

# The relationship between the frequency of gender-based violence exposure and Adolescents' psychosocial adjustment: A multilevel meta-analysis

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## ARTICLE INFO

### Keywords:

Gender-based violence exposure  
Family violence  
Adolescence  
Adjustment  
Multilevel meta-analysis

## ABSTRACT

Gender-based Violence Exposure (GVE) is not usually a punctual event in a child's life. However, research into the differential adjustment related to the frequency of GVE is still inconclusive, especially regarding older children and adolescents, hindering the empirical integration and synthesis of this topic. The aim of this meta-analysis was to quantitatively synthesize the documented relationship between the frequency of exposure to GBV and adolescents' adjustment. We analyzed whether the relationships differed by sex, age, study design, violence conceptualization, and measurements. A comprehensive search of online databases was conducted into peer-reviewed studies published between January 2000 and September 2020. The searches yielded an initial total of 4850 studies, after screening 35 independent samples, 16,291 participants, met the inclusion criteria. Data were pooled using multilevel meta-analytic models. Overall, our findings provide evidence of the existence of a dose-response relationship between exposure to GVE and adolescents' adjustment. This relationship was especially significant for aggressive behavior, antisocial behavior, and dating violence. These results highlight the need for early intervention programmes to avoid the consolidation and chronicity of adolescent emotional and behavioral problems, and the need for further research on the variables associated with the adolescent's adjustment.

Currently, it is estimated that each year more than half a billion children and adolescents are exposed to situations of gender-based violence (United Nations Children Fund, 2020), in which minors are direct witnesses of violence against their mothers through aggressive verbal, physical, or sexual behavior perpetrated by their mother's partner/ex-partner, who may or may not be the children's biological father. Prior literature on the subject suggests that exposure to gender violence is not usually a punctual event in children's lives but is characterized by being a problem with a tendency to become chronic over time, causing at the least more intense and lasting consequences the longer their exposure to violence, and the more serious and frequent the attacks suffered by the children's mothers (Maliken & Fainsilber, 2013; Mohammad, Shapiro, Wainwright, & Carter, 2015; Ruel, Lavoie, Hébert, & Blais, 2020). However, the relationship between gender violence exposure (GVE) and the psychological, behavioral, and emotional adjustment in minors has been analyzed in many cases by differentiating the children's adjustment by grouping them according to the presence or absence of their exposure to gender-based violence (DeBoard-Lucas & Grych, 2011; Evans, Davies, & DiLillo, 2008; Wolfe, Crooks, Lee,

McIntyre-Smith, & Jaffe, 2003). This makes it difficult to assess the effect of time and the frequency with which minors observe this type of aggressive behavior in their homes.

Early meta-analyses and systematic reviews on the topic consistently revealed a significant correlation between exposure to gender-based violence and the development of clinical symptoms and maladaptive behaviors in children (Carlson, 2000; Evans et al., 2008; Sternberg, Baradaran, Abbott, Lamb, & Guterman, 2006; Wolfe et al., 2003). However, these studies provided only a preliminary understanding of the overall impact of gender-based violence on child adjustment. They did not consider factors such as age, frequency, severity, and co-occurrence of different forms of violence over time. Consequently, the full range of children's adjustment was not fully addressed (Fong, Hawes, & Allen, 2017; Lourenço et al., 2013). Recognizing this limitation, subsequent meta-analyses (Vu, Jouriles, McDonald, & Rosenfield, 2016) have addressed some of these longitudinal effects and suggested an increase in negative symptoms as time passes after GVE, beginning with the appearance of mild indicators of maladjustment that would crystallize as the minors grow and pass from preschool age to early

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adolescence. Additionally, other meta-analyses have shed light on the significance of adaptive and resilient mechanisms in the lives of children and adolescents, which may account for the reduced presence of adverse consequences among older youths (Van Eldik et al., 2020; Willems, Li, Hendriks, Bartels, & Finkenauer, 2018).

Considering the age of the minor's exposure to gender-based violence and its relationship with the exacerbation of negative consequences for their development, adolescence seems to be a high-risk stage and thus a priority research stage. However, the conclusions drawn from current meta-analyses regarding the relationship between age and the adjustment of minors exposed to gender-based violence may not be entirely conclusive. This is because many studies examining the relationship between children's adjustment and GVE have primarily focused on preschool and infant populations. As a result, there is uncertainty surrounding the interpretation of the findings and the generalizability of the results to adolescents. (DeBoard-Lucas & Grych, 2011; Fong et al., 2017; Vu et al., 2016).

To achieve greater clarity into the adjustment and symptoms developed by older children and adolescents, it is necessary to develop meta-analytic studies focused on this age group, which, additionally represents an evolutionary moment of profound changes in their emotional and physical characteristics. This circumstance could register them as a particularly vulnerable group by increasing their risk of engagement in common antisocial or pre-criminal behavior or increasing their risk of replicating in their own dating relationships, the maladaptive patterns of interaction learned at home where violence was a valid strategy for interaction and conflict resolution (Jouriles, Mueller, Rosenfield, McDonald, & Dodson, 2012; Narayan, Englund, Carlson, & Egeland, 2014; Ruel et al., 2020; Xia, Li, & Liu, 2018).

In relation to this issue, the psychosocial problems examined in adolescents exposed to gender-based violence encompass a wide range of issues, which can be broadly classified into three main categories: 1) externalizing behavioral problems: disruptive behavior characterized by a low control of their emotions, a disregard for rules, irritability and aggressiveness, e.g. antisocial behavior and substance use (Evans et al., 2008; Vu et al., 2016); 2) internalizing behavioral problems, e.g. disturbances associated with subjective states or experiences of psychological tension such as depression, anxiety and post-traumatic stress disorder (DeBoard-Lucas & Grych, 2011; Van Eldik et al., 2020) and, 3) problems in their dating relationships, e.g. violent behavior of a psychological, physical or sexual nature in their first couple relationships as well as the development of legitimizing attitudes of the use of violence for conflict resolution (Harold & Sellers, 2018; Mohammad et al., 2015; Negriff, 2020; Renner & Boel-Studt, 2017). Furthermore, prior research findings suggest that exposure to gender-based violence could have differential outcomes mediated by the children's sex and age and that this could be an important risk factor in the development of internalizing symptoms in girls, while boys would be more vulnerable to develop externalizing behavior problems and to become involved in violent dating relationships, especially after the age of 12 (Evans et al., 2008; Gony, 2020; Harold & Sellers, 2018; Tailor & Letourneau, 2012).

Despite the certain consensus in the aforementioned conclusions, recent studies have suggested that the variability of the results regarding the adjustment of adolescents could be related to methodological and theoretical aspects of the studies. It is, therefore, necessary to analyze the value of the potentially associated variables with the variability of the reported effects, and to pay special attention to those variables that refer to the conceptualization and measurement of their exposure to violence. Specifically, meta-analytic studies are required to quantify the variability of the findings associated with: a) the measurement of exposure to gender-based violence through standardized instruments that can enable the generalization and replication of the results as opposed to the use of ad hoc questionnaires, b) the different informants of the violence and aggression experienced by the children, e.g. mothers/fathers, the adolescents, and/or qualified professionals, c) the definition of gender-based violence, whether it has been defined in the

studies exclusively as the presence of physical aggression or, on the contrary, as a variety of different violent behavior of a psychological, physical and sexual nature and, d) the origin of the samples, whether it originated from the general population or the at risk population. Each of these aspects could be related to the differences found in the greater or lesser effect of exposure to gender-based violence, on the adjustment of the children. Thus, their analysis could be of special relevance to evaluate the current follow-up of the victims and the specific intervention strategies developed to date depending on the type of violence the minors have been exposed to, and the characteristics of the victims (Gony, 2020; Hébert et al., 2019; Van Eldik et al., 2020; Vu et al., 2016).

