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Cognitive Schemas and Aggressive Behavior in Adolescents: The Mediating Role of Social Information Processing

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This study assesses the association between cognitive schemas of justification of violence, grandiosity and abuse, and reactive and proactive aggressive behavior, and whether this association is mediated by social information processing (SIP). For this purpose, a sample of 1371 adolescents (638 girls and 580 boys) completed measures of cognitive schemas, SIP, and Reactive-Proactive Aggression. The results showed that the cognitive schemas of justification of violence and narcissism are more relevant for proactive aggression, whereas the abuse schema is more relevant for reactive aggression. SIP mediated particularly the association between cognitive schemas and reactive aggression. Each cognitive schema was shown to be associated with some particular SIP component: justification of violence and abuse with the component of interpretation, and narcissism with the experience of anger. Moreover, the abuse schema was negatively associated with the selection of aggressive responses. Lastly, a general model of paths between schemas, SIP, and aggression was found to be quite similar for boys and girls, although the former scored higher in proactive aggression, partly because of their higher scores in the justification of violence and narcissism schemas.

Keywords: cognitive schemas, reactive aggression, proactive aggression, social information processing.
Aggressive behavior is a complex phenomenon in which multiple risk factors intervene including genetic, neurological, biological variables, sociocultural context, and early life experiences, among others (see Dodge & Pettit, 2003 for a review). Although all these factors can predispose an individual to act violently, various studies suggest that the cognitive variables act as a mediating mechanism through which the former factors would lead to aggression (e.g., Dodge & Pettit, 2003; Guerra, Huesmann, & Bates, 1995; Dodge, Pettit, Bates, & Valente, 1995; Lansford et al., 2006).

Role of cognitive schemas

On the other hand, Beck (1976) proposed a hierarchical model in which cognitive schemas act as profound structures that guide cognitive processes. According to this model, SIP is supposed to be the result of deeper cognitive structures or schemas. These schemas, also called working models and knowledge structures, consist of organized elements of past behaviors and experiences that form a relatively cohesive and persistent body of knowledge which guides one’s subsequent perception and appraisal of the world (Segal, 1988).

In the area of aggressive behavior, several studies have identified cognitive structures consisting of normative appropriateness of aggressive behavior as an important risk factor for aggression (Huesmann, 1988; Huesmann & Guerra, 1997). For instance, various longitudinal studies carried out with children and adolescents show that believing that the use of aggression is acceptable predicts antisocial behavior (Burks et al., 1999; Calvete, 2008; Henry et al., 2000; Huesmann & Guerra, 1997; Zelli et al., 1999). Moreover, at least two studies have demonstrated that SIP acts as a mediator between justification of violence schemas and aggressive behavior (Burks et al., 1999; Zelli et al., 1999).

In the present study, we aimed to extend these findings to two less studied cognitive schemas in relation to violent behavior: narcissism and abuse.

Narcissism involves pretentious views of personal superiority and an inflated sense of entitlement. The link between narcissism and aggression was proposed by Baumeister, Smart, and Boden (1996). According to these authors, when people with a very high opinion of themselves are questioned or threatened by others, aggression emerges (Baumeister, Bushman, & Campbell, 2000; Bushman & Baumeister, 1998). In support of this proposal, a growing body of research indicates that many aggressive individuals overestimate their own competence and display excessively positive self-views (Calvete & Connor-Smith, 2005; Hughes, Cavell, & Grossman, 1997; Lochman & Dodge, 1994; Prasad-Gaur, Hughes, & Cavell, 2001). Moreover, recent longitudinal studies have shown that this type of cognition, which implies grandiosity and entitlement, predicts antisocial behavior (Barry et al., 2007; Calvete, 2008). However, at the moment, there is no evidence about the way in which SIP intervenes in the association between narcissism and aggression.

Lastly, abuse schema involves the expectation that others will hurt, abuse, humiliate, or take advantage of oneself, and usually involves the belief that the harm is either intentional or the result of negligence (Young, 1999). It is interesting to note that the content
of this schema is consistent with the hostile intention attribution component of SIP, and as such, it can be hypothesized that this schema leads to the characteristic biases described in the SIP model when the individual interprets social encounters. However, few studies have specifically examined whether the abuse schema leads to aggressive behavior and, of these studies, with few exceptions (Muris, 2006), most were based on adult samples (Calvete, Estévez, López de Arroyabe, & Ruiz, 2005; Nordahl, Holthe, Haugum, & 2005).

