

Adolescent Beliefs about Antisocial Behavior:

Mediators and Moderators of Links with Parental Monitoring and Attachment

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Abstract

The current study examined whether parental monitoring and attachment were related to adolescent beliefs about antisocial acts, with temperament, gender, and age considered as potential moderators. A total of 7135 adolescents, ages 14-18 years, completed self-report measures of antisocial beliefs, parental monitoring, attachment security, and temperament. Results indicate that both attachment security and parental monitoring are associated with adolescent beliefs about antisocial behaviour. It also appears that the two aspects of parenting are complementary, in that a secure attachment relationship is associated with greater parental monitoring knowledge, which in turn is linked with a lower tolerance for antisocial behaviour. However, the relations between these aspects of parenting and beliefs about antisocial acts depended on youth characteristics, with some results varying by age, gender and temperament. Implications for future research and parent-focused interventions to prevent antisocial beliefs and behaviour are discussed.

Key words: Parental monitoring, attachment, antisocial behavior, temperament, adolescents

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One major goal for parents is to help children acquire social norms regarding the inappropriateness of antisocial activities, (Grusec, 2002; Eisenberg & Valiente, 2002; Grolnick & Farkas, 2002). Beliefs about the rightness or wrongness of antisocial behavior predict the likelihood of children and youth engaging in delinquent acts (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Zelli, Dodge, Lochman, Laird, & Conduct Problems Prevention Research Group, 1999), aggression (Erdley & Asher, 1998; McMahon & Watts, 2002; Oglive, Stewart, Chan & Shum, 2011), and substance abuse (Costa, Jessor, & Turbin, 1999; Mounst & Steinberg, 1995). Despite the apparent link between antisocial beliefs and behavior, little is known about the origins of these biased perspectives. Speaking to this gap in knowledge, Vitaro, Brendgen, & Tremblay (2000) stated that, “In future research, it would be interesting to examine variables that are predictive of an unfavourable attitude toward delinquency” (p. 322). To this end, the purpose of the present study is to examine the association between parenting and antisocial beliefs.

Whereas measures of antisocial beliefs have appeared in numerous studies, they have more often been conceptualized as correlates or predictors of antisocial behavior than as outcomes themselves (e.g., Costa et al., 1999; Guerra, Huesmann, & Hanish, 1995), and consequently their relations with other study variables have not typically been reported. Although primarily interested in predictors of delinquent behavior, Vitaro et al. (2000) report zero-order correlations indicating that parental monitoring and attachment to parents are inversely associated with positive attitudes toward delinquency. While interesting, these data reveal neither additive nor interactive relations amongst possible predictors of antisocial beliefs. In the three studies in which we found antisocial beliefs to be conceptualized as an outcome, attachment security, ethnic identity, global self-worth, exposure to violence, and having aggressive friends were found to be associated with beliefs about antisocial behavior and aggression (McMahon & Watts, 2002; Newcomb, Bukowski, & Bagwell, 1999; Silverberg, Vazsonyi, Schlegel, & Schmidt, 1998). The current study extends this research by simultaneously examining multiple dimensions of parenting and giving consideration to potential moderators such as temperament, gender, and age in the prediction of antisocial beliefs among a large sample of older adolescents.

A key aspect of the current study is that we examined the unique contributions to antisocial beliefs made by parental monitoring and parent-adolescent attachment, which, respectively, represent the two consistently identified broad dimensions of parenting—parental control and the parent-child relationship (Bacchini, Concetta, & Affuso, 2011; Cummings, Davies, & Campbell, 2000; Gallagher, 2002;). Previous research has shown that the control and relationship dimensions of parenting make unique contributions to child adjustment, owing perhaps to the need to balance external regulation of adolescent experimentation with risk behavior with the maintenance of a warm, trusting, supportive and communicative relationship that fosters a sense of security and well-being (Gray & Steinberg, 1999; Kerns, Aspelmeier, Gentzler, & Grabill, 2001; Bacchini et al., 2011). In addition, we considered additive and interactive relations between parenting and temperament, which is critical given previous research indicating that the link between parenting and children’s psychosocial adjustment depended on children’s temperamental predispositions (Colder, Lochman, & Wells, 1997; Kochanska, 1995, 1997). Finally, another unique feature of our study is the focus on male and female adolescents ages 14 to 18. This is a key developmental period in which there may be important changes to beliefs about antisocial behavior, given cognitive developments in abstract thinking (Marini & Case, 1994; Morra, Gobbo, Marini, & Sheese, 2008) identity formation, and social transformations, including increased unsupervised involvement with peers, the advent of romantic relationships, and normative experimentation with antisocial behavior (Bouchev & Furman, 2003; Brown & Klute, 2006;

Mata & van Dulmen, 2012; Volk, Camilleri, Dane, & Marini, (in press); Rubin, Bukowski & Parker, 2006).

