----------------------------------	---	-----------------------------------

11- Me siento inquieto/a como si no pudiera parar de moverme:

Realmente mucho	Bastante	No mucho	En absoluto
-----------------	----------	----------	-------------

12- Tengo ilusión por las cosas:

Muy a menudo	Con cierta frecuencia	Raramente	Nunca
--------------	-----------------------	-----------	-------

13- Experimento de repente sensaciones de gran angustia o temor:

Muy a menudo	Con cierta frecuencia	Raramente	Nunca
--------------	-----------------------	-----------	-------

14- Soy capaz de disfrutar con un buen libro o un buen programa de radio o de televisión:

A menudo	Algunas veces	Pocas veces	Casi nunca
----------	---------------	-------------	------------

## POSTTRAUMATIC GROWTH INVENTORY (PTGI)

### → Original version (English) (Tedeschi & Calhoun, 1996)

*NOTE:* The ten items marked with a \* are the ones conforming the PTGI 10-item form (Calhoun et al., 2010) which was used to assess PTG in the studies conducted on PICU staff.

#### **Instructions:**

*For the studies conducted with parents:* Indicate for each of the statements below the degree to which this change occurred in your life as a result of your child's admission to the PICU, using the following scale.

*For the studies conducted with health care providers:* Indicate for each of the statements below the degree to which this change occurred in your life as a result of your work, using the following scale.

#### **Response scale:**

0	I did not experience this change.
1	I experienced this change to a very small degree.
2	I experienced this change to a small degree.
3	I experienced this change to a moderate degree.
4	I experienced this change to a great degree.
5	I experienced this change to a very great degree.

#### **Items**

1. I changed my priorities about what is important in life.
2. I have a greater appreciation for the value of my own life.
3. I developed new interests.
4. I have a greater feeling of self-reliance.
5. I have a better understanding of spiritual matters.
6. I more clearly see that I can count on people in times of trouble.
7. I established a new path for my life.
8. I have a greater sense of closeness with others.
9. I am more willing to express my emotions.
10. I know better that I can handle difficulties.
11. I am able to do better things with my life.
12. I am better able to accept the way things work out.
13. I can better appreciate each day.
14. New opportunities are available which wouldn't have been otherwise.
15. I have more compassion for others.
16. I put more effort into my relationships.
17. I am more likely to try to change things which need changing.

18. I have a stronger religious faith.
19. I discovered that I'm stronger than I thought I was.
20. I learned a great deal about how wonderful people are.
21. I better accept needing others.

➔ **Spanish adaptation (Weiss & Berger, 2006)**

NOTA: Los diez ítems marcados con el símbolo \* son los que conforman la versión de 10 ítems del PTGI (Calhoun et al., 2010).

**Instrucciones:**

*Para los estudios realizados con padres:* Indique para cada una de las afirmaciones que se muestran a continuación, en qué medida experimentó cada cambio como consecuencia del ingreso de su hijo en la UCIP, utilizando la siguiente escala.

*Para los estudios realizados con profesionales:* Indique para cada una de las afirmaciones que se muestran a continuación, en qué medida experimentó cada cambio como consecuencia su trabajo, utilizando la siguiente escala.

**Escala de respuesta:**

0	No experimenté este cambio
1	Experimenté este cambio en una medida muy pequeña
2	Experimenté este cambio en una medida pequeña
3	Experimenté este cambio en un grado medio
4	Experimenté este cambio en gran medida
5	Experimenté este cambio en medida muy grande

**Ítems:**

1. He cambiado mis prioridades sobre lo que es importante en la vida\*
2. Aprecio más el valor de mi propia vida\*
3. He desarrollado nuevos intereses
4. Tengo un sentimiento más fuerte de confianza en mí mismo
5. Tengo una mejor comprensión de algunas cuestiones espirituales\*
6. Veo de manera más clara que puedo contar con la gente en momentos de crisis
7. He establecido un nuevo rumbo en mi vida\*
8. Tengo una mayor sensación de cercanía hacia los demás\*
9. Estoy más dispuesto a expresar mis sentimientos
10. Ahora sé mejor que puedo enfrentarme a los problemas\*
11. Creo que puedo hacer cosas mejores con mi vida\*
12. Puedo aceptar mejor las cosas tal como vienen
13. Puedo valorar mejor el día a día
14. Han aparecido nuevas oportunidades que, de no haber pasado esto, no habrían sucedido.
15. Tengo más sentimientos de compasión hacia los demás

