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7 **Design Effectiveness Analysis of a Media Literacy Intervention to Reduce**

8 **Violent Videogames Consumption among Adolescents:**

9 **The Relevance of Lifestyles Segmentation**

10  
11 **Abstract**

12 **Background:** Exposure to media violence might have detrimental effects on  
13 psychological adjustment and is associated with aggression-related attitudes and  
14 behaviors. As a result, many media literacy programs were implemented to tackle that  
15 major public health issue. However, there is little evidence about their effectiveness.  
16 Evaluating design effectiveness, particularly regarding targeting process, would prevent  
17 adverse effects and improve the evaluation of evidence-based media literacy programs.

18 **Objectives:** The present research examined whether or not different relational lifestyles  
19 may explain the different effects of an anti-violence intervention program. **Research**

20 **design:** Based on relational and lifestyles theory, we designed a randomized controlled  
21 trial and applied an ANOVA 2 (treatment: experimental vs. control) × 4 (lifestyle  
22 classes emerged from data using LCA: communicative vs. autonomous vs. meta-

23 reflexive vs. fractured). **Subjects:** Seven hundred thirty-five Italian students distributed  
24 in 47 classes participated anonymously in the research (51.3% females). **Measures:**

25 Participants completed a lifestyle questionnaire as well as their attitudes and behavioral  
26 intentions as the dependent measures. **Results:** The results indicated that the program

27 was effective in changing adolescents' attitudes towards violence. However, behavioral

1 intentions toward consumption of violent videogames were moderated by lifestyles.  
2 Those with communicative relational lifestyles showed fewer intentions to consume  
3 violent videogames, while a boomerang effect was found among participants with  
4 problematic lifestyles. **Conclusions:** Adolescents' lifestyles played an important role in  
5 influencing the effectiveness of an intervention aimed at changing behavioral intentions  
6 toward the consumption of violent videogames. For that reason, audience lifestyle  
7 segmentation analysis should be considered an essential technique for designing,  
8 evaluating, and improving media literacy programs.

9 *Keywords:* adolescents, media literacy, lifestyles, anti-violence attitudes, violence,  
10 videogames

1 Violence is an obstacle to positive youth development (PYD) and a major public health  
2 issue (WHO, 1996) with long-term negative social repercussions (WHO, 2008). For  
3 instance, UNICEF (2012) has reported that a high proportion of teenagers are affected  
4 by physical violence and bullying. In developed countries, school violence has become  
5 a prevalent social problem: in the US, teenage students were the victims of  
6 approximately 828,000 nonfatal assaults at school in 2010 (Kim & Brown, 2014).  
7 Moreover, violent experiences during adolescence are associated with severe social,  
8 emotional, cognitive and physical damage and disturbance in adulthood that can  
9 sometimes lead to substance abuse (Chapman et al., 2011). Several studies have  
10 demonstrated that one of the factors associated with violence among adolescents is  
11 exposure to media violence (Anderson et al., 2010; Möller, Krahe, Busching, & Krause,  
12 2012).

13         Considering the relevance of the issue and the scientific evidence, both  
14 researchers (Möller et al., 2012; Patton et al., 2014) and policy makers (Bailey, 2011)  
15 have suggested the importance of implementing awareness-raising and educational  
16 media literacy programs for reducing violent media consumption and promoting  
17 negative attitudes towards deviant role models. These types of strategies may help to  
18 facilitate PYD. Although several prevention strategies have been implemented (e.g.,  
19 Daphne III and Safer Internet Programs in the European Union, violence prevention  
20 campaigns of the Centers for Disease Control and Prevention in US), very little is  
21 known about how these media literacy school-based interventions affect behavioral  
22 change (Möller et al., 2011; Smith, Schneider, Smith, & Ananiadou, 2004). Sometimes  
23 persuasive communication campaigns can be effective (e.g., Farrelly, Pechacek,  
24 Thomas, & Nelson, 2008; Flynn et al., 2007). However, sometimes they can be  
25 ineffective (e.g., Foxcroft, Lister-Sharp, & Lowe, 1997; Rhodes, Roskos-Ewoldsen,

1 Edison, & Bradford, 2008) or even backfire, resulting in the opposite effect of what was  
2 expected, a phenomenon known as ‘boomerang effect’ (Brändle, Cárđaba, Ruiz-San  
3 Román, 2011; Cárđaba, Briñol, Brändle, & Ruiz San Román, 2016; Hart, 2013; ). To  
4 make a contribution to the fields of PYD and adolescent interpersonal violence  
5 prevention strategies and policies, the present study evaluated the efficacy of an Italian  
6 school-based intervention program that focused on violent media consumption (Kirsh,  
7 2010) using an *a posteriori* marketing research tool: audience segmentation based on  
8 relational lifestyle variables. The novelty of this study resides in its cross-disciplinary  
9 perspective and use of audience segmentation to evaluate the effectiveness of a media  
10 literacy intervention. Drawing from an ecological model (Livingstone, Haddon, &  
11 Görzig, 2012) that shows the importance of social relationship variables, this research  
12 identified adolescent profiles that should be considered for use in fine-tuning violence  
13 prevention messages. The results of this study can therefore be used to provide  
14 researchers, decision makers and practitioners, who work with and for adolescents, with  
15 evidence to develop effective, targeted campaigns; thereby facilitating adolescent  
16 empowerment, healthy lifestyles, and positive development.