Parental Monitoring

Parental monitoring has been negatively linked with externalizing behavior (Dishion, Spracklen, Andrews, & Patterson, 1996; Laird, Pettit, Dodge, & Bates, 2003), and we expected that it may also be associated with antisocial beliefs by means of a common mechanism. Specifically, given evidence that the development of antisocial beliefs is more likely when children associate with antisocial friends (Kerr & Stattin, 2000; Laursen, Hafen, Kerr, & Stattin, 2012; Newcomb et al., 1999; Patterson, DeBaryshe, & Ramsey, 1989), it may be that monitoring serves a protective function by reducing contact with antisocial peers who might otherwise model and reinforce beliefs legitimizing antisocial behavior (Baharudin, Krauss, Yacoob, & Pei, 2011; Kerr & Stattin, 2000; Laursen et al., 2012; Rubin et al., 2006). Parental monitoring practices may also facilitate consistent discipline, which in turn may regulate adolescents' experiences of punishment and reward, providing clear signals as to which behaviors are wrong and which ones are acceptable (Laird, Marrero & Sentse, 2010; Grusec, 2002; Patterson, Capaldi, & Blank, 1991).

Consistent with the work of other authors (Kerr & Stattin, 2000; Laird, Pettit, Bates, & Dodge, 2003), we distinguished between monitoring *knowledge*, what parents actually know about their children's whereabouts and activities, and *tracking*, a means for parents to obtain that knowledge by asking the adolescents, their friends, and their friends' parents about their own children's activities (Kerr & Stattin, 2000; Laird, Pettit, Bates, et al., 2003). In line with previous research, we hypothesized that monitoring knowledge would be negatively associated with antisocial beliefs (Vitaro et al., 2000), whereas we expected a u-shaped curvilinear relation between antisocial beliefs and tracking, given evidence that both low and high parental control have been associated with negative outcomes such as rebellion, association with deviant peers, and insecure attachment (Barnett, Kidwell, & Leung, 1998; Kerr & Stattin, 2000; Rubin et al., 2006;), and tracking seems to be an ineffective method for parents to acquire knowledge of their child's whereabouts and activities (Kerr & Stattin, 2000). However, in parent-child relationships characterized by high attachment security, high tracking may be a more effective means of obtaining monitoring knowledge because these adolescents may perceive their parents' questions as being less intrusive, more acceptable and reasonable, and more age-appropriate, which in turn may make the adolescents more forthcoming with the relevant information (Eisenberg & Valiente, 2002; Grusec, 2002). In light of the foregoing, we expected high tracking to be inversely related to antisocial beliefs when adolescents were high in attachment security.

There are normative changes during adolescence that may alter the link between monitoring knowledge and antisocial beliefs. Socially, adolescents spend more unsupervised time with peers, and in light of cognitive developments in abstract thinking and identity formation, youth often begin to demand autonomy and to challenge parental rules that they may perceive as subjective and arbitrary, all of which may lead to a lessening of parental control over adolescent activities (Steinberg & Silk, 2002). Given our expectation that effective monitoring may diminish adolescent acceptance of antisocial behavior by reducing involvement with deviant peers, we anticipated that monitoring knowledge would have a stronger link with antisocial beliefs for younger adolescents than for older ones.

In light of the wealth of research showing that boys are much more likely than girls to be involved in antisocial activities (Marini, Dane, Bosacki, & YLC-CURA, 2006; Piquero, Gover, Macdonald, & Piquero, 2005; Salmivalli, Kaukiainen, & Lagerspetz, 2000; Xie, Drabrick, & Chen, 2011), we expected male adolescents would believe that antisocial behaviour is more normative and acceptable, therefore, we hypothesized that monitoring knowledge would be more strongly (negatively) related to antisocial beliefs for males than for females.

Parent-Adolescent Attachment

We also expected, based on previous research, that securely attached adolescents would be less likely to hold antisocial beliefs (Silverberg et al., 1998; Vitaro et al., 2000). Secure attachment to parents is thought to increase adolescents' receptivity to and acceptance of parental moral messages, including the belief that antisocial behavior is wrong, because it heightens the importance of pleasing parents through the adolescent's behavior, the development of mutual cooperation, and the desire to maintain a relationship that sustains feelings of security (Eisenberg & Valiente, 2002; Grusec, 2002; Morcillo, Duarte, Shen, Blanco, Canino, & Bird, 2011; Scott, Briskman, Woolgar, Humayun, & O'Connor, 2011). Additionally, in the context of a secure parent-child attachment relationship adolescents may be more likely to imitate parental prosocial behaviours such as concern for others (Hastings, Utendale, & Sullivan, 2007).