**Reactive and Proactive Aggression**

A number of studies suggest that each type of aggressive behavior could be associated with a different pattern of social cognitions. On the one hand, reactive aggression, which is an aggressive response to a threat or perceived provocation, is related to hostile attribution biases (Crick & Dodge, 1996; Dodge & Coie, 1987; Orobio de Castro, Merks, Koops, Veerman, & Bosch, 2005; Schwartz et al., 1998). On the other hand, proactive aggression, which anticipates a reward, is associated with favorable outcome expectations for aggression (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). Furthermore, another important difference between these two types of aggression lies in the emotion involved in each of them. Anger is closely related to reactive aggression whereas pleasure is more related to proactive aggression (Dodge, 1991; Orobio de Castro et al., 2005; Roland & Idsoe, 2001).

In this study, it is assumed that not only the components of SIP but also the cognitive schemas could be different for each type of aggression. Whereas justification of violence beliefs are expected to be involved in both types of aggression, the schemas regarding narcissism and abuse could be more specific to some forms of aggression than to others. Specifically, the schema of narcissism or grandiosity, which implies the need to obtain everything one desires, could be more relevant to proactive aggressive behavior, which is oriented toward goal achievement. In contrast, the content of the abuse schema implies mistrust toward others’ intentions, which as mentioned, is highly consistent with the component of interpretation of SIP. In fact, previous studies have found associations between the abuse schema and paranoid ideation (Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002). As a consequence, the abuse schema should be related with reactive aggressive behavior, which emerges as a consequence of perceiving ill-intentioned provocations in others.

**Gender differences in aggressive behavior**

Traditionally, epidemiological studies have shown that boys display aggressive behavior more frequently than girls (Keiley, Bates, Dodge, & Pettit, 2000; Keltinkangas-Järvinen, 2002). However, in the last few years, interest in girls’ violent behavior has grown, partially because an increase has been detected (Dobb & Sprott, 1998; Leschied, Cummings, Van Brunschat, Cunningham, & Saunders, 2004; Snyder, Sickmund, & Poe-Yamagata, 1996). For example, Abad, Forns, and Gómez (2002), in a study with adolescents, found that gender differences in aggressive behavior occurred especially in early adolescence and that, as adolescence advanced, girls experienced a higher increase in aggressive behavior until the rates of boys and girls were equal.

With regard to reactive and proactive aggression, there is no consensus about the existence of gender differences. Whereas some studies have found similar rates of both behaviors in boys and girls (Connor, Steingard, Anderson, & Melloni, 2003), others have found higher rates in boys than in girls (Lansford, Dodge, Bates, & Pettit, 2002; Salmivalli & Nieminen, 2002).

Gender differences in the rates of aggressive behavior notwithstanding, the great similarity in some of the cognitive risk factors associated with aggression seems to be confirmed. For instance, although the justification of violence and narcissism are more characteristic of boys than of girls, the strength of their association with antisocial behavior seems similar in both genders (Calvete, 2007, 2008; Huesmann & Guerra, 1997; Werner & Nixon, 2005).

However, in the case of the abuse schema, studies of the impact of child maltreatment on behavior problems suggest that there could be gender differences, although the direction of these differences is difficult to determine because of the disparate results obtained. For example, whereas some studies indicate that, among children exposed to parental violence, more boys than girls manifest behavioral problems (Jaffe, Wolfe, Telford, & Austin, 1986), other studies do not find gender differences (Maxwell & Maxwell, 2003), or they even suggest that girls display more aggressive behavior than boys (Cummings, Pepler, & Moore, 1999). In contrast, studies with victims of bullying indicate that whereas passive victims are more likely to be girls, aggressive victims are more likely to be boys (Cerezo Ramirez, 2006; Hanish & Guerra, 2004; Pellegrini, Bartini, & Brooks, 1999; Veenstra et al., 2005). Moreover, boys tend to fight back more often than girls (Kochenderfer & Ladd, 1997).

