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Personality and Parenting Processes Associated with Problem Behaviors: A Study of Adolescents in Santiago, Chile

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Abstract

Considerable research in the U.S. has established that adolescent antisocial, aggressive, and attention problems have a negative influence on adolescents' ability to become productive members of society. However, although these behaviors appear in other cultures, little is known about the development of these problems among adolescents in countries other than the U.S.. This study contributes to our understanding of personality and parenting factors associated with adolescent problem behaviors using an international sample. Data are from a NIDA-funded study of 884 community-dwelling adolescents in Santiago, Chile (Mean age=14, SD=1.4, 48% females) of mid-to-low socioeconomic status. Results revealed that rule-breaking and aggressive behaviors were both associated with greater levels of adolescent drive but lower levels of parental monitoring and positive parenting by both parents. Adolescents who reported more attention problems were more likely to exhibit driven behavior, more behavioral inhibition, to report lower levels of parental monitoring, and positive parenting by mother and father. Results of interactions revealed that the influences of positive parenting and parental monitoring on adolescent aggressive behaviors varied as a function of the gender of the adolescent. Helping parents build on their parenting skills may result in important reductions in adolescent problem behaviors among U.S. and international adolescents.

Keywords

parenting behaviors; personality; aggression; problem behavior; attention problems; rule-breaking; adolescents; international

Successful development involves attaining a series of social, emotional and cognitive competencies in childhood and adolescence. Problem behaviors, including aggression and attention problems, experienced during this time have been found to interfere with the development of these competencies and may lead to continued problems into adulthood (Eley, Lichtenstein, & Moffitt, 2003; Huesmann, Dubow, & Boxer, 2009; Moffitt, Caspi, Harrington, & Milne, 2002). Individual explanations for the etiology of problem behaviors implicate the adolescent's personality for engaging in different types of situation-specific behaviors. An emerging body of literature suggests that differences in individual personality are associated with two of the most deleterious problem behaviors: adolescent aggression (Seibert, Miller, Pryor, Reidy, & Zeichner, 2010) and rule-breaking behaviors such as delinquency in adolescence (Hasking, 2007), as well as with other problematic adolescent behaviors (Simons & Arens, 2007; Simons, Dvorak, & Lau-Barraco, 2009). In addition, personality and attention problems have consistently been suggested to work together to create a sensitivity towards engaging in problematic behaviors such as using substances (Fields, Leraas, Collins, & Reynolds, 2009; Tercyak & Audrain-McGovern, 2003).

Personality

The present study is guided by Jeffrey Gray's proposed two theoretical systems that are fundamental personality traits that can be used to understand behaviors: the Behavioral Inhibition System (BIS) that occurs in response to punishment and the Behavioral Approach System (BAS) that is based on reward information (BAS) (Gray, 1970, 1987; Taylor, Reeves, James, & Bobadilla, 2006). According to the Behavioral Inhibition System when individuals encounter new stimuli, aversive stimuli or signals of non-reward, their behavior tends to be inhibited or ceased (Simons, et al., 2009). This suggests that when situations are considered to result in negative experiences individuals will attempt to avoid them or engage in avoidance behaviors (Coplan, Wilson, Frohlick, & Zelenski, 2006). On the other hand, according to the Behavioral Approach System, when situations are considered to produce positive experiences or to result in positive outcomes such as rewards, individuals will engage in goal directed activity (Caseras, Avila, & Torrubia, 2003).

Using Gray's formulation of his personality theory, Carver and White formulated and validated items to measure the Behavioral Approach and Behavioral Inhibition Systems that factored into four scales: one Behavioral Inhibition factor and three Behavioral Approach factors (Carver & White, 1994). Behavioral Approach consisted of fun-seeking, drive, and reward responsiveness factors (Carver & White, 1994). Both systems have been suggested to work in different ways and to allow the individual to engage in different behavioral repertoires as a result of what is encountered in their environment. One important aspect of the BAS system is *drive* which is involved in moving individuals towards desired activities and goals. In fact, recent research suggests that the Behavioral Approach-Drive factor is related to engagement of risky behaviors such as gambling (O'Connor, Stewart, & Watt, 2009) and aggression (Seibert, et al., 2010). In addition, it is plausible that adolescents might engage in problem behaviors such as rule-breaking and aggressive behaviors because they experience rewarding feelings (Erdle & Rushton, 2010; Yan & Dillard, 2010) from such activities. Another important predictor of adolescent aggression is behavioral inhibition, as measured by Gray's BIS system (Vitaro, Brendgen, & Tremblay, 2002; Watson, Fischer, Andreas, & Smith, 2004). The Behavioral Inhibition system is thought to capture cautious, wary and fearful aspects of personality (Watson, et al., 2004) and is related to attention problems such as Attention Deficit/Hyperactivity Disorder (AD/HD) (Nigg, 2001; Quay, 1997).