Based on the above, the present study is aimed at analyzing the relationships documented in the scientific literature during the last two decades between the frequency of exposure to gender-based violence and the occurrence of externalizing or internalizing behavioral problems and dating violence in the adolescent population. We have analyzed whether the relationships between the frequency of exposure and the different correlates could differ depending on the sex and age of the adolescents as well as the variability of the documented results depending on the study design, i.e. cross-sectional vs. transactional, the conceptualization of the gender-based violence, the time elapsed between exposure to violence and the appearance of the consequences, the selection of evaluation measurements and the diversity of informants of the violence and adolescents' adjustment. We hypothesized that: a) a higher frequency of exposure to gender-based violence would be associated with greater levels of externalizing and internalizing symptoms, and dating violence in the adolescent population (Sternberg et al., 2006; Van Eldik et al., 2020); b) the higher frequency of exposure to gender-based violence would be predominantly associated with externalizing symptoms and dating violence (Fong et al., 2017; Gony, 2020); c) the older adolescents would report higher levels of internalizing symptoms (Harold & Sellers, 2018); d) those adolescents in risky situations would report a lower relationship between the frequency of exposure to violence and associated symptoms (Wood & Sommers, 2011) and, e) the use of standardized measurement instruments and self-reporting measures would be associated with a slightly inflated effect size in relation to ad hoc studies due to the higher sensitivity of the questionnaires to detect the variables of interest (Vu et al., 2016).

## 1. Method

Firstly, to gather potentially eligible studies for the meta-analyses, a comprehensive search of online databases including APA PsycInfo, MEDLINE, PsycODOC, ERIC, and Psychology and Behavioral Science Collection, was conducted into peer-reviewed studies published in English or Spanish between 01 January 2000 and September 29, 2020. To ensure the rigor and validity of our violence exposure dose-response analysis, we excluded literature on IPV exposure published before 2000. This criterion was based on prior literature reviews, which consistently indicated that studies on IPV exposure conducted before 2000 often employed methodological designs that were not particularly stringent. Many of them had small sample sizes, which compromised the statistical power of the findings. Moreover, some studies did not report on the construct validity of the measurements, while most of them failed to adequately assess violent dynamics, such as the frequency of exposure and revictimization (Carlson, 2000; Wolfe et al., 2003). In addition, the meta-analysis was limited to peer-reviewed research sources to ensure maximum quality and validity of the results. Grey literature, such as dissertations, theses, reports, and conference proceedings, was excluded. The exclusion of these types of studies aimed to include the best sources of evidence to review in our work, reduce possible biases and increase the validity of the findings (Bellefontaine & Lee, 2014; Botella & Sánchez, 2015). To perform the searches, a variety of keyword combinations were used: a) gender-based violence exposure, b) adolescent population and c) consequences. TX ("exposure to intimate partner violence" OR "witnessing intimate partner violence" OR "gender

violence” OR “interparental violence” OR “domestic violence” OR “spouse abuse” OR “battered women”) AND TX (“consequences” OR “correlates” OR “impact” OR “effects” OR “outcomes” OR “adjustment”) AND TX (“adolescen\*” OR “teen\*” OR “teenager” OR “youth\*”) NOT TI (“qualitative”). The searches yielded an initial total of 4850 studies, after eliminating duplicates, which amounted to 924 studies, a first screening based on the title and abstract of the studies was performed by two reviewers.

## 2. Inclusion and exclusion criteria

To be included in the meta-analysis, a study had to fulfill the following inclusion criteria: 1) Reporting the results of a quantitative empirical study. 2) Analyzing the exposure to gender-based violence, i.e. interparental violence exerted by the father towards the mother. 3) Analyze GVE using continuous measures, specifically frequency of exposure. 4) Analyzing internalizing symptoms, externalizing symptoms, or dating violence prevalences and their relation to exposure to GVE in the adolescent population aged between 10 and 21 years old. The period between 10 and 21 years of age has been considered to encompass adolescence in a broad way, allowing for a comprehensive understanding of the adolescent stage (Cohen et al., 2016; Willems et al., 2018). 5) Informing, or providing upon request to the authors, a concurrent or prospective zero-order correlation between the frequency of exposure to violence and the adolescent's adjustment. Additionally, exclusion criteria were: 1) Analyzing problems other than internalizing symptoms, externalizing symptoms or dating violence. 2) Reporting case studies. 3) Examining the efficacy of clinical intervention programs without considering the frequency of GVE. 4) Analyzing the impact of exposure to two-way interparental violence, interparental violence by the mother, general family violence, or studies on exposure to any other type of violence.

Meta-analyses and systematic reviews were retained after the first screening and were analyzed as secondary sources for the identification of potentially relevant studies.

## 3. Screening procedures

The 15 % ( $n = 588$ ) of the sampled studies ( $n = 3926$ ) underwent duplicate title/abstract screening by two independent reviewers,

resulting in a 90 % agreement rate, the remaining studies were screened by one reviewer. Additionally, 33 articles identified through citations in previous articles (Fig. 1) were identified as potentially eligible studies and were also selected for full-text review and data extraction. Subsequently, the primary reviewer and a secondary reviewer performed the full-text review and screened in duplicate 50 % ( $n = 184$ ) of the potentially eligible studies ( $n = 368$ ). Both reviewers extracted the following variables in a coding prototype to determine the inclusion or not of the manuscript: a) title, b) year of publication, c) the objective of the study, d) type of violence measured, e) the instrument(s) used to measure the violence, f) informer(s) of the violence, g) whether the frequency of exposure to violence was measured, h) adolescents problems, i) the instrument used to measure adolescents problem, j) reported size effect, k) sample size, l) age of the minors, m) the origin of the sample (i.e. general population, shelters, child protection services). The two reviewers achieved a percentage agreement between 90 % and 100 % for the different variables. Any discrepancies between the coders were discussed until a consensus was reached. The data from the remaining 184 potentially eligible studies were screened by the main reviewer. After performing the second screening consisting of a full-text review, 35 of the 368 publications met the inclusion criteria and were therefore included in the meta-analysis.