16. Pongo más energía en mis relaciones personales
17. Ahora intento más cambiar aquellas cosas que deben de cambiarse
18. Tengo una fe religiosa más fuerte\*
19. Descubrí que era más fuerte de lo que en realidad pensaba\*
20. Aprendí mucho sobre lo extraordinaria que llega a ser la gente\*
21. Acepto mejor que necesito a los demás

## MASLACH BURNOUT INVENTORY

→ **Original version (Maslach, Jackson & Leiter, 1996)**

**Instructions:** For each question, indicate the score that corresponds to your current situation at your work.

**Response scale:**

0 Never	1 A few times per year	2 Once a month	3 A few times per month	4 Once a week	5 A few times per week	6 Every day
------------	------------------------------	----------------------	-------------------------------	---------------------	------------------------------	----------------

**Items:**

1. I feel emotionally drained by my work.
2. I am at the end of my patience at the end of my work day.
3. I feel tired when I get up in the morning and have to face another day at work.
4. I am easily able to understand what my patients feel.
5. I feel I look after certain patients impersonally, as if they are objects.
6. Working with people all day long requires a great deal of effort.
7. I look after my patients' problems very effectively.
8. I feel like my work is breaking me down.
9. Through my work, I feel that I have a positive influence on people.
10. I have become more insensitive to people since I've been working.
11. I'm afraid that this job is making me uncaring.
12. I feel full of energy.
13. I feel frustrated by my work.
14. I feel I work too hard at my job.
15. I really don't care about what happens to some of my patients.
16. It stresses me too much to work in direct contact with people.
17. I am easily able to create a relaxed atmosphere with my patients.
18. I feel refreshed when I have been close to my patients at work.
19. I accomplish many worthwhile things in this job.
20. I feel like I'm at the end of my rope
21. In my work, I handle emotional problems very calmly.
22. I have the impression that my patients make me responsible for some of their problems.

→ **Spanish adaptation (Seisdedos, 1997)**

**Instrucciones:** Seleccione la alternativa de respuesta que considere que más se acerque a su situación en el trabajo

**Escala de respuesta**

0 Nunca	1 Pocas veces al año o menos	2 Una vez al mes o menos	3 Unas pocas veces al mes o menos	4 Una vez a la semana	5 Pocas veces a la semana	6 Todos los días
------------	---------------------------------------	-----------------------------------	--	-----------------------------	------------------------------------	------------------------

**Ítems:**

1. Me siento emocionalmente agotado por mi trabajo.
2. Me siento cansado al final de la jornada de trabajo.
3. Me siento fatigado cuando me levanto por la mañana y tengo que ir a trabajar.
4. Comprendo fácilmente como se sienten los pacientes.
5. Creo que trato a algunos pacientes como si fueran objetos impersonales.
6. Trabajar todo el día con mucha gente es un esfuerzo.
7. Trato muy eficazmente los problemas de los pacientes.
8. Me siento "quemado" por mi trabajo.
9. Creo que influyo positivamente con mi trabajo en la vida de las personas.
10. Me he vuelto más insensible con la gente desde que ejerzo esta profesión.
11. Me preocupa el hecho de que este trabajo me endurezca emocionalmente.
12. Me siento muy activo.
13. Me siento frustrado en mi trabajo.
14. Creo que estoy trabajando demasiado.
15. Realmente no me preocupa lo que le ocurre a mis pacientes.
16. Trabajar directamente con personas me produce estrés.
17. Puedo crear fácilmente una atmósfera relajada con mis pacientes.
18. Me siento estimulado después de trabajar con mis pacientes.
19. He conseguido muchas cosas útiles en mi profesión.
20. Me siento acabado.
21. En mi trabajo trato los problemas emocionales con mucha calma.
22. Siento que los pacientes me culpan por alguno de sus problemas.