### 17 **Adolescents Lifestyles in the context of reflexive modernity**

18 Lifestyles could be defined as a complex and dynamic integrated system of  
19 preferences and attitudes, influenced by the socialization process, and translated into  
20 social routine decisions and actions that can be operationalized in terms of a complex  
21 system of behaviors, orientations, resources, and knowledge structures developed  
22 through experience that express personal and social identity (Faggiano, 2007; Thirlaway  
23 & Upton, 2009).

24 Through exploratory qualitative studies on the relationships of young people  
25 with their families and friends, Archer (2003; 2012) identified four theoretical types of

1 youth lifestyles based on adolescents' different reflexivity, or 'the regular exercise of  
2 the mental ability, shared by all normal people, to consider themselves in relation to  
3 their (social) contexts and vice versa' (Archer, 2012, p.1): (1) communicative reflexives  
4 (young people whose inner conversations and decisions include positive interactions  
5 with the family and other agencies), (2) autonomous reflexives (adolescents who make  
6 decisions in solitude, without too much parental support), (3) meta-reflexives (with  
7 conflicted family relationships and frequent internal conversations: they do not accept  
8 messages channeled by agencies without reflection), and (4) fractured reflexives  
9 (passive teenagers who, due to the poor quality of their relationships, have difficulty  
10 both in conducting fruitful conversations with others and purposeful internal  
11 conversations). Research on consumer behavior (Garcia Ruiz, 2009) has shown that  
12 these types of reflexivity can be used in an audience analysis with segmentation  
13 purposes since they explain the reason why relational lifestyles have a huge influence  
14 on the consumption decisions of young people.

15       Enabled by a marketing technique like lifestyle segmentation (Kahle &  
16 Chiagouris, 2014), lifestyle theory (for a review, see Faggiano, 2007) could provide  
17 useful insights for analyzing the effectiveness of media literacy interventions.  
18 Interpersonal relationships might be effective in moderating exposure to violent media.  
19 Market segmentation is a method used for classifying individuals, on the basis of key  
20 discriminant or criterion variables, into homogeneous segments that share relevant  
21 conditions for an outcome of interest (McDonald & Dunbar, 2004). Audience  
22 segmentation is vital for designing and evaluating social marketing strategies (Briñol &  
23 Petty, 2015; Kotler & Lee, 2012). Although some studies have made lifestyle analyses  
24 (Kahle & Chiagouris, 2014; Mathijssen, Janssen, Bon-Martens, & Goor, 2012), few of

1 them have included social relationship variables, despite their influence in the social,  
2 emotional and personality development of children (Ispa et al., 2013; Stacy et al., 1991).

3 In line with previous literature, and based on a previous study of the  
4 effectiveness of a segmentation strategy of alcohol users (Mathijssen et al., 2012), we  
5 propose to cluster the adolescents who participated in a school-based media literacy  
6 intervention ('Stop Violence on Social Media' project; for a review of the model  
7 underlying the intervention, see Appendix 1) on the basis of their lifestyles in order to  
8 analyze its effectiveness. Specifically, adolescents who have less experience making  
9 decisions based on positive interactions and exchange of ideas with others (mainly  
10 parents and other role models) may be less persuaded by an anti-violence school-based  
11 intervention because they might have problems accepting messages that come from  
12 external sources. The media literacy intervention, being oriented towards behavior  
13 change, requires certain social competences developed through an active process of  
14 socialization. In contrast, those adolescents who can count on supportive role models to  
15 follow and help develop healthy behaviors and habits should be more persuaded by the  
16 program than the other groups of adolescents.

### 17 *Objectives*

18 The present research examined whether or not different relational lifestyles may  
19 explain the different effects of a media literacy intervention program. To examine the  
20 efficacy of the 'Stop Violence on Social Media' project, we analyzed attitudes and  
21 behavioral intentions towards violence and violent videogames shown by a sample of  
22 Italian middle and high school students who participated in the program, compared to a  
23 control group. When examining the latent structure of resulting data, and without using  
24 a pre-defined classification strategy, participants were segmented on the basis of their  
25 relational lifestyles. We hypothesized that some adolescents would be more easily

1 persuaded by the media literacy intervention than others depending on their specific  
2 relational lifestyle. Therefore, we tested two hypotheses:

3 **H<sup>1</sup>:** The ‘Stop Violence on Social Media’ project is a useful tool to change  
4 teenagers’ attitudes toward violence.