## 4. Coding procedures

The 35 studies included in the meta-analysis were independently coded by both reviewers using a system designed by the research team specifically for the study that included sampling, design, measurement, and publication characteristics (Table 1). The research team meticulously selected and categorized moderator variables based on available information from previous meta-analyses on gender violence. In the process of writing the meta-analysis protocol, the team conducted a thorough review of the data reported in the literature to identify the most appropriate moderators and their categorization. For example, in establishing the categorization of instruments that were used in previous studies to measure exposure to violence, the team found that the CTS was the most widely used instrument and had also accumulated the most evidence of construct validity to date, followed by scales that were designed specifically for the studies and, finally, other standardized instruments with less evidence of construct validity. As a result, exposure

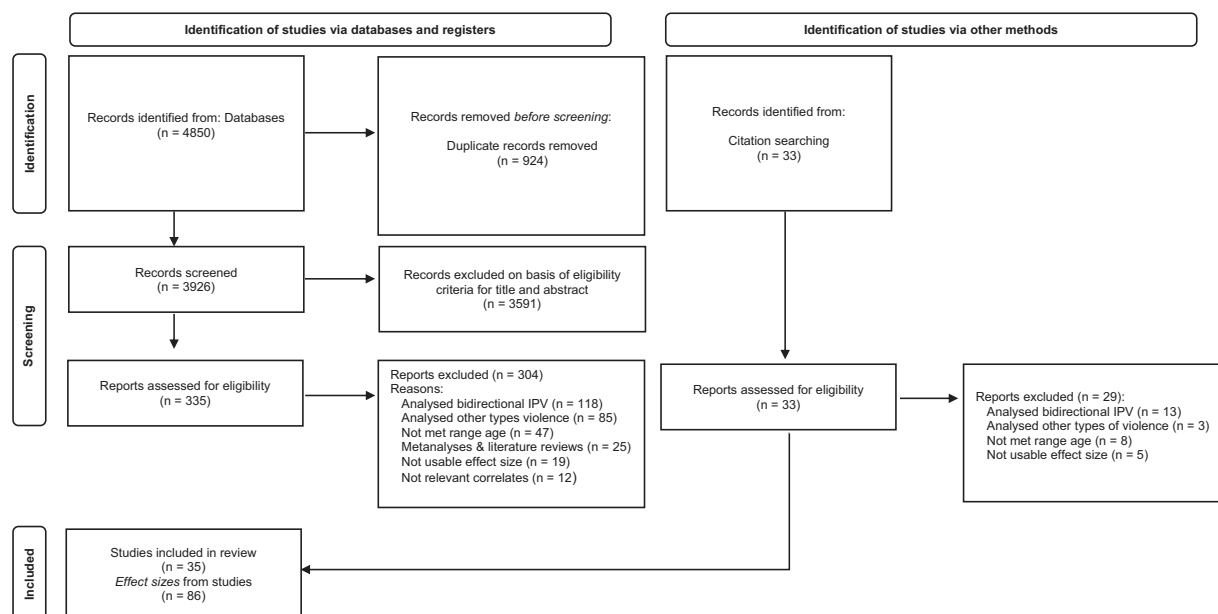


Fig. 1. PRISMA 2020 flow diagram of the systematic review process which included searches of databases, registers, and other sources (Page, et al. 2020).

**Table 1**  
Key variables coded for each study.

ID	ID to identify record
Year of publication	Year of publication
Adolescent problem	E.g. externalizing, internalizing, depression, anxiety, dating violence, antisocial behavior
Sample size	n
Zero-order correlation	r
Age	Adolescents mean age when the consequences were measured
Gender	Percentage of female adolescents in the sample
Socioeconomic status	1 = low 2 = middle 3 = high
Sample origin	0 = community population 1 = help seeking population/under legal process/living in shelters
Country of origin	2 = mixed 1 = United States 2 = Canada 3 = Europe 4 = Latinoamerica 5 = Asia 6 = Australia
Study Design	1 = Crossectional 2 = Longitudinal
Time lag	For longitudinal studies, the time elapsed in months between IPV assessment and consequences assessment
GVE measurement	1 = CTS 2 = other 3 = Ad hoc
GVE informant	1 = mother 2 = both parents 3 = adolescents 4 = multiple informants

GVE = Gender-based violence exposure.

to violence was analyzed in three distinct categories: CTS, other standardized measures, and ad hoc measurement tools. After completing coding and data extraction, the team reviewed the categorization of moderating variables to ensure that no critical information was omitted. However, no modifications were necessary to the initial categorization established.

Finally, the two reviewers independently assessed the risk of biases of the 35 publications based on the Joanna Briggs Institute (JIB) checklist for analytical cross-sectional studies (Aromataris & Munn, 2020), any disagreements during the risk of bias assessment were discussed with a third reviewer. The 35 studies were retained for further analyses after assessing their individual risk of biases, 30 % of the studies were assessed as having low risk of biases obtaining 8 or 7 points out of 8. The remaining 70 % scored 6–5 out of 8. Many of these studies did not identify potential confounding variables or establish adequate strategies to address them ( $n = 14$ ). Six studies measured GVE using measures with no prior evidence of validity, and eight studies used measures with no prior evidence of validity to measure the adolescents' symptoms. All the procedures were carried out following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guide (PRISMA; Page et al., 2021). The protocol of this meta-analysis was registered in the thesis plan and research ethics committee of the Universidad Autónoma de Madrid under the code CEI-116- 2315.

5. Statistical approach and analyses

Concurrent or prospective zero-order correlations (Pearson's correlation index,  $r$ ), were used as measure to synthesize the 86 effect sizes (35 studies) included in the present study. The scores on the frequency of exposure to gender-based violence and the associated symptoms were coded in the same direction so that the higher levels of gender-based violence reflected higher levels of symptomatology. The correlations were transformed to Fisher's  $Z$  (Rosenthal, 1991) to perform the analyses

with a more symmetric distribution and converted back to  $r$  to report the results. In most cases, the value of  $r$  was obtained directly from the correlation matrix displayed in the original studies, except in two cases where the data was requested from the authors, one of which where the value of  $r$  was calculated from the reported  $R^2$ , in two where it was taken from the coefficient standardized ( $\beta$ ), and in two other studies where it had been calculated from the reported  $LogRV$ , using the formulas  $d = LogRV / 1.65$  y  $r = d / \sqrt{d^2 + 1}$  to calculate the equivalence between indices (Botella & Sánchez, 2015). The criteria to convert  $\beta$ -weights, as suggested by prior simulation studies was that  $\beta$ -weights fell in the range between  $-0.5$  and  $0.5$  (Peterson & Brown, 2005).

Several studies provided more than one correlation index as they used multiple measures for the same construct, e.g. Youth Self Report, which was composed of subscales for the measurement of the internalizing and externalizing problems. This resulted in a greater number of measurements corresponding to the number of studies and the violation of the independence assumption between the analyzed effect sizes. The violation of the assumption of independence between measurements is a common problem in meta-analyses, consequently, a number of different approaches have been proposed to address this, some of these solutions have been to calculate the weighted mean of the effect sizes for each study, or to select an effect size per study. However, both methods have limitations and biases when it comes to estimating the models (Becker, 2000; Cheung & Chan, 2014). To address this issue, the interdependence between measurements was examined in the present study using a multilevel meta-analytic model (Assink & Wibbelink, 2016; Cheung, 2014; Cheung & Chan, 2014). This method has allowed for a more robust analysis of the data, which has considered the contribution of the same participants to multiple effect sizes of the same overall construct in each study. The Restricted Maximum Likelihood estimation method (REML) was used to estimate the parameter's models as it has proven to be approximately unbiased and quite efficient (Viechtbauer, 2005). Separate models were calculated for externalizing behavior problems, internalizing behavior problems, and dating violence in adolescents, as well as a general model to estimate the effect of exposure on general maladjustment in adolescents. Furthermore, when the studies provided independent effect sizes for the different behavioral problems, i.e. antisocial behavior, aggressive behavior, depression, anxiety, and PTSD, additional models were estimated for each to obtain greater specificity regarding the effect reported in prior research on the dose-effect relationship between GVE and the outcomes.