In addition to examining individual personality processes involved in the development and maintenance of behavioral problems, it is also important to examine how parents and families influence adolescent behaviors (Dishion & McMahon, 1998; Hair, Moore, Garrett, Ling, & Cleveland, 2008; Kerr & Stattin, 2000). We next discuss parenting and family processes.

Parenting and Family Processes

Despite the independence adolescents acquire as a result of their developmental stage, parents are a continued source of influence during this time. Adolescents who experience low levels of parental monitoring have been shown to have an increased risk of affiliating with delinquent peers (Dishion, Capaldi, Spracklen, & Li, 1995; Dishion & Loeber, 1985) and engaging in rule breaking behaviors (Griffin, Botvin, Scheier, Diaz, & Miller, 2000). Also, numerous studies have supported the relationship between a lack of parental monitoring and higher levels of aggression (Mrug, et al., 2008; Richards, Miller, O'Donnell, Wasserman, & Colder, 2004; Sampson & Laub, 1994; Sullivan, Childs, & O'Connell, 2010). Essentially, parents who know where their adolescents are, who they spend time with, and

what activities the adolescents are up to are able to significantly reduce the adolescents' opportunities for risky and problem behaviors (Sullivan, et al., 2010).

The quality of the relationship between adolescents and their parents has also been shown to play a significant role in the development of behavioral problems. Adolescents who have a positive relationship with their parents, that is, who have nurturing and involved parents, have a lower risk of developing problem behaviors (Scaramella, Conger, Spoth, & Simons, 2002). Many aspects of using negative parenting styles, including criticism, inconsistency and harsh parenting, have been associated with adolescents expressing greater levels of aggressive behavior (Ge, Brody, Conger, Simons, & Murry, 2002; Narusyte, Andershed, Neiderhiser, & Lichtenstein, 2007) and delinquent behavior (Bailey, Hill, Oesterle, & Hawkins, 2009; Capaldi, Pears, Patterson, & Owen, 2003). The protective effect of using warm parenting has also been reported (Doyle & Markiewicz, 2005).

Not only are parenting behaviors involved in setting the stage for different types of adolescent problem behaviors, they also have been implicated in the development of children's attentive abilities (Jones, Rothbart, & Posner, 2003). In particular, the effect of inconsistent parenting has been reported to have a positive relationship with attention problems (Ellis & Nigg, 2009). Additional parenting behaviors that have been associated with the development of childhood attention problems include unresponsive parenting and use of non-authoritative parenting (Keown & Woodward, 2002) as well as showing negative affect, less warm parenting, and less autonomy (Goldstein, Harvey, & Friedman-Weieneth, 2007; Trenas, Cabrera, & Osuna, 2008).

For the most part, the above research on the correlates and predictors of adolescent problem behaviors is limited to U.S. and European samples. A comprehensive literature review revealed that few studies exist that have simultaneously examined parenting and individual level factors which influence problem behaviors among adolescents in Latin America (Brook, 2003; Dormitzer, et al., 2004; Vittetoe, Lopez, Delva, Wagner, & Anthony, 2002). In practice, however, parenting involves a host of behaviors that are appropriate in different situations, thus to properly understand adolescent behavior a range of parenting behaviors must be taken into account.

We believe that it is particularly relevant to examine problem behaviors exhibited by adolescents and the factors that might ameliorate or exacerbate these behaviors among youth in Latin American in general, and among Chilean youth in particular. In the larger context of Latin America, recent research has documented that 25 to 32% of adolescents in Latin America "have dropped out of school, are young parents, are not employed, are addicted to drugs, or have been arrested" (Cunningham, 2008). In comparison to metropolitan cities in Latin America, rates of physically aggressive acts in Santiago are one of the lowest in the region (Orpinas, 1999). However, in Chile, and in particular the capital, Santiago, violent and delinquent behaviors appear to be on the rise in the past two decades (Cruz, 2000; Oviedo & Rodríguez, 1999; Oviedo, 1994). It is with these societal changes in mind that we set out to conduct the present study.

For these reasons, in the present study we address this knowledge gap by examining whether adolescent reports of parental monitoring and positive relationships with fathers and mothers protect Latin American adolescents from engaging in problem behaviors, as the mainly U.S. based literature suggests. Further, we examined whether adolescent personality traits as measured by the behavioral activation-drive factor and the behavioral inhibition factor of the BIS-BAS are associated with attention, aggression, and rule-breaking problem behaviors among a community-dwelling sample of Chilean adolescents, controlling by demographic characteristics. Because adolescent aggression, attention, and rule-breaking problem

behaviors are known to show gender and age differences (Bowie, 2010; Ramtekkar, Reiersen, Todorov, & Todd, 2010; Smith, Rose, & Schwartz-Mette, 2010), we also tested if there were age and gender differences in the associations examined.