5 **H<sup>2</sup>:** Adolescent relational lifestyles may moderate the efficacy of the media  
6 literacy program although the specific direction is not predicted.

## 7 **Method**

### 8 **Participants and Design**

9 Seven hundred thirty-five (735) Italian students distributed in forty-seven classes  
10 participated anonymously in the present research (48.7% males and 51.3% females).  
11 Schools were contacted and objectives for the intervention were explained in detail.  
12 From those schools that agreed to participate (four schools), informed consent was  
13 obtained both from schools’ authorities and students’ parents. Ages ranged from 12 to  
14 19 ( $M_{age} = 14.04$ ,  $SD = 1.04$ ). The forty-seven classrooms were randomly assigned  
15 either to an intervention program or to a control group, that is, all the students from the  
16 same classroom were assigned to one of the two conditions. Given that the  
17 randomization procedure was done at the class level, standard errors are clustered on  
18 each class. All participants were seated in front of a computer and completed the  
19 questionnaire online by reporting their beliefs, attitudes, behavioral intentions, and  
20 habits, so they could be classified later into one of four lifestyles (i.e., communicative,  
21 autonomous, meta-reflexive and fractured; Archer, 2012; Garcia Ruiz, 2009). The  
22 design was an ANOVA 2 (treatment: experimental vs. control)  $\times$  4 (lifestyles:  
23 communicative vs. autonomous vs. meta-reflexive vs. fractured). For the first time, this  
24 research evaluated the impact of the “Safe Social Media” project, partially funded by  
25 the European Commission within the Daphne III program.



## 1 **Procedure**

2 As part of a general program about lifestyles, participants were exposed  
3 simultaneously to a program designed to promote anti-violence attitudes and  
4 behaviours. The program focused on violence in the media. After receiving the  
5 program, half of the participants reported their attitudes toward violence and their  
6 behavioural intentions of consuming violent videogames in the next few days  
7 (experimental group). The other half of the participants (control group) completed these  
8 same measures before receiving the intervention. As mentioned above, all of the  
9 participants reported their beliefs, attitudes, behavioural intentions and habits and were  
10 classified into one of four lifestyles (i.e., communicative, meta-reflexive, autonomous,  
11 and fractured; see Appendix I for a full description of independent and dependent  
12 variables).

## 13 **Independent Variables**

14 *Treatment.* All participants received the media literacy program simultaneously,  
15 but classes were randomly assigned to complete the dependent measures immediately  
16 before the program (control treatment group) or to complete the dependent measures  
17 immediately after the program (experimental treatment group). The change in the timing  
18 of the completion of the dependent variable allows us to test the efficacy of the  
19 intervention while, at the same time, permits that all the students benefit from receiving  
20 the intervention unlike other research that employs a waiting-list procedure.

21 *Lifestyles.* To measure the different lifestyles of the participants, we selected  
22 attitudes, behaviours and values that were more applicable to adolescents' ways of  
23 living (Faggiano, 2007; Rivera & Santos, 2016). Based on the above theoretical  
24 background, thirty-eight items were retained from the total pool of items in the  
25 questionnaire.

## 1 **Dependent Variables**

2 *Attitudes toward violence.* Participants' attitudes toward violence were assessed  
3 using different prompts that asked about their perception of violence in terms of  
4 favorability.

5 *Behavioral intentions toward consumption of violent videogames.* All the  
6 participants were asked about their behavioral intentions to consume violent videogames  
7 both in the near and distant future in terms of probability.

## 8 **Results**

9 *Lifestyles.* The 38 items were submitted to a Latent Class Analysis (LCA).  
10 Regarding theoretical and empirical concerns, we selected a four-class solution.  
11 Although the most common model fit index is the Chi-square, we could not compute it  
12 because there were too many cells where the observed frequency was small (or zero).  
13 The model fit for this analysis met satisfactory fit based on its entropy: the entropy  
14 reached in this analysis was .90, indicating high certainty in classification. To assure  
15 that we selected the correct number of classes, we compared different models using the  
16 BIC adjusted values: the four-class solution ( $BIC_4 = 51048.14$ ) fitted better than the  
17 three-class solution ( $BIC_3 = 68151.03$ ), and better than the five-class solution ( $BIC_5 =$   
18  $68867.93$ ). We chose the model for which the adjusted Bayesian Information Criterion  
19 (BIC adjusted value) was the lowest. The first class was 'communicative lifestyle'  
20 (16.3%), the second class was 'fractured lifestyle' (27.3%), the third was 'autonomous  
21 lifestyle' (29.5%), and the fourth was 'meta-reflexive lifestyle' (26.8%). The resulting  
22 four classes differed from each other in terms of critical variables. Figure 1 below  
23 shows the probability distribution of some of the more critical variables in the LCA. As  
24 we can see, there are differences between lifestyle classes. For example, there was a  
25 higher probability that 'communicative' adolescents would engage in dialogue with