To check for outliers and influential cases, we used several recommended methods for sensitivity analyses in meta-analytical studies, including Studentized Deleted Residuals, Cook's distance, DFBETAS, and hat matrix (Viechtbauer, 2010; Viechtbauer & Cheung, 2010). Effect sizes number 28 and 29 in the externalizing symptomatology model exhibited Cook's distances  $>2/\sqrt{n}$ , and DFBETAS values  $>4/n$ ; while the effect size 18 in the internalizing symptomatology model obtained studentized residuals below  $-2$ . Values in these three cases suggested that such effects could be atypical and influential, with negative effects on the estimated pooled effects size for the dose-response relationship between exposure to GVE and the development of both symptoms. Both models were estimated again excluding the detected cases. The pooled effect size in both, the internalizing and externalizing symptomatology models increased by  $r_{\bullet} = 0.01$ , specifically from  $r_{\bullet} 0.12$  to  $0.13$  for the internalizing model; and from  $r_{\bullet} = 0.17$  to  $0.18$  for the externalizing one. These findings indicate that the results remained relatively stable despite the inclusion/exclusion of the atypical cases and within the initially estimated confidence interval. Thus, all effects were retained for the rest of the analysis since such small effect sizes could be attributed solely to chance (Viechtbauer & Cheung, 2010).

The estimated models enabled the analysis of the distribution of variance in the three levels. To assess whether a three-level model provided a better account of the data variability than a two-level model, the following fit indices were considered: the Akaike Information



Criterion (AIC) and the Bayesian Information Criterion (BIC). Lower values for these indices indicate a better fit (Sera, Armstrong, Blangiardo, & Gasparrini, 2019). Furthermore, ANOVA tests were conducted to compare the likelihood ratio test (LRT) values between the full model and the reduced model. The  $I^2$  index was used to describe the percentage of variation across studies that was due to heterogeneity, as opposed to chance. It was selected for being an intuitive expression of inconsistency among studies results (Higgins & Thompson, 2002). The  $I^2$  index was estimated by dividing the difference between the Q test and its degrees of freedom ( $k-1$ ) by the Q value and multiplying by 100 (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006). When the variance attributed to the differences between studies was  $>75\%$ , subsequent analyses were performed using mixed effects models to analyze the possible effect of moderating the variables. As suggested in prior studies (Harrer, Cuijpers, Furukawa, & Ebert, 2019; Van den Noortgate, López-López, Marín-Martínez, & Sánchez-Meca, 2015) continuous moderators were added to the overall model and an omnibus chi-square test was analyzed to corroborate if the regressions coefficient was statistically different from zero. While categorical moderators were examined by adding dummy variables to the overall model for the categories. An omnibus chi-square test showed whether the regression coefficients for all categories were statistically equal. To analyze the possible publication bias in the studies included in the meta-analysis, a visual inspection of the funnel plots (supplementary material) was conducted on the dispersion of the individual effects in relation to the

mean effect and the sample size of each study (Sterne, Becker, & Egger, 2005) for externalizing problems, internalizing problems, and dating violence, as well as the statistical analysis of the asymmetry of the funnel plot using the Egger regression test (Egger, Smith, Schneider, & Minder, 1997) and the Trim and Fill method (Shi & Lin, 2019; supplementary material). All analyses were performed using the Metafor package (Viechtbauer, 2010) from R Statistical Package.

## 6. Results

A total of 86 effect sizes were included (35 studies;  $n = 16,291$  adolescents), 32 on externalizing behavior problems, 29 on internalizing behavior problems, 1 on total internalizing and externalizing behavior problems, and 24 associated with dating violence. Approximately 70 % ( $n = 23$ ) of the studies were conducted in the United States, and the remaining 30 % in Italy ( $n = 3$ ), Canada ( $n = 2$ ), Republic of the Congo ( $n = 2$ ), China ( $n = 1$ ), Israel ( $n = 1$ ), Chile ( $n = 1$ ) and Australia ( $n = 1$ ). Of all studies, 51.4 % were conducted under a cross-sectional design and 48.6 % under a longitudinal design, 61.8 % of the studies were developed in the general population and 38.2 % in the risk population attended by services for victims of gender violence, shelters, or judicial services. A total of 58.8 % of the studies measured the frequency of gender-based violence taking into account only the physical aggressions directed towards the mother, while 41.2 % measured the frequency of gender-based violence more broadly, taking into account not only the

**Table 2**  
Summary characteristics of the studies included.

Study	Sample			Method				Risk of bias	
	Size	Females	M. age	Study design (Lag)	IPV	Symptoms	Informants	JIB checklist	
Appleyard, Egeland, van Dulmen, & Sroufe, 2005	171	45.0 %	16.0	L (180)	AD HOC <sup>a</sup>	INT, EXT	M	6	
Baldry (2003a)	1366	45.9 %	12.1	C	CTS <sup>b</sup>	AG	A	8	
Baldry (2003b)	1024	48.5 %	11.2	C	CTS <sup>b</sup>	AG	A	8	
Baldry, 2007	532	50.3 %	11.9	C	CTS <sup>b</sup>	AG, AB	A	6	
Bergman, Cummings, & Davies, 2014	266	47.5 %	13.8	C	CTS <sup>a</sup>	ANX, DEP, INT, EXT	M	6	
Emery, 2011	929	50.0 %	13.5	L (36)	CPS <sup>a</sup>	AB	M	8	
Faust et al., 2015	204 <sup>+</sup>	53.3 %	11.8	C	AD HOC <sup>b</sup>	ANX, DEP	SW	6	
Glass et al., 2018*	269	50.9 %	12.5	L (8)	CTS <sup>a</sup>	EXT	M	7	
Grych, Fincham, Jouriles, & McDonald, 2000	145 <sup>+</sup>	50.2 %	12.0	C	CPIC <sup>b</sup>	EXT	A	6	
Haj-Yahia & Abdo-Kaloti, 2007	1185	50.2 %	16.6	C	CTS <sup>a</sup>	AG, AB, ANX, INT, EXT	A	7	
Johnson, Greenhoot, Glisky, & McCloskey, 2005	134 <sup>+</sup>	50.3 %	15.0	L (72)	CTS <sup>a</sup>	DEP, PTSD	A	7	
Jouriles et al., 2012	88 <sup>+</sup>	51.1 %	15.9	L (3)	CTS <sup>a</sup>	AG, PTSD, DV	M	6	
Kennedy, Bybee, Sullivan, & Greeson, 2010	100 <sup>+</sup>	49.0 %	12.0	L (24)	CR- WIPV <sup>b</sup>	DEP	A	7	
Kinsfogel & Grych, 2004*	391	52.4 %	16.0	C	CTS <sup>b</sup>	AG, ATT, DV	A	6	
Levendosky et al., 2002	111 <sup>+</sup>	49.5 %	14.9	C	SVAWS <sup>b</sup>	DEP, PTSD	M	6	
Lichter & McCloskey, 2004	208 <sup>+</sup>	51.0 %	16.7	L (108)	CTS <sup>a</sup>	ANX, ATT, DV	M	5	
Ma et al., 2016	593	48.1 %	14.2	C	CTS <sup>a</sup>	AG, AB, ANX, INT, EXT	M	6	
Maliken & Fainsilber, 2013	74	38.0 %	16.0	L (132)	CTS <sup>a</sup>	INT, EXT	M	6	
McCloskey & Lichter, 2003	295 <sup>+</sup>	54.0 %	16.4	L (108)	CTS <sup>a</sup>	AG, DV	M	5	
Martin & Mohr, 2002	56 <sup>+</sup>	42.8 %	11.0	C	CTS <sup>b</sup>	AG, ANX, DEP, PTSD	M	5	
Mohammad et al., 2015	91 <sup>+</sup>	54.9 %	13.2	C	CTS <sup>b</sup>	AG, ANX, PTSD	M	6	
Moretti, Bartolo, Craig, Slaney, & Odgers, 2014	138 <sup>+</sup>	100.0 %	16.3	L (60)	FQB <sup>b</sup>	DV	A	6	
Narayan et al., 2014	182	45.6 %	16.0	L (60)	AD HOC <sup>b</sup>	DV, EXT	M	6	
Negriff, 2020	347	50.0 %	17.5	L (84)	CTI <sup>a</sup>	ANX, DEP, PTSD, EXT	A	8	
Renner & Boel-Studt, 2017	626 <sup>+</sup>	51.2 %	15.5	L (48)	CTS <sup>a</sup>	INT, EXT	M	7	
Ruel et al., 2020	2564	63.7 %	15.3	L (6)	CTS <sup>b</sup>	ATT, DV	A	8	
Suh et al., 2016	326	52.29 %	16.1	L (36)	AD HOC <sup>a</sup>	TOTAL	A	6	
Temple, Shorey, Tortolero, Wolfe, & Stuart, 2013*	917	55.9 %	15.1	C	AD HOC <sup>a</sup>	ATT, DV	A	5	
Wright & Fagan, 2012*	1517	50.8 %	13.5	C	CTS <sup>a</sup>	AG, INT	M	8	
Xia et al., 2018	1192	50.0 %	14.1	L (12)	AD HOC <sup>a</sup>	AG, ATT	A	5	
Yates, Dodds, Sroufe, & Egeland, 2003	155	47.7 %	16.0	L (180)	AD HOC <sup>a</sup>	INT, EXT	SW	6	