Method

Sample and Procedures

This study used cross-sectional data from the first wave of the Santiago Longitudinal Study (SLS), a study of community-dwelling adolescents in Santiago, Chile. This project is a collaboration between a U.S. institution and the Institute of Nutrition and Technology of Food (INTA in Spanish) of the University of Chile with funding from the National Institute on Drug Abuse (NIDA). The second wave of data collection is presently underway and will not be available until two years from now. The participants for this study were recruited from a convenience sample of approximately 1,100 families that participated in a study of nutrition when the youth were 10 years old. We successfully recruited 1,021 youth. There are no significant differences in sociodemographic characteristics between the youth who participated and those that did not. The main reason for youth not participating is their having relocated without the study being able to track them down.

The analytical sample for the present study consisted of 884 participants with data on all the variables of interest. The main reason for the difference in participants with missing data on the variables of interest has to do with the 87 participants (8.52% of our sample) who reported that they did not have a father or paternal figure (i.e., a biological or adopted father or another male whom the youth considers a father figure). In addition, 38 participants (3.7%) did not answer the question about whether they had a father or paternal figure. An additional 12 participants had missing data on some of the other variables included in this study. A comparison of the means of the variables utilized in this study between the analysis sample ($N = 884$) and the omitted sample ($N = 137$) revealed differences in participants' age and SES. Youth in the omitted sample were on average six months older (t -test = 0.58, $p < 0.001$) and had higher SES (t -test = 3.55, $p < 0.01$) than youth in the analysis sample. On average, the analytic sample consisted of 14 years old ($SD = 1.2$), 48% females, and of families of mid-to-low socioeconomic status (see Table 1).

Adolescent participants completed a two-hour interviewer-administered questionnaire with standardized measures that were pilot tested and validated with the population under investigation prior to conducting the present study. The questionnaire, which consists of nearly 900 questions, was created by combining standardized instruments commonly used in the United States and in Chile to assess the constructs measured in the study. Topics assessed ranged from measuring the adolescents' relationship with parents, adolescents' perceptions of self, behavior, health status, and substance use, among others. To ensure language and conceptual equivalence, instruments that only existed in the English language were first translated into Spanish by three Chilean educators who reside in the U.S., one of them being the PI of the study. This process took over six months. As a side note we point out that the translation was done by the U.S. team to avoid placing the burden of translation on the Chilean partners in Chile. As (Delva & Castillo, 2010) posit, too often the burden of translating falls on the international partners. Interestingly, the partners in Chile were extremely appreciative that this initial work was not, as the Co-I of the SLS said, 'dumped on them as foreign investigators usually do'. Every single translated instruction, stem question, and words in the questionnaire were subsequently reviewed by the Chilean Co-I and three of the study interviewers in Chile. Discussions then took place between the Chilean team and the U.S. team to decide on the possibility of revising some of the questions. This task took about three months. Subsequently, the entire instrument was pilot tested with 30 youth whose age and gender represented the study participants. Further

revisions and additions to the instrument were made based on the pilot study. This task took about a month as it also included conducting preliminary analyses to assess the correlations among constructs to have a general sense of how the constructs were associated. Results of these analyses suggested the constructs were indeed associated in ways they would be expected.

Interviews were conducted in Spanish in a private office at the University of Chile Institute for Nutrition and Technology of Food (INTA in Spanish) by Chilean psychologists trained in the administration of standardized instruments. Adolescent assent and parental consent were obtained by the interviewers prior to commencing the interviews. The study received Institutional Review Board approval from the institutional review boards of the corresponding universities.

Measures

All of the study's measures are based on youth reports, the exception being the measure of socioeconomic status that is based on the parent's reports. The study's dependent variables were rule breaking behaviors, aggressive behavior, and attention problems assessed with the Youth Self Report (YSR) (Achenbach & Rescorla, 2001). Each measure is discussed in more detail below.

Rule breaking behavior—This variable consists of the 15 items of the YSR that assess rule breaking behaviors. Of note, this scale is better known as the YSR 'delinquent behavior' scale but its name and some of the items were revised in the more recent version of the instrument, beginning in 2001. The stem question of the YSR is as follows "Below is a list of items that describe kids. For each item that describes you now or within the past 6 months, please tell me if the item is 'very true or often true', 'somewhat or sometimes true' or is 'not true'. Examples of items are "I break rules at home, school, or elsewhere", "I hang around with kids who get in trouble", and "I ran away from home". Responses to the 15 items were added to create a composite score, with higher scores representing more occurrences of rule breaking behaviors (Cronbach's alpha = 0.69).