**TRAUMA SCREENING QUESTIONNAIRE**

→ **English version (Brewin et al., 2002)**

**Instructions:** Please consider the following reactions which sometimes occur after experiencing very difficult situations, such as the ones you usually experience in your work. Please indicate (Yes/No) whether or not you have experienced any of the following at least twice in the past week.



## Response scale

Yes	No
-----	----

## Items

1. Upsetting thoughts or memories about the event that have come into your mind against your will.
2. Upsetting dreams about the event
3. Acting or feeling as though the event were happening again
4. Feeling upset by reminders of the event
5. Bodily reactions (such as fast heartbeat, stomach churning, sweatiness, dizziness) when reminded of the event
6. Difficulty falling or staying asleep
7. Irritability or outbursts of anger
8. Difficulty concentrating
9. Heightened awareness of potential dangers to yourself and others
10. Being jumpy or being startled at something unexpected

### → Spanish translation

**Instrucciones:** Las siguientes reacciones, a veces ocurren cuando se viven situaciones muy difíciles, como aquellas a las que se enfrenta en su trabajo en la UCIP. Por favor, responda si ha tenido o no alguna de las siguientes reacciones durante las dos últimas semanas.

## Escala de respuesta:

Sí	No
----	----

## Ítems:

1. Pensamientos o recuerdos molestos o desagradables acerca del acontecimiento que tienen a tu mente en contra de tu voluntad.
2. Sueños molestos o desagradables acerca del acontecimiento.
3. Actuar o tener la sensación de que el acontecimiento está ocurriendo de nuevo.
4. Sentirse molesto porque algún acontecimiento se lo haya recordado.
5. Reacciones corporales (como taquicardia, sudoración, mareos) cuando recuerda el acontecimiento.
6. Dificultad para dormirse o permanecer dormido.
7. Irritabilidad o explosiones de ira.
8. Dificultades de concentración.
9. Aumento de la conciencia de la existencia de peligros potenciales para usted mismo o los demás.
10. Sentirse asustado o sobresaltado cuando ocurre algo inesperado.

## COPING QUESTIONNAIRE FOR HEALTH CARE PROVIDERS (CQ-HC)

### → Original version (Spanish)

**Instrucciones:** Por favor, indique en qué grado actúa de acuerdo con las siguientes afirmaciones, utilizando la siguiente escala.

**Escala de respuesta:**

1 Nunca	2 Rara vez	3 Alguna vez	4 A menudo	5 Casi siempre
------------	---------------	-----------------	---------------	-------------------

**Ítems:**

En mi trabajo, **cuando he tenido problemas o dificultades con alguno de mis compañeros** (personal de enfermería, médicos, etc...)

1. He pensado mucho en el problema, deseando que no hubiera ocurrido.
2. He intentado pensar o hacer otras cosas para no pensar mucho en ello.
3. He buscado aislarme para no tener que hablarlo con nadie.
4. He procurado contárselo a otra persona.
5. He procurado buscar por mí mismo cómo podría mejorarlo o resolverlo.
6. Me he dejado llevar de mis sentimientos y he actuado casi sin pensar.
7. Me he culpado a mí mismo por no haber sabido prevenir los problemas.
8. He pensado en positivo, tratando de aprender de lo ocurrido.

En mi trabajo, cuando me enfrento a **situaciones difíciles con un paciente o sus familiares** (como el empeoramiento o el fallecimiento de un paciente, desacuerdos con algún familiar, etc.)

1. Le he dado muchas vueltas, pensando que ojalá las cosas no hubieran ocurrido así.
2. He procurado distraerme para no pensarlo.
3. He buscado no estar con otras personas para no tener que hablar de ello.
4. Normalmente he buscado hablar con alguien sobre ello.
5. He procurado buscar por mí mismo/a si hay algo que pueda hacer.
6. Me he dejado llevar por mis emociones y he actuado sin pensarlo apenas.
7. Me he culpado a mí mismo por no haber podido evitarlo o prevenirlo.
8. He pensado en positivo, tratando de aprender de la situación.