L = Longitudinal design; C = Cross-sectional design; Lag = The time elapsed in months between IPV assessment and consequences assessment.

CTS = Conflict Tactics Scale (Straus, 1979); CPS = Conflicts and Problem-solving Scale (Kerig, 1996). CR-WIPV = Child Report of Witnessing IPV scale (Allen, et al. 2003); SVAWS = Severity of Violence Against Women Scales (Marshall, 1992); FBQ = The Family Background Questionnaire (McGee et al., 1997); CTI = The Comprehensive Trauma Interview (Noll et al., 2003).

M = mother; A = adolescent; SW = Social worker; EX = Externalizing; IN = Internalizing; DV = Dating Violence; AB = Antisocial Behavior; AG = Aggressive Behavior; DEP = Depression; ANX = Anxiety; PTSD = Posttraumatic Stress Disorder; ATT = Attitudes Towards Partner Violence; Total = Addition of EXT and INT symptoms.

<sup>+</sup> Sample was taken in social protection services or shelters.

<sup>a</sup> Exposure to gender-based violence was characterized by physical assault only;

<sup>b</sup> Exposure to gender-based violence was characterized by physical, verbal and sexual assaults, \* study analyzed male and female samples independently.

times that adolescents were exposed to physical attacks towards their mother, but also to other types of violence, e.g. psychological and sexual (Table 2). Descriptives of the continuous variables of the studies included in the meta-analysis for each type of consequence are shown in Table 3.

When assessing whether the three-level model provided a superior explanation for the variability of the data for the three outcomes, it was found that the AIC and BIC indices for the three-level models were lower to the two-level models for externalizing (AIC = 31.72; BIC = 28.01 vs AIC = 33.57; BIC = 30.15) and internalizing symptoms (AIC = 33.18; BIC = 48.17 vs AIC = 36.69; BIC = 41.09; AIC = 41.09), and that according to LRT values, the adjustment for the full and reduced models was significantly different in each case (externalizing = 4.89,  $p < 0.05$ ; internalizing = 9.91  $< 0.01$ ), indicating that the three-level approach better accounted for the variability of both outcomes. However, when evaluating the suitability of the three-level approach for the dating violence outcome, it was identified that the AIC and BIC indices did not show significant differences between models (AIC = 52.27, BIC = 50.00 vs AIC = 51.85, BIC = 49.17), and no significant differences between the full model and the restricted model were founded according to LRT (1.31,  $p < 0.2517$ ). Therefore, a three-level approach was not applied in analyzing the pooled effect for DV.

Overall, the results showed a clear relationship between the frequency of exposure to gender-based violence and the development of externalizing behavior problems and dating violence. In contrast, in the case of internalizing behavioral problems, no significant association was identified between the frequency of exposure to interparental violence and specific symptoms; yet a significant relationship between the frequency of exposure and internalizing symptomatology was found when the total effect was analyzed (Table 4).

## 7. Frequency of GVE and externalizing symptoms

A total of 32 effect sizes (24 studies;  $n = 11,755$ ) analyzed the relationship between the frequency of exposure to gender-based violence and the development of externalizing problems in the adolescent population. The total pooled effect size for the relationship was  $r_{\bullet} = 0.17$  (0.12; 0.23), 8.03 % of the total variance was attributed to the sample variance (level 1), 6.54 % to the difference between effect sizes within studies (level 2) and 85.42 % to the variance between studies (level 3). Twelve studies analyzed the relationship between the frequency of exposure to violence and aggressive behavior separately ( $r_{\bullet} = 0.20$ , [0.11; 0.28]) and four studied the relationship between the frequency of exposure to violence and the development of antisocial behavior ( $r_{\bullet} = 0.28$ , (0.02; 0.43). The pooled effect size weighted for each consequence was statistically different from zero ( $p < 0.05$ ) and statistically similar  $F(2, 29) = 0.2987$ ,  $p = 0.74$ .

**Table 3**

Means, Standard Deviations and range across studies.

Variable	Externalizing	Internalizing	Dating Violence
<i>M SD</i>			
Correlation	0.17 (0.15)	0.12 (0.17)	0.13 (0.08)
Age	14.37 (2.01)	14.40 (2.31)	15.76 (0.68)
Proportion of females	49.13 (22.22)	48.90 (13.0)	55.90 (35.99)
Lag	69.92 (61.10)	89.1 (59.70)	63.21 (53.90)
<i>Range</i>			
Correlation	−0.10 0.47	−0.26 0.51	0.01 0.30
Age	10 18	10 18	14.16 16.70
Proportion of females	0100	0100	0100
Lag	3180	3180	3180
Year of publication	2000–2020	2002–2020	2003–2020

Note: Age = Adolescent's age when consequences were measured; Lag = time elapsed in months between interparental violence assessment and adolescent's consequences assessment.

**Table 4**

Effect sizes for the relationship between the frequency of gender based-violence exposure and adolescents' symptoms.