Aggressive behavior—This variable consists of the 17 items of the YSR that assess aggressive behaviors. The type of aggressive behavior that the YSR measure is mainly relational aggression though two of the questions do ask about physically hurting others. The stem question and response categories for this measure are the same as the ones listed above. Examples of items are "I am mean to others", "I destroy my own things", "I get in many fights", and "I physically attack people". Responses to these items were added to create a composite score, with higher scores representing more occurrences of aggressive behaviors (Cronbach's alpha = 0.80).

Attention problems—This variable consists of the 9 items of the YSR that assess attention problems. The stem question and response categories for this measure are the same as the ones listed above. Examples of items are "I fail to finish things I start", "I have trouble concentrating or paying attention", and "I have trouble sitting still". Responses to these items were added to create a composite score, with higher scores representing more attention problems (Cronbach's alpha = 0.64).

The independent variables, all of which were mean centered, were as follows:

Behavioral approach-drive—The BIS-BAS measure was one of several measures developed from Gray's model to measure approach and inhibition behaviors (Carver & White, 1994; Gray, 1970). There are three scales which constitute the Behavioral Approach

Scale that measure approach drive. In this study, we used only the Drive subscale of the BAS (BAS-D) (Carver & White 1994) which includes items reflecting the persistent pursuit of desired goals. Example items are “I go out of my way to get things I want”, “When I want something I usually go all-out to get it”, “If I see a chance to see something that I want I move on it right away”, “When I go after something I use a ‘no holds barred’ approach.” The items had a four-point Likert-type response scale ranging from ‘Very true of me’ to ‘Very false for me’. Higher scores represent more drive (Cronbach's alpha = 0.71).

Behavioral Inhibition—The Behavioral Inhibition Scale of the BIS (BIS-I) (Carver & White 1994) was used to measure inhibition. Example questions include “Criticism or scolding hurts me quite a bit”, “I feel pretty worried or upset when I think or know somebody is angry at me”, “If I think something unpleasant is going to happen I usually get pretty worked up”, “I feel worried when I think I have done poorly at something”, and “I worry about making mistakes”. Higher scores represent more behavioral inhibition (Cronbach's alpha = 0.63).

Parental Monitoring—To evaluate parental monitoring of youth, participants were asked 10 questions that purport to assess the extent to which parents monitor their children's activities and whereabouts. The parenting variables are taken from the Oregon Social Learning Center initially developed by Capaldi & Patterson (OSLC, 2009) and used by other researchers (Chilcoat, Dishion, & Anthony, 1995). Sample questions included “If your mom/dad or guardian are not at home, how often do you leave a note for them about where you are going?”, “Are there kids your mom/dad or guardians don't allow you to hang out with?”, and “How often, before you go out, do you tell your mom/dad or guardian when you will be back?”. Response categories were ‘1=All of the time’, ‘2=Most times’, ‘3=Sometimes’, ‘4=Hardly ever’, and ‘5=Never’. After reverse scoring the corresponding items, a composite score was created by adding the responses of the 10 questions with higher scores representing more parental monitoring (Cronbach's alpha = 0.67).

Mother and father parenting behaviors—Adolescent perceptions of parenting behaviors were assessed separately for the mother and father by asking 17 questions from the Parental Warmth, Support and Hostility measure (Conger & Ge, 1999). This questionnaire asks the adolescent to report on the extent to which parents engage in a continuum of more to less positive parenting behaviors (Conger & Ge, 1999). Examples of items are “How often does your ——— (mother/father) let you know (she/he) really cares about you?”, “...listens carefully to your point of view?”, “... gets angry at you?”, “...boss you around a lot?”, “...insult or swear at you?”, with response categories being ‘1=Never’, ‘2=Sometimes’, ‘3=Often’, and ‘4=Always’. Items were added to create a composite score for each the mother and father scales. Higher scores represent more positive relationships with each of the parents or guardians, respectively. Cronbach's alpha for the mother scale was 0.89 and for father was 0.89.

The demographic variables were as follows:

Age and sex were assessed based on the adolescents' self-reports and socioeconomic status of the family was assessed based on the parent's report. The socioeconomic status (SES) variable was based on a measure sensitive to SES circumstances in the developing world (Graffar, 1956) that was completed by the parent who brought the adolescent participant to the interview site. The SES instrument consists of over two dozen questions, but 13 are specifically utilized to obtain a composite score of SES. Questions include items such as “total number of adults in the same house”, “type of job by head of household”, “father's education”, and “type of sewage accommodations”. This scale was also mean centered.