**Objectives and hypotheses**

Summing up, this study aimed to examine the association between three cognitive schemas (justification of violence, narcissism, and abuse) and aggressive behavior in adolescents, and to test whether this association was mediated by SIP. In consistency with previous studies, we proposed the following hypotheses: (a) Justification of violence would be associated with both proactive and reactive aggression, and this association would be mediated by SIP (especially with the component of
selection of aggressive behavior). (b) Narcissism would be associated with proactive aggression, and this association would be mediated by SIP. (c) In contrast, abuse would be associated with reactive aggression and this association would be mediated by the interpretation component of SIP.

In addition, we expected to find associations among the SIP components themselves: interpretation, anger, and response selection. Lastly, we tested whether the role of cognitive schemas and SIP components was similar for both boys and girls, using multiple group structural equation modeling. Whereas we expected that the role of the justification of violence and narcissism schemas would be similar both for boys and girls, we did not speculate any hypothesis for the role of abuse schema, as previous studies have provided mixed results.

Method

Participants

The sample was made up of 1371 adolescents, high school students from 31 classrooms of 10 educational centers of Bizkaia (Spain). Of these schools, 70.5% were private and 29.5% public. The measurements were taken between November and December of 2007. Of the sample, 638 were girls, 580 boys, and 13 did not indicate gender. Participants were between 12 and 16 years old and the mean age was 14.20 years (SD = 1.34). They were all studying secondary compulsory education (27.8% first grade, 23.8% second grade, 26.5% third grade and 29.6% fourth grade). According to the information provided by the school staff about parental education and income, socio-economic levels were represented with the following distribution: 10% low, 24% medium-low, 51% medium, 5% medium-high and 10% high levels.

Measures

The Social Information Processing Questionnaire (SIPQ; Calvete & Orue, 2009) is based on the Social Information Processing Inventory (Orobio de Castro, 2000). The SIPQ presents 5 ambiguous scenarios (3 suggesting ambiguous provocations by peers, one implying an unjust punishment by an adult, and one implying an ambiguous rejection by peers). Thus, it incorporates the traditional scenarios focused on provocation by peers along with scenarios that imply relationships with adults, which are used in some measures of SIP (Zelli et al., 1999). Adolescents are asked to imagine each scenario and answer questions about the way they would think, feel, and behave in these situations. The SIPQ includes two versions, one based on open responses that have to be coded, and one based on Likert-type scales. Although both versions have shown adequate psychometric properties, including a confirmation of their factor structure, the second one is preferable in studies with large samples. In this study, we used the Likert-scale version to assess the following components of SIP: (1) Interpretation of others’ intentions and emotions (10 items; 2 items per scenario), which assesses the extent to which the adolescent interprets that the other person acted ill-intentionally and was later glad about the consequence, (2) anger (5 items), which assesses the degree to which the adolescent would get angry in the situation, and (3) aggressive response selection (10 items; 2 items per scenario), which measures the degree to which the adolescent would use aggressive behaviors of a verbal or physical nature against the other person. Each item is rated on a scale ranging from 1 (not at all probable) to 5 (very probable). Items across scenarios were summed in order to create the three scales. The internal consistency coefficients of this study were .77, .68, and .88 for interpretation, anger, and aggressive response selection, respectively.

The Irrational Beliefs Scale for Adolescents (IBSA; Cardeñoso & Calvete, 2004). The Justification of Violence subscale of the IBSA consists of 9 items that reflect the idea that aggression is appropriate in a variety of situations (e.g., “Sometimes you have to hit others because they deserve it”), and that aggression enhances self-esteem and helps to maintain status among peers (e.g., “Being good at fighting is something to be proud of”) and “It is better to have a row than let them think I am a coward”). Each item is rated on a 4-point Likert-type scale ranging from 1 (not at all true) to 4 (completely true). Previous research has shown that this subscale is associated with aggressive and delinquent behavior (Calvete & Cardeñoso, 2005). In this study, the alpha coefficient was .84.