1 parents about their feelings and seek the support of their parents. ‘Communicative’  
2 adolescents were also more likely to report a desire to do good things for their  
3 neighborhoods (i.e., civic values). In addition, ‘communicative’ adolescents had a lower  
4 probability for taking drugs compared to fractured adolescents. The ‘fractured’  
5 adolescents had a higher probability of taking drugs with respect to the other three  
6 classes taken together, and a lower probability both for doing good things for their  
7 neighborhoods and for having respect for authority. The ‘autonomous’ adolescents had  
8 a higher probability of respect for authority and the lowest probability to consume  
9 drugs. The ‘meta-reflexive’ adolescents had a lower probability of seeking parents  
10 support compared to the other three lifestyles.

11 [Insert Figure 1 about here]

12 *Attitudes toward violence.* We submitted the ‘attitude toward violence’ index to  
13 an ANOVA  $2 \times 4$ . As expected ( $H^1$ ), this analysis revealed a main effect of Treatment:  
14 participants who received the program rated violence as more unfavourable ( $M = 2.24$ ,  
15  $SD = 1.51$ ) than those who were in the control group ( $M = 2.63$ ,  $SD = 1.85$ ),  $F(1, 713) =$   
16  $11.574$ ,  $p = .001$ ,  $\eta^2 = .016$ . There was no effect of Lifestyles,  $F(3, 713) = 1.344$ ,  $p =$   
17  $.26$ ,  $\eta^2 = .006$ . The two-way interaction between Treatment and Lifestyle was non-  
18 significant,  $F(3, 713) = 1.780$ ,  $p = .15$ ,  $\eta^2 = .007$ .

19 *Behavioral intentions toward consumption of violent videogames.* We submitted  
20 ‘behavioral intentions toward consumption of violent videogames’ to an ANOVA  $2 \times 4$ .  
21 There was no effect of Treatment,  $F(1, 722) = .769$ ,  $p = .38$ ,  $\eta^2 = .001$ , nor Lifestyles,  
22  $F(3, 722) = .040$ ,  $p = .99$ ,  $\eta^2 < .001$ . As illustrated in Figure 2, however, the resulting  
23 two-way interaction between Lifestyles and Treatment was marginally significant,  $F(3,$   
24  $722) = 2.311$ ,  $p = .07$ ,  $\eta^2 = .01$ , thus indicating that the treatment effectiveness was  
25 marginally different depending on the lifestyle. We can decompose this interaction by

1 comparing lifestyle sectors between Treatment groups. For the ‘communicative’ type,  
2 those who were in the experimental group had fewer intentions to consume violent  
3 videogames ( $M = 4.41, SD = 1.93$ ) than those who were in the control group ( $M = 5.09,$   
4  $SD = 2.12$ ),  $F(1, 722) = 3.248, p = .07, \eta^2 = .004$ , suggesting that the media literacy  
5 program was effective for them. For ‘fractured’ types, we obtained the opposite pattern  
6 of results: those who were in the experimental group had more intentions to consume  
7 violent videogames ( $M = 4.94, SD = 1.90$ ) than those who were in the control group ( $M$   
8  $= 4.46, SD = 2.24$ ),  $F(1, 722) = 2.767, p = .09, \eta^2 = .004$ , suggesting a boomerang  
9 effect. For ‘autonomous’ and ‘meta-reflexive’ adolescents, we found a null effect. For  
10 ‘autonomous’ type, no differences were found between experimental ( $M = 4.52, SD =$   
11  $1.96$ ) and control group ( $M = 4.82, SD = 1.99$ ),  $F(1, 722) = 1.178, p = .28, \eta^2 = .002$ .  
12 For ‘meta-reflexive’ type, the difference between experimental ( $M = 4.68, SD = 2.04$ )  
13 and control group ( $M = 4.73, SD = 2.09$ ) was also not significant,  $F(1, 722) = .029, p =$   
14  $.86, \eta^2 < .001$ .

15 [Insert Table 1 about here]

16 [Insert Figure 2 about here]

## 17 **Conclusions and Discussion**

18 This research focused on relational lifestyles as a determinant in predicting the  
19 effectiveness of a media literacy intervention. The results showed that adolescents’  
20 attitudes toward violence can be changed after participating in an intervention program that  
21 promotes anti-violence attitudes and critical media consumption, regardless of adolescents’  
22 lifestyles. Those participants in the Safe Social Media intervention were, on average, more  
23 likely to form unfavorable attitudes toward violence compared to those in the control group  
24 ( $H^1$ ).