	$N_{EF}$ (k)	n	$r_{\bullet}$	95 % CI	p
Overall	86 (35)	16,291	0.14	[0.09 0.18]	$< 0.0001$
Externalizing total	32 (24)	11,755	0.17	[0.12 0.23]	$< 0.0001$
Antisocial behavior	5(4)	3239	0.28	[0.02 0.43]	0.04
Aggressive behavior	15 (12)	6810	0.20	[0.11 0.28]	0.002
Externalizing syndrome	12 (12)	4013	0.16	[0.07 0.25]	0.003
Internalizing total	29 (17)	5718	0.12	[0.05 0.19]	0.002
Depression	7(7)	1218	0.07	[−0.04 0.17]	0.18
Anxiety	7(7)	2742	0.09	[−0.12 0.29]	0.33
PTSD	5 (5)	693	0.11	[−0.05 0.27]	0.14
Internalizing syndrome	10 (10)	4587	0.15	[0.07 0.25]	0.003
Dating Violence	24 (11)	5975	0.12	[0.09 0.14]	$< 0.0001$
Violent behavior	14 (10)	4780	0.14	[0.12 0.16]	$< 0.0001$
Attitudes towards partner violence	10 (6)	5272	0.10	[0.05 0.14]	0.001

Note:  $N_{EF}$  = Number of effect sizes, k = number of studies, n = sample size,  $r_{\bullet}$  = pooled effect sizes.

## 8. Frequencies of GVE and internalizing symptoms

A total of 17 studies (29 effect sizes;  $n = 5718$ ) on the effect of gender-based violence exposure and the development of internalizing symptoms were analyzed. The pooled effect size for the relationship was  $r_{\bullet} = 0.12$  (0.05; 0.19). 10.34 % of the total variance was attributed to the sample variance (level 1), 8.14 % to the difference between effect sizes within studies (level 2) and 81.52 % to the variance between studies (level 3). Seven studies separately analyzed the effect of the frequency of exposure to violence on the development of depression ( $r_{\bullet} = 0.07$ , [−0.04; 0.17]), and anxiety ( $r_{\bullet} = 0.09$ , [−0.12; 0.29]) and five on the relationship with post-traumatic stress syndrome ( $r_{\bullet} = 0.11$ , [−0.05; 0.27]). The pooled effect size for each consequence was statistically similar  $F(3, 29) = 0.931$ ,  $p = 0.43$  and was statistically different from zero when total internalizing symptomatology was analyzed in the studies ( $p < 0.01$ ).

## 9. Frequencies of exposure to gender-based violence and dating violence

A total of 11 studies (24 effect sizes;  $n = 5975$ ) were analyzed regarding the relationship between the frequency of exposure to gender-based violence and dating violence of the exposed adolescents, a pooled effect size was identified as significant for the equivalent relation to  $r_{\bullet} = 0.12$  (0.09; 0.14). Ten studies separately analyzed the effect of the frequency of exposure to violence on the development of violent behavior in dating ( $r_{\bullet} = 0.14$ , [0.12; 0.16]), and seven analyzed the development of behavior that legitimized the use of violence in dating relationships ( $r_{\bullet} = 0.10$ , [0.05, 0.14]). The pooled effect size for each consequence was statistically different from zero ( $p < 0.001$ ) and statistically different  $F(1,21) = 5.4281$ ,  $p = 0.02$ . Although the two-level model proved to have a better fit than the three-level model, the pooled effect size for a three-level DV model were tested to ensure that statistical dependencies and incorrect standard errors were not affecting the results. No significant differences were found between the two models. Deviance statistics did not show notable improvement, and the pooled effect sizes remained stable. The total DV effect decreased by  $r_{\bullet} = 0.01$ , while the effect size for violent behaviors increased by  $r_{\bullet} = 0.01$ . Importantly, both results remained within the confidence intervals estimated by the two-level model.

## 10. Publication bias

To analyze the patterns of publication biases, funnel-plots were analyzed for externalizing symptoms, internalizing symptoms, and dating violence (Supplementary material). Subsequently, Egger's asymmetry tests were performed for externalizing symptoms ( $z = -0.0532$ ,  $p = 0.9576$ ), internalizing symptoms ( $z = -1.4358$ ,  $p = 0.1511$ ) and dating violence ( $z = 1.5933$ ,  $p = .11$ ). Both the visual inspection of the funnel-plots and the Egger's test revealed the absence of evidence of publication bias. Finally, the Trim and Fill Procedure was tested for the three cases. For externalizing symptoms, there was no evidence of publication biases. However, for internalizing symptoms ( $z = 4.57$ ;  $p < 0.001$ ) and dating violence ( $z = 6.47$ ;  $p < 0.001$ ), this test suggested evidence for publication biases. A visual inspection of the inputted funnel plots (supplementary material) suggested the absence of three "positive" studies in the inferior right side of the plot, with positive small effect sizes and large standard errors. The pooled adjusted effect size for internalizing symptoms increased to  $r_{\bullet} = 0.15$  (0.11;0.20), suggesting an underestimation of the actual pooled effect size due to publication biases. Additionally, for dating violence, five "negative" studies were missing on the left inferior side of the plot (supplementary material). This pattern suggested the existence of missing studies that likely report a lack of relationship between the frequency of GVE and DV with larger standard errors due to smaller sample sizes. In line with this, the pooled effect size for DV, adjusted using the Trim & Fill method, decreased to  $r_{\bullet} = 0.10$  (0.08;0.12). This decrease suggests a slight overestimation of the pooled effect size. However, it is important to note that both pooled effect sizes still fall within the original confidence intervals estimated for the internalizing symptoms ( $r_{\bullet} = 0.12$  [0.05–0.19]) and DV ( $r_{\bullet} = 0.13$  [0.08–0.16]). Additionally, caution must be exercised when interpreting these results, as Trim and Fill method assumes homogeneity and when applied to heterogeneous data sets like the one in this study, may adjust for publication biases even when none exist (Moreno et al., 2009; Peters, Sutton, Jones, Abrams, & Rushton, 2007).

## 11. Moderation analysis

In an attempt to explain the heterogeneity in the correlations, a second set of analyses was performed based on the estimation of mixed models to identify whether the estimated effect size between the frequency of exposure to gender-based violence and the development of

externalizing and internalizing symptoms varied according to sex, age and type of sample (general population vs. risk population), study design (longitudinal vs. cross-sectional), conceptualization of violence (limited to physical assaults vs. broad concept including physical, psychological and sexual assaults), measuring instruments, informants of violence and time elapsed between the measurement of interparental violence and the measurement of the symptoms. Moderation analyses were not tested on dating violence as the pooled effect size had a heterogeneity of <75 %.

## 12. Moderation effects by sex and age

The analysis of variance associated with the percentage of females and age of the sample showed that the studies conducted on older adolescents reported a stronger relationship between the frequency of GVE and the development and internalizing symptoms,  $Q(1,27) = 9.82$ ,  $p = 0.004$  ( $b = 0.04$ , i.e., in years). No differences were identified by sex, or for the sex\*age interaction in any of the analyses.

Moderation effects relative to the sample, study design and measurement tools.