The Schema Questionnaire (SQ, Young, 1990). The narcissism and abuse schemas were assessed by the SQ. The SQ was translated into Spanish by Cid, Tejero, and Torrubia (1997) in collaboration with Young, showing good reliabilities and correlations with positive and negative affect, depression, and self-esteem in a clinical sample (Cid & Torrubia, 2002). Although there is a short version of the SQ, with excellent psychometric properties in Spanish (Calvete et al., 2005), in this study, we used the long version of the scale in order to obtain a more detailed measure of these schemas. Furthermore, some items were rephrased to be more comprehensible for adolescents, and one item was eliminated from the abuse scale because it was considered that its content could hurt the sensitivity of adolescents who may have suffered certain experiences of abuse in the past. Grandiosity or narcissism schema (8 items) refers to the belief that one is superior to other people and entitled to special rights and privileges (e.g., “I’m special and shouldn’t have to accept many of the restrictions placed on other people”) and was used as a measure of maladaptive narcissism (Emmons, 1984). Abuse schema (11 items) describes the expectation that others will hurt, abuse, humiliate, lie, or take advantage
of one (i.e., “I feel that people will take advantage of me”), and usually involves the belief that the harm is either intentional or the result of negligence. Items are rated using a 6-point Likert-type scale (1 = completely untrue of me, 2 = mostly untrue of me, 3 = slightly more true than untrue, 4 = moderately true of me, 5 = mostly true of me, and 6 = describes me perfectly). Alpha coefficients were .80 for each scale.

Aggressive behavior was assessed with the Reactive-Proactive Aggression Questionnaire (Raine et al., 2006). This questionnaire consists of 11 items for reactive aggression (“How often have you hit others to defend yourself?”) and 12 items for proactive aggression (“How often have you had fights with others to show who was on top?”). Each item is rated as 0 (never), 1 (sometimes) or 2 (often). The questionnaire has shown good reliability and validity in adolescent samples. Alpha coefficients in this study were .83 and .78 for reactive and proactive aggression, respectively.

Procedure

Because there were no student names included on the surveys, the school staff chose to collect passive consent from parents. Thus, parents were informed and given the option of refusing to allow their son/daughter’s participation. The adolescents filled in the questionnaires in their classrooms. The study was presented as a research about aggression and discipline among young people. In some schools instruments were administered in Basque language (n = 269) but there were not differences between this subgroup and the rest of adolescents in any variable of the study. Participants were informed that their responses were confidential and would only be read by the investigation team. Participants were encouraged to ask questions if they had any trouble answering the items. Participation was voluntary and a few adolescents (n = 6) decided not to participate in the study. The questionnaires took around 60 minutes to complete.

Results

The SEM models were tested via maximum likelihood estimation with LISREL 8.8 (Jöreskog & Sörbom, 2006). Following the recommendations from a number of authors (e.g., Hoyle & Panter, 1995; Hu & Bentler, 1999), goodness of fit was assessed by the comparative fit index (CFI) and the nonnormed fit index (NNFI). In addition, the root mean square error of approximation (RMSEA) was used because it has been recommended as a basis for power analysis and model evaluation (MacCallum & Hong, 1997). Generally, CFI and NNFI values of .95 or above and RMSEA values less than .06 reflect good fit.

Three item parcels were used as indicators for each of the latent variables in the model by randomly assigning items from each subscale to the parcels. We set the scale of each construct by fixing latent variance to 1, because this method is adequate when the manifest variables are measured on different scales (Little, Slegers, & Card, 2006). Table 1 presents the intercorrelations between all the indicators of the model and their descriptive statistics.

The model comprised 8 latent variables: three cognitive schemas (Justification of Violence, grandiosity, and abuse), three SIP components (interpretation, anger, and response selection), and two types of aggressive behavior (proactive and reactive aggression). First, a preliminary confirmatory factor analysis indicated the appropriateness of measuring the latent variables with the indicators and that the factor loadings were significantly different from zero. Next, the hypothesized structural model was tested. This model included both direct and indirect paths between cognitive schemas and aggressive behavior. Indirect paths consisted of mediation through SIP components. The fit indexes were satisfactory for the model, $\chi^2(227, n = 1371) = 1124$, RMSEA = .054 (.051; .057), NNFI = .98, CFI = .98. As some of the paths were not significant, a new model was estimated, with nonsignificant paths excluded. The fit indexes were also excellent for this model, $\chi^2(234, n = 1371) = 1087.61$, RMSEA = .053 (.050; .056), NNFI = .98, CFI = .98. Figure 1 displays the principal parameters of the model, which are described below.