1           With regard to the second hypothesis of the study, we only found tentative evidence  
2 supporting the idea that adolescents' relational lifestyles might influence the effectiveness  
3 of the media literacy intervention aimed at changing behavioral intentions toward the  
4 consumption of violent videogames. Specifically, for those adolescents with a  
5 'communicative' lifestyle, the program seemed effective in changing their intentions to  
6 consume violent videogames, but we need to point out that this evidence is, at best, partial.  
7 That is, the 'communicative' adolescents had fewer intentions to consume violent  
8 videogames after receiving the media literacy intervention compared to those who were in  
9 the control group. However, for those adolescents with a 'fractured' lifestyle, the program  
10 seemed counterproductive in changing their behavioral intentions. That is, the 'fractured'  
11 adolescents had higher intentions to consume violent videogames after receiving the media  
12 literacy intervention compared to those who were in the control group, resulting in an  
13 undesired 'boomerang effect'. For the other two lifestyle segments ('autonomous' and  
14 'meta-reflexive' types) there was no effect on the intervention.

15           These results may suggest that further projects and studies are needed to consider  
16 the complexity that exists when evaluating the effectiveness of communication campaigns  
17 and media literacy programs. Campaign evaluation is a complex task because, as this study  
18 shows, different results can be obtained depending on the dependent variable that is  
19 analyzed. In the present study, the media literacy program seemed effective when  
20 analyzing attitudes toward violence but less effective when analyzing behavioral intentions  
21 toward violent videogames. Moreover, the effectiveness of an intervention can be difficult  
22 to evaluate because even the same dependent variable can be affected by other moderating  
23 variables. Including the relational lifestyles as predictors allowed this study to show some  
24 evidence suggesting that the effect of treatment on behavioral intentions depended partially  
25 on the type of lifestyle of the individual who received the treatment.

1           It is not easy to know why some relational lifestyles (i.e., communicative) facilitate  
2 the effectiveness of the intervention and others (i.e., fractured) lead to a boomerang effect.  
3 Although some authors have proposed to introduce lifestyles based on different reflexivity  
4 in consumption studies (Garcia Ruiz, 2009; Garcia Ruiz & Rodriguez-Lluema, 2010), there  
5 is no evidence about their influence on the way of reacting towards an intervention. We did  
6 not have any strong *a priori* prediction regarding which segment would react positively or  
7 negatively to the intervention, but there could be some *post-hoc* explanations. It might be  
8 effective for those lifestyles characterized by good positive interactions with the family and  
9 friends, while the contrary could be hypothesized for lifestyles characterized by negative  
10 interactions and drug consumption. For example, communicative adolescents – who can  
11 count on supportive role models to follow and develop healthy behaviors and habits – may  
12 be more open to messages that reinforce their own lifestyle, whereas fractured adolescents  
13 – who lack a positive social network and have habits and behavior that hinder the  
14 development of productive relationships – might react negatively to messages that threaten  
15 their own lifestyle.

16           Thus, taking into account relational lifestyles as a possible moderator could be  
17 critical in creating effective media literacy interventions. Our results suggest that not every  
18 individual should receive the same kind of intervention because the intervention might  
19 have undesired and counterproductive consequences for some individuals. To maximize  
20 the effectiveness of anti-violence media literacy programs, communicative, fractured,  
21 autonomous, and meta-reflexive adolescents might need to receive different types of  
22 interventions (Briñol & Petty, 2006; 2009; Kahle & Chiagouris, 2014).

23           Therefore, this study provides new evidence suggesting that segmentation of the  
24 target audience could be a useful technique to reduce violence by tailoring the type of  
25 message with important variables of the adolescents such as their specific relational

1 lifestyles. However, more research on the role of lifestyles relational dimensions  
2 (experiences, social identity, subjective culture and motivations) in consumption patterns is  
3 needed (Livingstone, Mascheroni & Staksrud, 2015).

4         Of course, to determine the best strategy to avoid these undesirable consequences  
5 of these interventions, more research is needed on the psychological mechanisms  
6 underlying the assimilation and contrast effects of different lifestyles. For example, if  
7 fractured adolescents reject the intervention because they feel self-threatened by the  
8 message, then a self-affirmation strategy (i.e., participants thinking about what values they  
9 consider personally important) before delivery of the intervention should increase its  
10 effectiveness (Briñol, Petty, Gallardo, & DeMarree, 2007; Briñol, Petty, & Wagner, 2009;  
11 Cohen, Aronson, & Steele, 2000; Correll, Spencer, & Zanna, 2004).