Studies about internalizing symptoms that conceptualized interparental violence by limiting it to physical behavior reported inflated effect sizes in relation to the studies that analyzed violence under a broader concept. Furthermore, studies conducted in the population at risk reported significantly smaller effect sizes in relation to those conducted on samples composed by general population regarding internalizing symptoms. Finally, the studies that analyzed the exposure to violence reported by adolescents, documented inflated effect sizes in relation to the studies where mothers or social workers reported the frequency of GVE, the difference between informants was statistically significant for the internalizing symptoms. No moderation effects relative to the type of sample, design, and measurement of variables were founded for the externalizing symptoms (Table 5).

## 13. Discussion

The present meta-analysis enabled us to analyze the empirical findings corresponding to the last two decades on the relationship between the frequency of GVE and the development of emotional and behavioral problems in the adolescent population. The analyses corroborated not only the relationship between exposure to gender-based violence in the family context and adolescents maladjustment, e.g. internalizing or externalizing in adolescents, but also made it possible to synthesize the effect of the frequency with which they were exposed on their severity and diversity (Evans et al., 2008; Ruel et al., 2020; Van Eldik et al., 2020; Vu et al., 2016).

Furthermore, this analysis allowed for a review of the methodological characteristics of studies published on the topic since 2000, as well as an evaluation of the potential risk of bias or threats to the internal validity of the published effect sizes. It is noteworthy that most studies provided clear inclusion criteria and described the sample in sufficient detail, enabling other researchers and clinicians to determine if the results are comparable to their population of interest. As expected, most studies measured GVE using standardized measurements with aggregated evidence of validity such as the CTS or the YSR, which allowed for a more reliable comparison of scores and supported the measurement of construct validity. However, two of the major individual risk of biases in these studies were: 1) the lack of rigor when dealing with the effects of confounding factors. Future studies should consider the effect of theoretically relevant variables on the reported relationships and use other analytical strategies such as partial correlations or multivariate analysis to obtain more nuanced findings. And 2) the use of cross-sectional designs (51 % of the studies) to address a temporal relation between the frequency of GVE and adolescent' maladjustment. It is recommended that studies in this field intensify their efforts to conduct longitudinal follow-up assessments of adolescents to acquire a more comprehensive

**Table 5**

Results for the moderation analyses for the relationship between exposure to gender-based violence and adolescents' adjustment.

	Externalizing							Internalizing						
	<i>k</i>	<i>r</i> <sub>●</sub>	95 % <i>CI</i>	<i>Q<sub>b</sub></i>	<i>df</i>	<i>p</i>	<i>I</i> <sup>2</sup> [95% <i>CI</i> ]	<i>k</i>	<i>r</i> <sub>●</sub>	95 % <i>CI</i>	<i>Q<sub>b</sub></i>	<i>df</i>	<i>p</i>	<i>I</i> <sup>2</sup> [95% <i>CI</i> ]
Study design														
Cross sectional	18	0.14***	[0.07 0.24]	1.06	1	0.31	94.28	19	0.10*	[0.02 0.18]	1.19	1	0.27	93.26
Longitudinal	14	0.19***	[0.09 0.29]				[87.2–95.5]	10	0.19**	[0.06 0.31]				[84.9–94.8]
Sample				0.65	1	0.42	94.20				5.53	1	0.01	92.12
General	24	0.18***	[0.10 0.25]				[87.4–95.5]	11	0.21***	[0.11 0.29]				[82.1–93.8]
At Risk	8	0.13*	[0.02 0.24]					18	0.05	[−0.03 0.014]				
GVE				0.12	1	0.72	94.24				7.19	1	0.007	92.39
Conceptualization														[81.2–93.4]
Narrow <sup>a</sup>	22	0.15***	[0.06 0.23]				[87.3–95.5]	19	0.18***	[0.11 0.25]				
Broader <sup>b</sup>	10	0.17**	[0.06 0.28]					10	−0.01	[−0.14 0.11]				
GVE Measurement				0.15	2	0.85	94.12				0.65	2	0.721	93.26
CTS	24	0.18***	[0.02 0.33]				[87.2–95.6]	16	0.15***	[0.03 0.20]				[85.6–95.3]
Other standardized	6	0.17*	[0.11 0.25]					9	0.17*	[0.04 0.30]				
Ad hoc	2	0.08	[−0.15 0.33]					4	0.09	[−0.09 0.28]				
Exposure to GVE				0.84	2	0.44	93.99				20.9	2	<0.001	83.33
raters														[74.4–87.1]
Mother	17	0.7	[−0.1 0.11]				[87.0–95.5]	18	0.07*	[0.01 0.13]				
Adolescent	13	0.17**	[0.06 0.24]					7	0.29***	[0.21 0.37]				
Social Worker	2	0.12	[−0.1 0.40]					4	0.05	[−0.09 0.19]				

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ; Note: *k* = number of effect sizes; *r* = point estimate of effect size; *CI* = Confidence Interval; *Q<sub>b</sub>* = homogeneity statistic. GVE = Gender-based violence Exposure; <sup>a</sup> GVE was characterized by physical assault only; <sup>b</sup> GVE was characterized by physical, verbal, and sexual assaults.

and robust understanding of the causal relation between the frequency of GVE and adolescents' adjustment. Nonetheless, the relative stability of the results, even after analyzing possible influential cases and publication risks, is noteworthy as it provides a more confident analysis of the results obtained in this meta-analysis.

Overall, our findings confirmed that the higher the frequency of exposure to gender-based violence at home, the worse the adjustment of the adolescents (Harold & Sellers, 2018; Glass, Kohli, Surkan, Remy, & Perrin, 2018; Ma, Grogan-Kaylor, & Delva, 2016; Renner & Boel-Studt), especially regarding a greater prevalence of externalizing problems and the replication of violent patterns of interaction in their first dating relationships. Therefore, as the previous literature has suggested, the adjustment in adolescents would show a dose-response relationship in which the greater exposure to violence against their mothers would be associated with a greater development of aggressive behavior, antisocial behavior, dating violence, and legitimizing attitudes of the use of violence in intimate relationships (Goncy, 2020; Mohammad et al., 2015; Xia et al., 2018). However, it seems that the effect of the frequency of exposure and adolescents' internalizing symptoms, e.g. Post-Traumatic Stress Disorder, depression, or anxiety, is not as clear. Contrary to our hypothesis our findings have suggested the independence between the frequency of exposure and internalizing symptoms. This finding, rather than representing the absence of internalizing maladjustment in adolescents, leads us to recognize the effect on the adolescents from the first moment of exposure to aggression, and the need for early intervention in this population, since regardless of the frequency of exposure they are equally vulnerable to the development of depression, anxiety or post-traumatic stress disorder. Consequently, the recognition of minors exposed to gender-based violence as direct victims of violence is a priority, for whom it is necessary to implement specific intervention strategies in care services for victims of gender violence or even to generate specialized care services to reduce the distress experienced by the adolescents as well as the consequences on the short and long-term on the well-being of young people (Rosser, 2017; Wood & Sommers, 2011).

Regarding the differences on the adjustment of adolescents by sex, our results suggest that both girls and boys are likely to develop internalizing and externalizing behavior problems in equal proportions when they are in the developmental period of adolescence. This similarity in the consequences could be due to a change in the adjustment of the

minors as they grow older, that despite being different during childhood (Evans et al., 2008; Wolfe et al., 2003), would tend to equivalence during adolescence, when boys begin to express more feelings of sadness and hopelessness and girls more aggressiveness and anger (Wood & Sommers, 2011; Wright & Fagan, 2012). Future longitudinal studies should analyze the prevalence and changes in trends in the adjustment of minors depending on the evolutionary stage, as well as the value of other possible contextual factors such as changes in parenting styles and gender socialization in the last few years (Fong et al., 2017; Tailor & Letourneau, 2012).