### → English translation

**Instructions:** Please, indicate in which degree you act according to the following statements using the following response scale.

### Response scale

1 Never	2 Almost never	3 Sometimes	4 Fairly often	5 Very often
------------	-------------------	----------------	-------------------	-----------------

### Items

In my work, when **I have had problems or difficulties with any of my colleagues** (nursing staff, physicians, etc.)

1. I have repeatedly think about the problem, wishing that it wouldn't have happened.
2. I have tried to think in other things, avoiding thinking too much about the situation.
3. I have isolated myself, so that I did not have to share the problem with anyone.
4. I have spoken about it with someone.
5. I have tried to solve the situation by myself.
6. I have acted impulsively, not thinking about it.
7. I have blamed myself, for not having been able to prevent the problem.
8. I have tried to think of the positives, trying to learn from what happened.

In my work, when **I face difficult situations with a patient of his/her family** (such as the worsening or the death of a patient, or disagreements with the family of a patient, etc.)

9. I have repeatedly think about the problem, wishing that it wouldn't have happened.
10. I have tried to think in other things, avoiding thinking about the problem.
11. I have isolated myself, so that I did not have to share the problem with anyone.
12. I have tried to speak about it with someone.
13. I have tried to search for a solution by myself.
14. I have acted impulsively, barely thinking about it.
15. I have blamed myself, for not having been able to avoid or prevent the problem.
16. I have tried to think of the positives, trying to learn from what happened.

### SATISFACTION WITH LIFE SCALE (SWLS; Diener et al., 1985)

**Instructions:** Below are five statements with which you may agree or disagree. Using the scale below, indicate your agreement with each item.

### Response scale

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree nor disagree	5 Slightly agree	6 Agree	7 Strongly agree
------------------------	---------------	------------------------	---------------------------------	---------------------	------------	---------------------

### Items

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

→ **Spanish version (Vázquez, Duque & Hervás, 2013)**

**Instrucciones:** Más abajo hay cinco afirmaciones con las que usted puede estar de acuerdo o en desacuerdo. Por favor, responda a las preguntas abierta y sinceramente utilizando la siguiente escala.

**Escala de respuesta**

1 Completamente en desacuerdo	2 En desacuerdo	3 Más bien en desacuerdo	4 Ni de acuerdo ni en desacuerdo	5 Más bien de acuerdo	6 De acuerdo	7 Completamente de acuerdo
-------------------------------------	-----------------------	-----------------------------------	--	--------------------------------	--------------------	----------------------------------

**Ítems**

1. En la mayoría de los aspectos, mi vida se acerca a mi ideal.
2. Las condiciones de mi vida son excelentes.
3. Estoy completamente satisfecho/a con mi vida.
4. Hasta ahora, he conseguido las cosas más importantes que quiero en la vida.
5. Si pudiera vivir mi vida de nuevo, no cambiaría nada.

## **B) DESCRIPTION OF THE PROTOCOL USED FOR DATA COLLECTION IN PART II**

The first approach to each parent was in the first 48 h after their child was discharged from the PICU (T0). A researcher in psychology (the author of this dissertation) approached the parents in the pediatric ward where the child had been transferred after being discharged from PICU. Then, the study was presented and explained to the parents. They were also given the informative pamphlet which is included in pages 453 and 454 (these pamphlets were also left in the PICU, so some parents might have seen them before this first approach). Those who accepted to participate, signed the written consent and were given the first set of questionnaires. Additionally, we asked them how they would like to be re-contacted for the following-up (e-mail, telephone or post).