Analyses

We first examined the bivariate associations between each independent variable and the dependent variables: rule breaking behaviors, aggressive behaviors and attention problems—using bivariate regression analysis. Then, we examined the association of the independent variables entered simultaneously with each of the dependent variables while adjusting for demographics. Use of the Breusch-Pagan test (StataCorp, 2007) provided evidence of heteroskedasticity. Therefore, the multiple OLS regression analyses were estimated with a variance covariance matrix allowing for heteroskedasticity (Long & Ervin, 2000). We also tested for differential effects (interactions) of all the independent variables by both gender and age. First, every interaction term between each, gender and age, and each independent variable (drive, inhibition, and the three parenting variables), was entered separately (a total of 10 interactions). Then, in subsequent models all significant interactions were entered. For parsimony's sake, in this paper we only present the results of the analyses that resulted in significant interactions. To assist with the interpretation of the significant interactions we include several figures that graphically depict these interactions. Standardized coefficients are presented when discussing results of multivariate analyses. All analyses were conducted with STATA 10.0 (StataCorp, 2007).

Results

Rule breaking behavior

The results of the bivariate analyses indicate that rule breaking behaviors were positively associated with age and adolescent Behavioral approach system-drive (BAS-D) (see Table 2). On the other hand, rule breaking behaviors were inversely related to gender (females had lower levels than males), parental monitoring, and positive parenting by both the mother and father. In the multivariate context, after holding constant all other variables in the model, age and gender were no longer significant but adolescent BAS-D remained significantly and positively ($b = 0.19$, $p < 0.01$) associated with rule breaking behavior.

The multivariate analyses also showed that parental monitoring, and positive parenting by the adolescent's mother and father remained significantly and inversely related to rule breaking behaviors ($b = -0.20$, $b = -0.06$, and $b = -0.04$ respectively; $p < 0.01$ for all three coefficients). These results mean that, on average, as adolescents reported more parental monitoring and more positive relationships with both parents they reported lower levels of rule breaking behaviors.

Figure 1 depicts the results of the interactions between positive parenting by father with age and gender, and parental monitoring with gender. The magnitude of the inverse association between positive parenting by fathers and adolescents' rule breaking behaviors is higher with younger adolescents. As adolescents age, the magnitude of the association of parental monitoring and rule breaking decreased. The association between parenting and rule breaking behavior was also found to vary by gender. As the level of positive relationship with the father increased, the levels of rule breaking decreased only for males. Note that for females the effect of positive relationship with parents was almost constant.

The association between parental monitoring and rule breaking was found to also vary by gender. As mentioned earlier in the description of the multivariate results, on average, both males and female adolescents benefitted from increased parental monitoring, but as the levels of parental monitoring increased females display lower rule breaking behaviors than males. In other words, females scored higher on rule breaking behavior than males at lower levels of parental monitoring but at higher levels of parental monitoring male adolescents scored higher than female adolescents.

Aggressive behavior

The results of the bivariate analyses indicate that the variable aggressive behavior was positively associated with age, gender (higher scores for females), SES and BAS-D (see Table 3). The bivariate results also showed an inverse relationship between levels of aggression and parental monitoring and positive parenting by both the mother and father. In the multivariate context aggressive behavior remained less common among males, who on average scored 1.07 ($p < 0.01$) points lower in the scale of aggression than females. BAS-D also remained positively related to aggression after controlling for other variables in the model. On average, the higher the scores in the BAS-D scale the higher the scores in the aggression scale ($b = 0.36$, $p < 0.01$).

Parental monitoring and positive parenting by both of the adolescent's parents remained significantly and inversely related to aggressive behaviors, even after taking into account all other variables in the model ($b = -0.17$, $b = -0.12$, $b = -0.07$, respectively with $p < 0.01$ for all three coefficients). These results suggest that, on average, adolescents reporting more parental monitoring and more positive relationships with both parents showed lower levels of aggressive behaviors.

The third set of models in Table 3 shows the results for the interaction effects. The association between positive relationship by mother and aggressive behaviors varied by the adolescents' age with the magnitude of the association growing larger among younger adolescents (see Figure 2). The association between positive relationship with mother and aggressive behaviors also was found to vary by gender. Female adolescents on average scored higher on aggressive behaviors at lower levels of positive relationship with mother but the male female gap disappeared at higher levels of positive relationship with mother. No other variables were significantly associated with aggressive behavior.

Attention problems

The bivariate analyses indicate that attention problems were positively associated with adolescent age, gender (higher scores for females), BAS-D, and behavioral inhibition system (see Table 4). Results of the bivariate analyses indicate that the three parental measurements – parental monitoring, positive relationship with mother and father – were negatively related to attention problems.