First, as can be observed, the three SIP components were intercorrelated, although the association between interpretation and aggressive response selection was low. In addition, only the response selection component was significantly associated with aggressive behavior, and the relation with reactive aggression was much higher than with proactive aggression.

Regarding justification of violence beliefs, the results displayed significant direct paths with both types of aggressive behavior, although the path was higher for proactive than for reactive aggressive behavior. These beliefs were also associated with the interpretation and aggressive response selection components of SIP, but not with anger. The significance of the indirect effects of justification of violence on aggressive behavior via SIP components— which were estimated as the product of the path coefficients that links justification of violence with each type of aggression— was tested and found to be significant. In addition, we carried out a bootstrapping procedure to provide an alternative test of significance for this mediation. Bootstrapping offers an empirical method of determining the significance of statistical estimates, but there is no requirement for the sampling distribution to be symmetrical (Efron & Tibshirani, 1993). The approach relies on resampling the data set to generate an empirical sampling distribution of the indirect effects, which is used
Table 1
Means, Standard Deviations and Intercorrelations among aggression, schemas and SIP components

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*Note.* RS = Response Selection, *p < .001
to test hypotheses and derive confidence. In this study, we created 1,000 bootstrap samples from the original data, set by random sampling with replacement, and the covariance matrix was estimated from each sample. The second step was to conduct the structural model 1,000 times with these 1,000 bootstrap covariances to yield 1,000 estimations of each path coefficient. The third step was to use LISREL’s saved output of the 1,000 estimations of each path coefficient to calculate an estimate of the indirect effects. The final step was to see whether the 95% confidence interval (CI) for the estimated indirect effects included zero. According to Shrout and Bolger’s (2002) proposal, an indirect effect is significant at the .05 level if the 95% confidence level does not include zero. Using this criterion, the results from the bootstrap procedure indicated that the indirect effect of justification of violence via SIP on proactive aggression (95% CI: .088-.092) and on reactive aggression (95% CI: .352-.359) was statistically significant.

Lastly, the direct path from the abuse schema to reactive aggression, but not to proactive aggression, was significant. In addition, as hypothesized, the relation between abuse and the interpretation component of SIP was significant. However, in contrast to our expectations, abuse schema was negatively associated with the response selection component of SIP. As a consequence of this path, the total mediational effect was negative. Bootstrapping procedure indicated that the indirect effect of abuse via SIP on proactive aggression (95% CI: -.015-.014) and on reactive aggression (95% CI: -.059-.056) were low but statistically significant.

Gender differences for the model

We also investigated whether the path coefficients of the model linking schemas, SIP, and aggression were equivalent across boys and girls through a multiple-group analysis. With this purpose, the following steps were carried out.

First, we tested the configural invariance of the model to demonstrate that the pattern of fixed and free parameters was equivalent across subsamples, $\chi^2(468, N = 1371) = 1374$, RMSEA = .052 (.049-.056), NNFI = .98, CFI = .98.

Second, we performed a weak factorial invariance test, which implies that the relative factor loadings are equal.
across subsamples. This constriction did not increase \( \chi^2 \) significantly, \( \Delta \chi^2(19, N = 1371) = 20, \text{ ns} \).

Third, we performed an omnibus test of invariance of variance/covariance matrices. The resulting model did not increase \( \chi^2 \) significantly, \( \Delta \chi^2(8, N = 1371) = 11, \text{ ns} \).

Fourth, we tested the invariance of the paths linking cognitive schemas, SIP, and aggressive behaviors. The nonsignificant \( \chi^2 \) increment indicated that the overall pattern of paths was invariant across boys and girls, \( \Delta \chi^2(15, N = 1371) = 13, \text{ ns} \). However, when paths were examined one by one, statistically significant differences were observed in two of them: The path between grandiosity and proactive aggression was higher in boys than in girls (.34, \( p < .001 \) vs. .13, \( p < .001 \)), and the path between abuse and interpretation was higher in girls than in boys (.35, \( p < .001 \) vs. .16, \( p < .05 \)).