12         One important limitation of the present study is the absence of an active control  
13 group in addition to the passive form used here. For instance, the adolescents in the  
14 active control group should have attended a neutral intervention outside the area of  
15 violence control that promoted habits such as recycling to allow them to be involved in  
16 a program of a similar duration to that of the experimental group. This would have  
17 permitted us to rule out a number of alternative explanations for the resulting effects of  
18 the study (e.g., passage of time, feelings of being special, feelings of being mistreated,  
19 etc.). Despite this, we chose a passive control group because access to school was  
20 limited for a short period of time, making it difficult to offer two different intervention  
21 programs.

22         Another limitation is the duration of the intervention. The intervention was only  
23 two hours for the same reason mentioned above (i.e., access to school was limited for a  
24 short period of time). We might think that interventions with longer durations should

1 result in different outcomes; therefore, future research with longer interventions than the  
2 one applied in this research is needed.

3         In closing, although the results of this research does not allow to propose a  
4 definitive typology for audience targeting, we think that our moderation-by-lifestyles  
5 approach is useful for those who work with and for adolescents and try to develop  
6 effective targeted programs and campaigns. First, as previous segmentation research  
7 showed, this study presented some suggestive evidence that an intervention program  
8 may not be equally effective for all the adolescents. Usually, segmentation studies only  
9 take into account variables at the individual level (e.g., personality traits or socio-  
10 demographic characteristics) to divide groups (Ispa et al., 2013; Stacy et al., 1991).  
11 Instead, we used multidimensionality variables such as lifestyles that include variables  
12 at individual, structural, and societal levels (e.g., habits of consumption, relationships  
13 with the community, friends and parents, etc.). Thus, in this study we extended these  
14 individual factors to a new, integrative concept such as the relational lifestyles of  
15 adolescents.

16         From a practical standpoint, our results suggest that lifestyle segmentation and  
17 targeting strategies might benefit from considering not only individual attitudes,  
18 interests, opinions and values included in models commonly used by social marketing  
19 and other disciplines, but also more complex factors like lifestyles developed through  
20 interpersonal relationships. In consequence, the results of this study may be useful for  
21 the development of new holistic segmentation strategies and refinements of the  
22 instruments applied for their evaluation. Thus, future research should explore new  
23 scales and questionnaires, as well as qualitative techniques, to refine the clustering on  
24 lifestyles and make a clearer contribution for the moderating role of lifestyles on the  
25 effectiveness of interventions and social campaigns.



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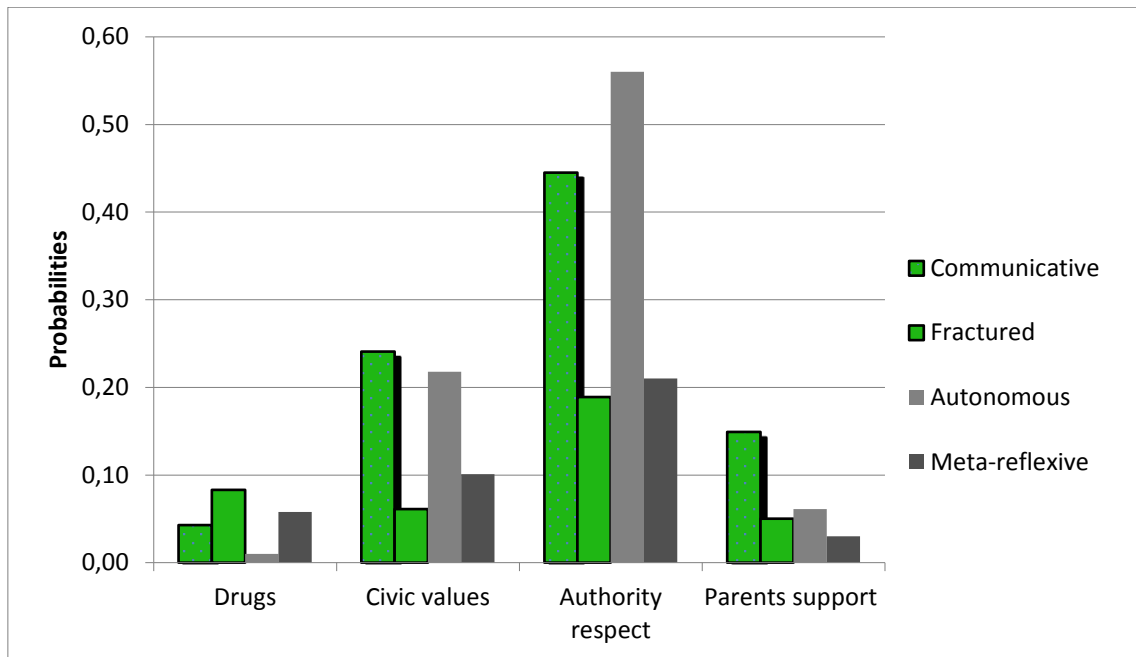
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1 Figure 1. Probabilities for the maximum category (5) of some of the variables in the  
2 LCA.