The results of the multivariate analyses are quite similar to those of the bivariate analyses. Females continue to have more attention problems. Both behavioral approach system-drive and behavioral inhibition remained positively related to attention problems (BAS-D $b = 0.15$, $p < 0.01$ and BIS-I $b = 0.10$, $p < 0.01$) after taking into account all other variables in the model. This means that the higher the scores of BAS-D and BIS-I, the more attention problems the youth reported. Attention problems were inversely associated with parental monitoring ($b = -0.09$, $p < 0.01$), positive parenting by mother ($b = -0.07$, $p < 0.01$) and father ($b = -0.03$, $p < 0.01$) even after holding constant all other variables. As in the case of rule breaking and aggression behaviors, the more parental monitoring and more positive relationship with the parents the less attention problems youth reported.

Finally, the association between behavioral approach –drive and attention problems varied depending on the adolescents' age as depicted in Figure 3. For adolescents about and below the average age, BAS-D was positive such that the younger the adolescent the stronger the magnitude of the association between BAS-D and attention problems. Interestingly, for older adolescents the relationship flipped and became negative. In other words, higher levels of BAS-D were associated with fewer attention problems among older adolescents.

Discussion

The results showed that, in Chilean adolescents, Gray's personality trait behavioral approach system-drive (BAS-D) was related to all three problem behaviors assessed in this study (rule breaking, aggressiveness, and attention problems) while the behavioral inhibition system (BIS-I) was related only to attention problems. At the same time, adolescents' perception of the parenting they receive consistently showed a protective relationship on these three problem behaviors.

The relationship of BAS-D with problem behaviors is consistent with previous findings in the existing literature (O'Connor, et al., 2009; Seibert, et al., 2010). Adolescents scoring higher in BAS-D tend to score higher in rule breaking and aggressive behaviors as well as in attention problem. These findings extend previous work showing that the tendency to move towards rewarding experiences can also be important factors in rule-breaking and aggression. When adolescents do not feel guilty after doing something wrong, break rules at home or school, or when they get in physical fights, they are disregarding conventional rules of proper social behavior. Having a strong desire to seek out rewarding goals might be an essential part of how individuals engage in activities that disregard what is commonly acceptable and within the range of established behaviors in a society.

In the case of attention problems, it could be hypothesized that adolescents with higher levels of BAS-D might find difficult to focus on activities, but as depicted in Figure 3 the association of BAS-D with attention problems depends on the age of the adolescents. Younger adolescents who scored higher in BAS-D were more likely to score higher in attention problems, but the magnitude of the association of BAS-D changed as age increased such that older adolescents who scored higher in BAS-D were more likely to score lower in attention problems. One possible explanation is that older adolescents would be more able to focus and redirect their BAS-D while younger adolescents would not be able to be as successful as older adolescents in redirecting their drive. Future research is needed to test this hypothesis.

The literature accounting for the relationship between BIS-I and behavioral problems is less consistent than the literature on BAS. Therefore it is not entirely surprising that the results in this paper not only showed no relationship between BIS-I and rule breaking or aggression but also showed a positive relationship with attention problems. In other words, adolescents who reported more inhibition (as measured by the BIS-I) were more likely to score higher in attention problems. This finding is consistent with Nigg's explanation that attention problems are more likely a problem of inhibiting executive control processes than a problem with the type of inhibition that results from anxiety or fear, as measured by BIS-I (Nigg, 2001). Future research is needed to understand the role of inhibition on behavioral problems with Latin American populations.

Consistent with similar work in Latin America (Martinez et al., 2008), this study also provides evidence for an inverse association among parental monitoring, positive parenting by both mothers and fathers, and problem behaviors (i.e. rule breaking, aggression and attention problems) above and beyond the influences of personality among Chilean adolescents. The role played by these parenting characteristics in this Latin American sample is consistent with what has been suggested by previous research in the U.S.. Thus, parenting is associated with these three adolescent outcomes in similar ways in the Chilean context. These findings suggest that as a whole, parents who properly attend to their children's needs and who engage in positive parenting are more likely to be successful in guiding adolescents to engage in less rule breaking and aggressive behaviors and develop less attention problems. Interestingly, the findings suggest that the effect of monitoring and

the effect of having a positive relationship with mothers and fathers differed depending on age and gender for both aggressive behavior and rule breaking.

The association of positive parenting by fathers on rule breaking was found to vary as a function of the adolescents' age and gender. In this study, younger adolescents and males benefitted more from having a positive relationship with their fathers. The differential effect of age can be explained by Richard Lerner's developmental contextual perspective which underscores the importance of considering evolving individual-context relationships as the units of development (Lerner, 1991). According to this view, development involves evolving relationships between the individual and its context and thus it is plausible that as children grow older the influence of parents is changed by other significant socialization agents such as friends and peers. As a result, then, it might be expected that younger adolescents receive more benefit from having a more positive relationship with their fathers. But it is worth noticing that even at higher ages, the slope of the relationship of father relationship with rule breaking remained negative providing evidence for the importance of a good relationship between the adolescents and their fathers even in older adolescents.