Finally, we tested the invariance of the intercepts, including the parameters corresponding to the means of both the indicators and the latent variables of the model. In this case, \( \chi^2 \) increment was significant, \( \Delta \chi^2(16, N = 1371) = 100, p < .05 \), indicating that boys and girls do not score equally in some variables of the model. As the intercepts were freely estimated in the sample of boys, and constrained equal to zero in the sample of girls (reference group), the Kappa and Alpha values obtained for the latter group represent latent means differences between the two subsamples. In this case, positive values indicate higher scores for boys in proactive aggression (\( \alpha = .41, p < .001 \)), interpretation (\( \alpha = .23, p < .01 \)), justification of violence (\( \kappa = .64, p < .001 \)), and grandiosity (\( \kappa = .28, p < .001 \)).

Discussion

The main purpose of this study was to determine whether justification of violence, narcissism and abuse cognitive schemas are associated with proactive and reactive aggression, and, more important, to test whether this association is mediated by SIP.

In the case of beliefs justifying violence, the results confirm this mediation and so support those obtained in previous studies (Burks et al., 1999; Zelli et al., 1999). It is important to emphasize that the association between justification of violence and aggressive behavior via SIP was particularly high for reactive aggression. In ambiguous encounters with other people, adolescents who score high in justification of violence tend to attribute hostile intentions and positive emotions to these people, and to select aggressive responses to deal with the situation. As a consequence of this processing style, they tend to react more aggressively. Justification of violence beliefs are also associated with proactive aggression, but in this case, the link is only direct, not via SIP, because, as commented on below, the results of this study show that SIP is much more involved in reactive aggressive behavior than in proactive aggressive behavior.

In this study, we introduced two cognitive schemas that have received less attention with regard to aggressive behavior: narcissism and abuse. The findings reinforce the idea that their role is very different for each type of aggression.

On the one hand, narcissism is directly associated with proactive aggression but not with reactive aggression. Washburn, McMahon, King, Reinecke, and Silver (2004) also found that the maladaptive traits of narcissism are specifically associated with proactive aggression. Thus, adolescents who score high on narcissism could use aggression instrumentally to achieve their goals and to maintain their self-image of grandiosity (Salmivalli, 2001), and to promote a superior construction of self through physical and psychological dominance of others (Washburn et al., 2004). Moreover, this schema is only significantly related to the anger component of SIP. The narcissism schema implies believing that one should obtain everything one desires and that things should always go one’s way. It is therefore easy to understand that adolescents who score high in narcissism tend to experience anger in the scenarios they were asked to imagine in this study. These involved frustrating situations such as “someone makes you lose at a video-game,” “someone bumps into you and your books fall down,” etc., at which the youths with narcissism experienced anger. It is also probable that adolescents with ideas of grandiosity get angry and behave aggressively in situations in which their self-image of grandiosity is threatened, as suggested by the threatened egotism hypothesis (Baumeister et al., 1996). As a result of this path between narcissism and anger, although narcissism is not directly associated with reactive aggression, there is an indirect association via SIP.

In contrast, the abuse schema seems to play a very different role, as it is directly associated with reactive aggression, but not with proactive aggression. This is consistent with previous studies (Shields & Cicchetti, 1998). Moreover, as expected, this schema is significantly related to the interpretation component of SIP. However, unexpectedly, abuse is negatively related to the aggressive response selection component. The interpretation of this negative link between abuse and aggressive response selection complex is possible. A possible explanation could be found in the theoretical model of Young (1999), according to which the abuse schema may be present both in victims and in people who maltreat others. In fact, various studies have found the abuse schema in victims of violence (Calvete, Estevez, & Corral, 2007). Victims frequently show some helplessness and this implies that adolescents with an abuse schema who adopt the role of victims are less likely to select aggressive behaviors in the scenarios used. In any case, this is speculative and we will have to wait for future studies to analyze in depth the role of cognitions about abuse and to examine whether, for example, they are
associated with more selection of aggressive behaviors in some adolescents and less in others.