Moreover, regarding the differences by age, we identified, as hypothesized, a significant increase in internalizing symptoms associated with greater exposure to violence in older adolescents. This fact could be related to a longer history of victimization, which may result in an increase in the dose-effect. However, it could also be attributed to the greater capacity of late adolescents for introspection, affective processing, and articulation of experienced discomfort, which are characteristic of the later stages of development. (Carracedo, Farina, & Seijo, 2018; Harold & Sellers, 2018; Van Eldik et al., 2020). These findings, rather than minimizing the impact of frequent exposure to inter-parental violence in the youngest, point once again to the need for early intervention for those minors exposed to inter-parental violence to prevent the consolidation and chronification of the symptoms in adolescents and young adults (Sternberg et al., 2006; Vu et al., 2016).

In addition, regarding the effect of the type of sample, we observed that the studies conducted in a population at risk reported a smaller effect size for the relationship between the frequency of exposure and the internalizing consequences in adolescents. These findings could be associated with the expected imbalance in adolescents at risk who, when living in shelters or situations of poverty, would be exposed to other potential stressors that would make it difficult to discriminate the degree to which the consequences at an internalizing level would be associated with each adverse event (Fong et al., 2017; Hughes et al., 2017; Wolfe et al., 2003). Future empirical studies should discriminate the individual and aggregate effect of different adverse events on the adjustment of minors and seek the analysis of the consequences in both the at-risk population and the general population, with the aim of discriminating both the possible differential adjustment of minors to childhood adverse events, and the possible resilience factors of the children who report better adjustment despite adversity (Howell, 2011; Yule, Houston, &



Grych, 2019).

Regarding the conceptualization of violence, the measurement instruments and the informants of violence exposure, we identified that those studies that measured gender-based violence exclusively through physical assaults reported greater effect sizes for the relationship between violence exposure and internalizing symptoms. Nonetheless, these results should be interpreted with caution, because although they could be read as the existence of a greater pooled size effect between exposure to physical aggression and adolescent maladjustment, it could also be the result of the interaction of other variables associated with the experiences of the adolescents, and the type of aggression suffered by mothers such as the physical and mental health of the mothers or family functionality (Glass et al., 2018; Levendosky, Huth-Bocks, & Semel, 2002). Finally, we identified that when the adolescents reported on the frequency of exposure to gender-based violence, the reported effect size by the studies was greater. This data suggests the advantage of self-reporting measures in the adolescent population to analyze, in a sensitive way, the exposure to violence and its consequences because although the information provided by mothers and/or social workers tends to correlate with the information provided by the minors, on many occasions this may be significantly less, as it is probably associated with assessment biases on the part of the adult informants. Further studies on the adolescent's adjustment should prioritize self-reporting or reporting by multiple informants on the consequences developed by the adolescents in order to gain a clearer panorama of the adolescent experiences and well-being.

Finally, although many of the pooled effects estimated in this study may be considered small according to conventional standards (e.g. between 0.09 and 0.20), clinicians and researchers must exercise caution when interpreting these results based on minimum cut-offs. As noted by multiple academics (Ferguson, 2009; Funder & Ozer, 2019), clinicians and researchers should not adhere to arbitrary or conventional guidelines, but rather consider benchmarks and consequences of the effect sizes. For instance, with regard to the dose-effect relation shown in this study, prior meta-analyses have revealed that direct victimization from other forms of violence, such as sexual or physical abuse, have similar consequences and effect sizes to those found in this study (Fitton, Yu, & Fazel, 2020; Hillberg, Hamilton-Giachritsis, & Dixon, 2011). This suggests that sole indirect exposure to gender-based violence could be as harmful and detrimental to adolescents' health as other direct forms of violence. Furthermore, considering that the internalizing and externalizing consequences studied in this meta-analysis represent a significant detriment to adolescents' well-being and development, such dose-response relations should not be underestimated by clinicians because they demonstrate the urgent need for early detection and intervention at the first signs of exposure to gender-based violence before the symptoms experienced by exposed minors become chronic and intensify.

Despite the multiple contributions (Table 6), and the exhaustiveness of the research literature, there are some limitations that must be considered when interpreting the results. First, the estimation of pooled effect sizes relied on concurrent and prospective zero-order correlations. These correlations do not consider potential confounders and may not account for spurious relationships. As a result, they are subject to the risk of bias. For instance, the fact that smaller effect sizes were associated with at-risk populations may be related to the failure to account for confounders; further studies should explore this possibility. Second, half of the studies included in this meta-analyses (51 %) were performed using a cross-sectional data and, although moderation analyses showed no significant differences in reported effect sizes between studies according to design (i.e. longitudinal vs cross sectional), the effects from studies based on cross-sectional designs may preclude conclusions about causality and direction of effects. Third, most of the studies analyzed were conducted on an Anglo-Saxon population, limiting the generalization of the results to other countries, as well as the analysis of possible cultural variables associated with the teenage setting. Fourth, the study of the consequences reported in the scientific literature has been limited to

**Table 6**  
Implications for research, policy, and practice.

Research
<ul style="list-style-type: none"><li>• Future research should analyze other potential confounders associated with the adjustment of adolescents to the exposure to gender-based violence, such as the health and psychological well-being of the mother and father, parenting styles, and the cumulative effect of other adverse events in the family.</li><li>• Future research should also focus on identifying variables associated with the resilient responses of adolescents despite GVE</li><li>• Future studies should prioritize the use of standardized instruments for measuring gender-based violence that can favor the generalization and replication of the results must be adopted.</li></ul>
Policy
<ul style="list-style-type: none"><li>• Current need to recognize exposed minors as direct victims of gender-based violence, since they experience similar consequences to those minors who had suffered direct victimization.</li><li>• Institutions are recommended to include adolescent-adequate intervention programs and strategies in current gender-based violence programs.</li></ul>
Practice
<ul style="list-style-type: none"><li>• There is a need for early intervention in children and adolescents exposed to gender-based violence in order to reduce the symptoms and discomfort experienced, and to avoid consolidation and chronicity in behavior problems.</li></ul>

three categories, i.e. externalizing, internalizing, and DV. Future studies should continue with the analysis of other consequences such as emotional dysregulation, lack of empathy, suicidal ideation, self-harm, or stress. Finally, the grey literature was intentionally excluded to incorporate only empirical studies that had undergone rigorous peer review processes into the analyses. Publication bias analyses supported this decision by showing no significant evidence of publication bias in the magnitude of the weighted effect size reported in the study. However, the possibility that the grey literature in this study area may alter the final weighted effect size should not be ruled out.

**Author's contributions**

All authors contributed with the conceptualization, investigation, formal analysis and writing. All authors have read and agreed to publish the manuscript current version.

**Funding**

This work was supported by the Ministry of Science, Innovation and Universities of Spain (Grant number: PGC2018-096130-B-I00) and the funding for the predoctoral contract (PRE2019-091184).

**Declaration of competing interest**

The authors declare no conflict of interest.

**Data availability**

Data will be made available on request.

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.avb.2023.101872>.

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