Three to two weeks before each parent had to complete the three months (T1) and the six months (T2) follow up assessment, we contacted them in different ways, depending on the channel of communication that they had indicated in T0. Then, there were three possibilities depending on how they had chosen to be re-contacted:

- If they had chosen to be re-contacted by email, we sent them an email to the address provided with a reminder of the purpose of the study and an attached document which included the set of questionnaires that they had to complete to continue participating in the study. In the case that they did not reply within a week, we called them by telephone to ask them whether they had received the email, and we did that two times more in case they still did not reply.
- In case they chose to be contacted by post, three weeks before the date in which they should reply the questionnaires we called them to make sure that we had the correct post address. Then we sent them an envelope which included a reminder letter with the purposes of the study, the set of questionnaires that they had to send us back fulfilled and

a self-addressed stamped envelope, so that they could send us back the fulfilled questionnaires easily and with no economic cost for them. In the case that two weeks after sending them the letter we had no response, we called them on the phone to make sure that they received it, and to remind them to send us back the questionnaires if they still wanted to collaborate in our study.

- Finally, in case they chose to be contacted by telephone, we gave them the choice to reply the questionnaires by phone, or to receive the set of questionnaires by email, or post. In the case they chose email or post, we followed the same procedure as in the two cases mentioned above.

In any case, if the follow-up questionnaires were not returned after a second mailing or letter, they were given the opportunity either to complete the questionnaires over the telephone or, if they preferred, in person at a time when the child was being reviewed in the outpatient clinic.

## **C) INFORMATION PROVIDED TO THE PARTICIPANTS IN THE DIFFERENT STUDIES**

Here we are including the information provided to the participants in each of the studies of this dissertation (parts I, II and III) in Spanish and in English.

### **PART I**

#### **→ Spanish**

El objetivo de nuestro proyecto es estudiar las relaciones entre resiliencia (capacidad de recuperarse ante la adversidad) y otros factores que se han encontrado relacionados con resiliencia en estudios previos (por ejemplo, optimismo). Queremos saber qué hay detrás de aquellas personas que ante una situación difícil son capaces de recuperarse, y seguir adelante.

Además, sabemos que la resiliencia depende de la situación, es decir, que no nos recuperamos igual ante la pérdida de un trabajo, ante las dificultades económicas, o ante la enfermedad de un ser querido, por ejemplo. Para estudiar cómo se recupera la gente ante diferentes dificultades, hemos diseñado un cuestionario que evalúa resiliencia en distintas situaciones. Ello nos permitirá conocer si hay situaciones que la faciliten o dificulten.

La finalidad última de nuestro estudio es conocer cómo podemos diseñar intervenciones psicológicas que promuevan una recuperación positiva frente a situaciones difíciles.

Pulsando “aceptar” entenderemos que da su consentimiento para participar. Es importante que responda a todas las preguntas que se presentarán a continuación con sinceridad, lo que le llevará aproximadamente 35 minutos. **Agradecemos sinceramente su colaboración.**

#### **→ English**

The aim of this study is to explore the relations between resilience (capacity to recover after a significant adversity) and other factors which have been found related to it in previous studies, such as optimism. We would like to know what is behind this capacity of being able to recover well from adversities.

Besides, we know that resilience depends on the situation, so we do not recover in the same way after different difficulties (e.g., losing a job, economic difficulties of the illness of a loved one). To study how people recover from different adversities we have developed a questionnaire to assess resilience in different situations.

The last aim of our study is to know how we can design psychological interventions aimed at promoting positive recovery after difficult situations.

By clicking “accept” we will understand that you give your consent to participate. It is important that you reply all the questions with sincerity. It will take approximately 35 minutes. **We sincerely appreciate your collaboration.**

## PART II

### → Spanish

El siguiente tríptico fue dejado en la entrada de la UCIP, para que los padres conocieran la posibilidad de participar en el estudio cuando su hijo fuese dado de alta. Además, cuando les contactamos por primera vez, les entregamos una copia del mismo.