Having a positive relationship with fathers also had a differential relationship with rule breaking based on the adolescents' gender. We found that more positive relationships with fathers resulted in male adolescents engaging in less rule breaking behaviors. It is possible that the father's modeling might have a stronger effect on males than females because of same-gender identification with in the family context (Brody, 1999). Adolescents, particularly males, who indicate having a more positive relationship with their fathers might have fathers who tend to exhibit healthier behaviors which serves as better role modeling to the youth. On the other hand, adolescents with more negative relationship with their fathers might also have fathers who themselves exhibit more problematic behaviors (i.e., physical punishment, drug use).

Another interesting result involving gender interactions in these models was that female adolescents benefitted more from higher levels of positive relationships with their mothers than male adolescents. More positive relationships with their mothers might provide female adolescents with a modeling mechanism to cope with aggression better than females who had less positive relationships with their mothers. The effect might be stronger for females because of same gender identification within the family (Brody, 1999) as was suggested above for adolescent males and relationship with their fathers.

Study Limitations

The study findings should be interpreted with the following three limitations in mind. First, our estimates are based on cross-sectional data suggesting we should be cautious when making statements about temporal associations. For example, in this study we posit that adolescents with more BAS-drive may engage in more behavioral problems. However, it is plausible that an adolescent's BAS-drive may be boosted as a result of their engaging in problem behaviors. Even if this were the case, it is worth exploring if helping adolescents increase their ability to focus on a positive goal and providing the support to allow them to stick to it could result in decreased problem behaviors. Second, in this study we rely solely on adolescents' self-reports. Having information from other sources such as parents, teachers, and peers, would provide additional insight into the associations observed. Third, the analysis sample consisted of slightly younger (by about 6 months) youth and of slightly lower SES than the omitted sample (n=137). The omitted sample mainly consisted of youth who did not have a father or father figure in their lives and as such did not answer the questions that aimed to assess the type of parenting they receive from their fathers.

Subsequent studies with older youth and with youth of higher SES are need to examine if the findings of the present study can be replicated with these populations.

Notwithstanding these limitations, nearly all of the study findings are consistent with previous literature based on populations from the U.S. and some European countries. These findings provide additional support of the cross-cultural nature of these relationships, mainly that an individual's personality is related to their behaviors and that despite personality differences, parents and families do play a critical protective role in the proper development of adolescents, a developmental period when youth face tremendous challenges. It is also worth highlighting the differential associations found to occur by age and gender. These findings provide additional evidence concerning the importance of developing interventions that take into serious consideration developmental stages and the gender of the youth and parents or adult figures. Finally, in this study we found that females had higher levels of aggression and attention problems than males even after controlling for age, SES, and the other variables in the study. Whereby aggressive and attention problems may have once been stereotypical behaviors of males, the study findings may reflect societal changes in the way males and females behave in Chile. Research by Gonzalez and colleagues (2007) on the sexual behavior of youth in Chile indicate that for over 15 years, female Chilean adolescents between the ages of 12 and 19 have had sex at earlier ages and with a higher number of sexual partners than male adolescents. These findings, and those of our present study, point to the fact that gender roles and behaviors may not be static and that for this reason, more research should be conducted globally to understand how cultural and societal changes may be modifying the way males and females behave.

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Figure 1. Differential relationships of rule breaking behavior with positive relationship with father by adolescent age and gender, and with parental monitoring by gender (n=884).

Figure 2.
Differential relationship of aggressive behavior with maternal positive relationship by adolescent age and gender (n=844)

Figure 3. Differential relationship of behavioral approach-drive with attention problems by youth age (n=884).

Table 1

Descriptive Statistics (n=884)

Variable	Mean	S.D.
Dependent variable		
Rule breaking behavior	5.03	3.23
Aggressive behaviors	8.17	4.78
Attention problems	5.69	3.06
Demographics		
Sex, Female	48%	
Age	14.33	1.45
SES *	32.80	6.67
Independent variables		
Behavioral approach-drive	7.97	2.32
Behavioral inhibition	9.81	2.48
Parental monitoring	27.59	5.21
Positive parenting – mother	54.48	8.95
Positive parenting – father	55.52	8.27

* Socioeconomic status composite index ranging from 18 to 58.

Higher numbers indicate higher status.

Table 2

Individual and parenting variables associated with rule breaking behaviors: Results of bivariate and multivariate OLS regression analyses (n=884).