This study also contributes to the understanding of the role of SIP in reactive and proactive aggressive behavior. The findings of other studies (Dodge & Coie, 1987) about the higher relevance of the components of interpretation, anger, and aggressive response selection for reactive behavior than for proactive behavior are confirmed. However, it is important to note that, alternatively, the SIP components assessed in this study may not be the only ones that contributed to these results, but also the nature of the scenarios used for its assessment (provocations and ambiguous rejections). That is, one could speculate whether, if we had used scenes with situations involving control and/or domination, the role of SIP would be more relevant for proactive aggression.

Moreover, this study shows that the aggressive response selection component is more highly associated with aggression, as suggested in other studies. For example, Zelli et al. (1999) also found that the interpretation component was not directly associated with aggressive behavior, but instead the aggressive response access component, which is very similar to that of aggressive response selection. However, given the high association between interpretation, anger, and aggressive response selection, one could assume that these components act sequentially, so that the former are associated with aggressive behavior via the mediating mechanism of response selection, which would act as a proximal control over the act of aggression.

Lastly, this study addressed gender differences in the model that links schemas, SIP, and aggression, finding that, in general, this model was very similar in both genders. Nevertheless, although there were no gender differences in reactive aggressive behavior, the boys showed higher rates of proactive aggressive behavior than the girls. This result contradicts that of Connor et al. (2003), who found no gender differences in proactive aggression, but it is consistent with the results of other studies that suggest that girls react to provocation just as frequently as boys, but that they are less likely to initiate the provocation (Frodi, Macaulay, & Thome, 1977). It is also coherent with the proposal of Keenan and Shaw (2003), for whom girls are more likely to carry out reactive aggression than proactive aggression because when they display antisocial behaviors, these tend to be accompanied by negative emotions and internalizing problems.

Likewise, the results about gender differences are also very similar to those obtained in other samples of Spanish adolescents with the scales of aggressive and delinquent behavior of the Youth Self-Report (Achenbach & Rescorla, 2001). Although proactive and reactive behavior do not completely coincide with these two modalities of antisocial behavior, an analysis of items shows that many of the behaviors included in the scale of delinquent behavior of the YSR can be labeled proactive aggressions.

In this study, the gender differences in proactive aggression are partially explained by the boys' higher scores in the cognitive schemas of justification of violence and narcissism. Furthermore, the narcissism schema is more strongly associated with proactive aggression among boys. This could be due to the fact that the instrument employed to measure reactive and proactive aggressiveness includes mostly physical and verbal forms of aggressiveness, and not relational aggressiveness, which is more typical of girls (Crick, 1996; Crick & Grotpeter, 1995). Girls with a high narcissism schema could use forms of relational aggressiveness such as manipulation or spreading gossip to achieve their goals and maintain their self-image.

This study also has theoretical implications as it integrates different levels of cognitive contents. Thus, in accordance with Beck's hierarchical model, our results suggest that the social information processing would act as a mediator that explains the link between a number of deep schemas and aggressive behaviors. For instance, adolescents who endorse the abuse schema would interpret hostile intentions in other people when they confront ambiguous social encounters.

Summing up, the results of this study show that whereas cognitive schemas of justification of violence and narcissism are more relevant for proactive than for reactive aggression, the abuse schema is more relevant for reactive aggression. With regard to the mediating role of SIP, it is more intense for reactive aggression and, in addition, the cognitive schemas studied seem to be linked to different components of SIP: justification of violence and abuse to interpretation of hostile intentions and positive feelings in others, narcissism to anger, and abuse to a lower selection of aggressive responses.

However, these results should be taken with caution, given the cross-sectional nature of the study and they should be reinforced with a longitudinal follow-up that shows that cognitive schemas predict SIP and aggressive behavior. Moreover, the data referring to the abuse schema, although suggestive, pose new questions that should be addressed in future studies.

References


proactive and reactive aggression in moderately to highly aggressive children. *Aggressive Behavior*, 33, 185–197.


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