#### - **Parte externa del tríptico informativo entregado a los padres.**

<p><b>¿Por qué hacemos este estudio?</b></p> <p>El ingreso de un hijo en una Unidad de Cuidados Intensivos Pediátricos y de Reanimación (UCIP-REA) es una situación que puede resultar especialmente difícil.</p> <p>Sin embargo, a pesar de las dificultades, la experiencia nos muestra que <b>muchos de los padres que pasan por esta situación lo hacen de una forma admirable y son capaces de reponerse</b> a las dificultades. Esta capacidad para enfrentarse con éxito a las situaciones difíciles se conoce como <b>resiliencia</b>.</p> <p>Con la realización de este proyecto, se pretende <b>estudiar la resiliencia en los padres que han pasado por el ingreso de un hijo en la UCIP-REA</b>, así como posibles dificultades emocionales que puedan atravesar.</p> <p>Nuestro objetivo último es el <b>poder ayudar mejor a los padres que en el futuro pasen por la situación del ingreso de un hijo en la UCIP-REA</b>.</p>	<p><b>¿Qué tendría que hacer usted para participar?</b></p> <p>Su participación consistiría en contestar a unos cuestionarios en 3 momentos diferentes:</p> <ol style="list-style-type: none"><li>1. El primer momento es <b>48 horas alrededor del alta</b> de su hijo de la UCIP-REA.</li><li>2. El segundo es <b>3 meses después del alta</b> de la UCIP-REA.</li><li>3. El tercero es <b>6 meses después del alta</b> de la UCIP-REA.</li></ol> <p>En el primer momento te entregaremos los cuestionarios en papel. En los momentos 2 y 3, lo podrás responder por e-mail, por correo postal o por teléfono, de modo que <b>NO</b> será necesario que vuelvas al hospital para participar.</p> <p>Los cuestionarios son sencillos, y tardan en ser respondidos unos <b>20-25 minutos</b> en cada momento.</p> <p><b>¿Qué hago si me interesa participar?</b></p> <p>Comuníquelo al personal de la unidad. Además <b>se le ofrecerá la posibilidad de participar cuando su hijo reciba el alta</b> de la UCIP-REA.</p>	<p><b>¿Cuáles son sus derechos?</b></p> <ul style="list-style-type: none"><li>- La decisión de participar en el estudio es <b>libre y voluntaria</b>, y no afectará alguno a los cuidados médicos que su hijo está recibiendo.</li><li>- Los participantes en el estudio no van a soportar riesgos ni molestias adicionales ya que su inclusión únicamente conlleva completar una serie de cuestionarios.</li><li>- Toda la información relacionada con el estudio es estrictamente <b>confidencial</b>.</li><li>- Una vez finalizado el estudio, si usted ha participado en el mismo, recibirá un breve resumen de los resultados obtenidos.</li></ul>		<p><b>SU COLABORACIÓN ES MUY IMPORTANTE.</b></p> <p><b>MUCHAS GRACIAS.</b></p>
--	---	---	---	--



- **Parte interna del tríptico informativo entregado a los padres.**

**¿Por qué hacemos este estudio?**

El ingreso de un hijo en una Unidad de Cuidados Intensivos Pediátricos y de Reanimación (UCIP-REA) es una situación que puede resultar especialmente difícil.

Sin embargo, a pesar de las dificultades, la experiencia nos muestra que **muchos de los padres que pasan por esta situación lo hacen de una forma admirable y son capaces de reponerse** a las dificultades. Esta capacidad para enfrentarse con éxito a las situaciones difíciles se conoce como **resiliencia**.

Con la realización de este proyecto, se pretende **estudiar la resiliencia en los padres que han pasado por el ingreso de un hijo en la UCIP-REA**, así como posibles dificultades emocionales que puedan atravesar.

Nuestro objetivo último es el **poder ayudar mejor a los padres que en el futuro pasen por la situación del ingreso de un hijo en la UCIP-REA**.

**¿Qué tendría que hacer usted para participar?**

Su participación consistiría en contestar a unos cuestionarios en 3 momentos diferentes:

1. El primer momento es **48 horas alrededor del alta** de su hijo de la UCIP-REA.
2. El segundo es **3 meses después del alta** de la UCIP-REA.
3. El tercero es **6 meses después del alta** de la UCIP-REA.

En el primer momento te entregaremos los cuestionarios en papel. En los momentos 2 y 3, lo podrás responder por e-mail, por correo postal o por teléfono, de modo que **NO** será necesario que vuelvas al hospital para participar.

Los cuestionarios son sencillos, y tardan en ser respondidos unos **20-25 minutos** en cada momento.