Variable	Bivariate		Full Model ^a			Interaction Model ^a		
	b	s.e.	b	s.e. ^b	β	b	s.e. ^b	β
Demographic Controls								
Age	0.30 ***	0.08	0.08	0.07	0.03	0.08	0.07	0.04
Sex (Ref = Male)	-0.53 **	0.22	-0.29	0.21	-0.04	-0.28	0.21	-0.04
SES	0.01	0.02	-0.001	0.01	-0.003	-0.004	0.01	-0.01
Independent variables								
Behavioral approach-drive	0.26 ***	0.05	0.19 ***	0.04	0.13	0.19 ***	0.04	0.14
Behavioral inhibition	-0.07	0.04	0.01	0.04	0.01	0.01	0.04	0.004
Parental monitoring	-0.27 ***	0.02	-0.20 ***	0.02	-0.32	-0.14 ***	0.03	-0.22
Positive parenting – mother	-0.13 ***	0.01	-0.06 ***	0.02	-0.15	-0.06 ***	0.02	-0.14
Positive parenting – father	-0.11 ***	0.01	-0.04 ***	0.01	-0.10	-0.07 ***	0.02	-0.19
AgeXPositive parenting father					-0.01 *	0.01	0.01	-0.05
GenderXParental monitoring					-0.13 ***	0.04	0.04	-0.14
GenderXPositive parent-father					0.06 ***	0.02	0.02	0.13
Constant			5.18 ***	0.14		5.19 ***	0.14	

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

^a All variables entered simultaneously. 'b' refers to unstandardized coefficients and 'b' to standardized coefficients.

^b Robust standard error to correct for heteroskedasticity.

Table 3

Individual and parenting variables associated with aggressive behaviors: Results of bivariate and multivariate OLS regression analyses (n=884).

Variable	Bivariate			Full Model ^a			Interaction Model ^a		
	b	s.e.	b	s.e. ^b	β	b	s.e. ^b	β	
Demographic Controls									
Age	0.32 ***	0.11	-0.03	0.10	-0.01	-0.04	0.10	-0.01	
Sex (Ref = Male)	0.89 ***	0.32	1.07 ***	0.31	0.11	1.09 ***	0.31	0.11	
SES	0.04 *	0.02	0.03	0.02	0.04	0.03	0.02	0.05	
Independent variables									
Behavioral approach-drive	0.45 ***	0.07	0.36 ***	0.07	0.17	0.35 ***	0.07	0.17	
Behavioral inhibition	0.01	0.07	-0.01	0.06	-0.01	-0.01	0.06	-0.01	
Parental monitoring	-0.29 ***	0.03	-0.17 ***	0.03	-0.19	-0.17 ***	0.03	-0.18	
Positive parenting - mother	-0.19 ***	0.02	-0.12 ***	0.02	-0.20	-0.09 ***	0.03	-0.15	
Positive parenting - father	-0.16 ***	0.02	-0.07 ***	0.02	-0.12	-0.06 ***	0.02	-0.12	
GenderXPositive parenting - mother						-0.07 *	0.04	-0.09	
AgeXPositive parenting - mother						0.03 **	0.01	0.07	
Constant			7.65 ***	0.20	.	7.70 ***	0.20	.	

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

^a All variables entered simultaneously. ' β ' refers to unstandardized coefficients and 'b' to standardized coefficients.

^b Robust standard error to correct for heteroskedasticity.

Table 4

Individual and parenting variables associated with attention problems: Results of bivariate and multivariate OLS regression analyses (n=884).

Variable	Bivariate		Full Model ^a		Interaction Model ^a	
	b	s.e.	b	s.e. ^b	b	s.e. ^b
Demographic Controls						
Age	0.17 **	0.07	-0.01	0.07	-0.002	0.07
Sex (Ref = Male)	0.54 **	0.20	0.51 **	0.20	0.50 **	0.20
SES	0.03	0.02	0.02	0.01	0.02	0.01
Independent variables						
Behavioral approach-drive	0.21 ***	0.04	0.15 ***	0.04	0.11 ***	0.04
Behavioral inhibition	0.09 **	0.04	0.10 **	0.04	0.10 **	0.04
Parental monitoring	-0.14 ***	0.02	-0.09 ***	0.02	-0.15 ***	0.02
Positive parenting - mother	-0.10 ***	0.01	-0.07 ***	0.02	-0.18 ***	0.02
Positive parenting - father	-0.08 ***	0.01	-0.03 **	0.01	-0.09 **	0.01
AgeXBAS-drive					-0.08 **	0.03
Constant			5.44 ***	0.14	5.47 ***	0.14

* $p < 0.10$;

** $p < 0.05$;

*** $p < 0.01$.

^a All variables entered simultaneously. 'b' refers to unstandardized coefficients and 'b' to standardized coefficients.

^b Robust standard error to correct for heteroskedasticity.