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5  
6

1 Table 1. Mean, standard deviation and cells sample size

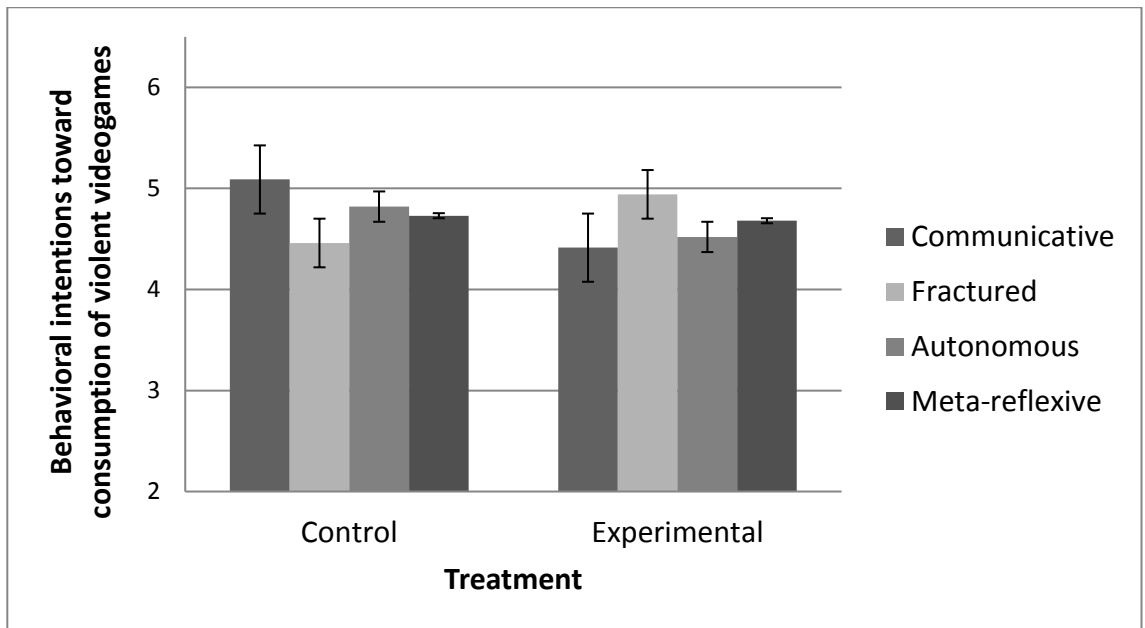
2

		Attitudes toward violence		Behavioral intentions to consume violent videogames		N
		Mean	SD	Mean	SD	
Communicative	Control	2.740	1.942	5.089	2.117	64
	Experimental	1.830	1.267	4.414	1.932	54
	Total	2.319	1.719	4.780	2.054	118
Fractured	Control	2.786	2.027	4.460	2.236	116
	Experimental	2.234	1.541	4.941	1.902	85
	Total	2.550	1.851	4.663	2.110	201
Autonomous	Control	2.346	1.584	4.821	1.988	97
	Experimental	2.208	1.507	4.520	1.956	118
	Total	2.271	1.540	4.656	1.972	215
Meta-reflexive	Control	2.634	1.806	4.732	1.955	87
	Experimental	2.474	1.558	4.682	2.044	109
	Total	2.545	1.670	4.704	1.999	196
Total	Control	2.624	1.850	4.732	2.088	364
	Experimental	2.236	1.505	4.650	1.967	366
	Total	2.430	1.670	4.691	2.028	730

3

4

1 Figure 2. Behavioral intentions toward consumption of violent videogames as a function  
2 of Treatment and Lifestyles



3

4

5

# 1 APPENDIX I: VARIABLES DESCRIPTION

## 2 Independent Variables

3 *Treatment.* To avoid information contamination, all the participants received the  
4 media literacy intervention simultaneously, but the experimental group completed the  
5 dependent measure after and the control group before the intervention. This procedure  
6 permitted us to test whether the intervention program was effective in changing anti-  
7 violence attitudes and related behavioral intentions to consume violent videogames. The  
8 intervention program was designed to increase the adolescents' awareness of the  
9 negative consequences of the presence of violence in the media (i.e., TV shows, films,  
10 and videogames) and to change their violence consumption-related attitudes and  
11 behaviors. The program consisted of three sessions, each of 40 minutes duration. Every  
12 session was adapted to the motivations, previous knowledge, and language of the  
13 adolescents so as to engage them in listening to the speaker. Each session of the  
14 program was started by providing the participants with a story about situations in which  
15 an adolescent would need to make some decisions about consuming violence in the  
16 media. The idea of these narratives was to make the participants identify with the main  
17 character of the stories. The structure of the sessions was composed of three modules  
18 based on media, TV, and videogames, with a special emphasis on the latter, which was  
19 the focus of our research. The theoretical model underlying this intervention is based on  
20 the recommendations of Möller, Krahe, Busching, & Krause (2012) who recommend  
21 the use of social learning theory (Bandura, 1977) and script theory (Huesmann, 1998).  
22 Both theories explain the processes by which exposure to media violence leads to  
23 aggressive behavior and indicate how detrimental effects of this exposure might be  
24 diminished. On the one hand, exposure to media violence may trigger a mechanism of  
25 observational learning in which aggressive behavior is developed through imitation. On