**¿Qué hago si me interesa participar?**

Comuníquelo al personal de la unidad. Además **se le ofrecerá la posibilidad de participar cuando su hijo reciba el alta** de la UCIP-REA.

**¿Cuáles son sus derechos?**

- La decisión de participar en el estudio es **libre y voluntaria** y no afectará alguno a los cuidados médicos que su hijo está recibiendo.

- Los participantes en el estudio no van a soportar riesgos ni molestias adicionales ya que su inclusión únicamente conlleva completar una serie de cuestionarios.

- Toda la información relacionada con el estudio es estrictamente **confidencial**.

- Una vez finalizado el estudio, si usted ha participado en el mismo, recibirá un breve resumen de los resultados obtenidos.



**SU COLABORACIÓN ES MUY IMPORTANTE.**

**MUCHAS GRACIAS.**

→ **English translation of the pamphlet.**

The following informative pamphlet were let at the entrance of the PICU so that parents could know about the possibility of participating in our study right after their child's discharge from the PICU. We also provided a copy to each parent when we asked them to participate in the study. Here we are providing the translation of the information inside the pamphlet.

**Why this study?**

- Having a child admitted to the PICU can be a difficult situation for parents.
- However, in spite of the difficulties, many parents cope well with this situation, and are able to recover. This ability to recover from adversity is called resilience.
- By doing this study, we intend to study resilience in parents whose child has been admitted to the PICU, as well as which difficulties they may experience.
- Our last objective is to better help parents who in the future experience their child's admission to the PICU.

**What should you do to collaborate?**

Your participation would consist on replying some questionnaires in three different time-points.

1. The first one is in the first 48 h after your child's discharge from PICU.
2. The second one is three months after your child's discharge from PICU.
3. The third one is six months after your child's discharge from PICU.

In the first time-point, we will give you the questionnaires printed. In the second and the third ones, you will be able to reply by e-mail, telephone or post, so you **won't** have to come back to the hospital to participate. The questionnaires are easy to complete, and it takes about 20-25 minutes to complete each assessment.

**What should I do if I'm interested in participating?**

Tell the personnel in the unit. Besides, you will be offered the possibility of participating after your child's discharge from the PICU.

**Which ones are your rights?**

- The decision to participate in the study is completely free and voluntary and it won't affect in any way to your child's care.
- The participants won't have any additional risks or disturbance, as participating only consists of completing some questionnaires.
- All the information related to the study is strictly confidential.
- Once the study is finished, if you are interested you will receive a brief summary on its results.

**Your participation is very important. Thank you very much!**

## **PART III**

### **Information for participants**

Los profesionales que trabajan en pediatría se encuentran expuestos de forma continua a un entorno muy demandante en el que constantemente tienen contacto con situaciones difíciles. Dado que hay pocos estudios que se hayan explorado la salud mental de estos trabajadores en España, el objetivo de este trabajo es estudiarlo.

Además, en este trabajo se estudiará en qué medida la resiliencia (capacidad de hacer recuperarse después de situaciones difíciles) de los profesionales, así como sus estrategias de afrontamiento (qué hacen para afrontar las dificultades que ocurren en su trabajo) influye en su mejor o peor salud mental y satisfacción con la vida.

La participación en este proyecto es totalmente voluntaria, anónima y confidencial. Consistirá en completar una serie de cuestionarios, lo que le llevará alrededor de 20-25 minutos. **Agradecemos sinceramente su participación.**

### **Information for participants**

Professionals working in pediatrics are constantly exposed to a very demanding environment, and are usually in touch with very difficult situations. As there are not many studies which have explored mental health in these professionals in Spain, this is the objective of this research.

Furthermore, in this study it will be explored in which degree professionals' resilience (the capacity to recover after experiencing difficult situations), and their coping strategies (what they do to face their difficulties at work) impact their mental health and life satisfaction.

The participation in this study is completely voluntary, anonymous and confidential. It will consist of completing some questionnaires, which will take about 20-25 minutes. **We sincerely appreciate your collaboration.**