1 the other hand, script theory links observational learning from violent media characters  
2 to the development of aggressive scripts.

3 *Lifestyles.* Thirty-eight items were used to assess participants' lifestyles. The  
4 item-response format ranged from 1 'Never' to 5 'Very much'. Some examples of these  
5 items were: 'When I hang out with my friends I consume alcohol' or 'I smoke  
6 cigarettes', 'I have attended cultural activities such as going to museums and theatres',  
7 'It is important for me to do things to improve my town or community', 'My parents  
8 know where I am going or what I am doing during my leisure time', 'In my peer group I  
9 can give my opinion without fear because others will respect me', and 'I have talked to  
10 my parents about drug and alcohol abuse'<sup>i</sup>. Then, in order to explore the lifestyle sectors  
11 in this population we carried out a Latent Class Analysis (LCA) using the statistical  
12 software *MPlus* version 4 (Muthén & Asparouhov, 2002). The number of latent classes  
13 is unknown and cannot be directly estimated *a priori*. To identify the model with the  
14 optimal number of classes, various models with different numbers of latent classes must  
15 be estimated and compared with each other (Wang & Wang, 2012). In this analysis, a  
16 cluster solution was determined according to the following criteria. Firstly, the overall  
17 fit of the tested latent class model was analysed using the entropy, which indicated the  
18 certainty in the classification. Secondly, the most economical model was selected from  
19 those that fitted-, that is, the model for which the Bayesian Information Criterion (BIC  
20 adjusted value) presents the lowest value. As a result of this analysis, we were able to  
21 identified four different lifestyle factors. In order to classify these lifestyles we used  
22 both theoretical and empirical strategies. In order to determine the salient characteristics  
23 of these four lifestyle sectors, we used the probabilities of each category in each item.  
24 We based our views on previous literature consistent with our findings (Faggiano, 2007;  
25 García Ruiz, 2009) that also suggested four lifestyle categories: communicative,

1 autonomous, meta-reflexive, and fractured. As a result of this process, we were able to  
2 name the lifestyle sectors in a manner consistent both with previous literature and with  
3 the findings from the LCA.

#### 4 **Dependent Variables**

5 *Attitudes toward Violence.* Participants were asked ‘how do you evaluate  
6 violence?’ in a series of eleven 9-point semantic differential scales (i.e., bad-good,  
7 dislikeable-likeable, not acceptable-acceptable, not recommended-recommended,  
8 useless-useful, unpleasant-pleasant, negative-positive, inconvenient-convenient,  
9 harmful-beneficial, undesirable-desirable, and unnecessary-necessary). Ratings were  
10 highly intercorrelated ( $\alpha = .96$ ), so they could be averaged to create a composite attitude  
11 index. Higher values on this index indicated evaluations more favourable toward  
12 violence.

13 *Behavioral intentions toward consumption of violent videogames.* This variable  
14 was measured using three 9-point scales anchored at ‘completely disagree’ to ‘completely  
15 agree’. The examples were: ‘In the future, I would like to play violent videogames to a  
16 lesser degree’, ‘When I grow up, I will forbid my children to play violent videogames’, and  
17 ‘In the future, I would like to play videogames that teach values to the gamers’. These  
18 items were intercorrelated ( $\alpha = .69$ ), therefore they were averaged to create a composite  
19 index of intentions to consume violent videogames. We reversed these items to allow for  
20 greater consistency between this dependent measure and the ‘attitudes toward violence’  
21 index. Thus, higher values on this index indicated more intentions to consume violent  
22 videogames. We also included an item about civic videogames as a proxy to measure the  
23 intentions of participants to consume violent videogames plus their intentions to refuse  
24 usage of anti-violence videogames. The result of reversing the item was that those who

- 1 rated higher in it indicated greater intentions to consume a larger proportion of violent
- 2 videogames.
- 3

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<sup>i</sup> Link to the full distribution of lifestyle ítems:

[https://drive.google.com/open?id=0B9Cz2PX\\_2KM3ZWZPbkZMMU8tUEk](https://drive.google.com/open?id=0B9Cz2PX_2KM3ZWZPbkZMMU8tUEk)