In addition, drawing on past research that antisocial behaviour is more normative for male adolescents (e.g., Marini et al., 2006; Xie et al., 2011), we hypothesized that attachment security would have a stronger negative relation to male beliefs about antisocial behaviour. Finally, we anticipated that attachment would be more strongly associated with antisocial beliefs in younger adolescents because friendships involving intimate self-disclosure and romantic relationships become more normative in later adolescence (Bouchey & Furman, 2003; Brown & Klute, 2003; Nosko, Tieu, Lawford, & Pratt, 2011; Rubin et al., 2006). These close relationships with individuals outside of the family may exert an additional influence on the formation of beliefs, lessening the overall impact of parent-adolescent attachment.

Attachment Mediated by Monitoring Knowledge

Kerns et al. (2001) found that attachment security was positively associated with monitoring knowledge, seemingly because securely attached children (in 3rd and 6th grade) were more likely to "check in" with parents on a regular basis. This is consistent with additional research showing that parents best acquire monitoring knowledge through adolescent self-disclosure (Harma & Willoughby, 2011; Stattin & Kerr, 2000). In light of these findings, we anticipated that the negative relation between attachment security and antisocial beliefs would be partially mediated by monitoring knowledge, insofar as secure parent-adolescent attachment relationships, characterized by trust, communication, and low alienation (see Armsden & Greenberg, 1987), may afford a context for adolescent self-disclosure of their peer-related activities.

Parenting and Temperament

Another purpose of the present study is to examine the differential relations of parenting to antisocial beliefs for children with various temperaments. Activity level and a predisposition to approach novel or potentially rewarding stimuli (rather than engaging in withdrawal), which may both be reflective of low self-regulation, have been found to be positively related to externalizing behavior (Hagekull, 1994; Karp, Serbin, Stack, & Schwartzman, 2004; Rothbart, Ahadi, & Evans, 2000; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). On the basis of this research, we hypothesized that both activity level and approach would be positively associated with antisocial beliefs. It is also possible that parenting may be moderated by temperament. For example, parental control strategies (i.e., discipline) were less effective in promoting internalization of parental values in children who were temperamentally low in fear (Kochanska, 1995, 1997). Adolescents high in approach motivation, and accordingly low in withdrawal, appear to be less sensitive to punishment (e.g., Rothbart, Ahadi & Evans, 2000; Torrubia, Avila, Molto, & Cesaras, 2001), and consequently may be less inclined to reflect on and re-evaluate their behavior in response to parental monitoring and concomitant discipline (Marini, Dane, & Kennedy, 2010). Therefore, we proposed that monitoring knowledge would be more strongly associated (negatively) with antisocial beliefs for youth with less of a temperamental disposition toward approaching novel or potentially rewarding stimuli (i.e., low approach orientation).

Conversely, attachment security has been found to be more effective in promoting internalization of parental values with low fear-high approach children than was maternal discipline (Kochanska, 1995, 1997), presumably because it capitalized on the motivation to please parents. Thus, we anticipated that attachment security would be more strongly associated (negatively) with antisocial beliefs for youth high in approach tendencies.

Consistent with a previous finding by Colder et al. (1997), and given that highly active adolescents are lower in self-regulation and may therefore benefit more from the external regulation of their parents, we expected that monitoring knowledge would be more strongly (negatively) linked with antisocial beliefs for children high in activity level. Finally, it may be that children low in self-regulation may benefit more from the social regulation of impulses that comes from their attempts to maintain closeness in the parent-child relationship through such means as, for example, attempting to please and not embarrass the parents. Accordingly, it was predicted that attachment security would be more strongly, negatively associated with antisocial beliefs for adolescents who were high in activity level.

Method

Participants and Recruitment

Students ages 14-18 ($M = 15$ years, 7 months; $SD = 1$ year, 4 months) from 25 secondary schools in a southern Ontario region of Canada, participated in this study in 2000. The study was approved by research ethics boards at the researchers' University and at the regional school board. The overall participation rate was 76%, resulting in a total of 7135 adolescent (49.7% boys) participants. A passive parental consent procedure was used to ensure a representative sample, and active informed assent was obtained from adolescent participants. Parents were mailed a written description of the study prior to the administration of the survey, which indicated they could request that their child not participate in the survey. In addition, to ensure parental awareness of the study, several parental information sessions were held throughout the school district, and the study was given widespread media coverage. In terms of demographics, 93% of the youth were born in Canada, as were 77.3% of their parents. The most common ethnic backgrounds were Western European (over 70%), and Eastern European (17.8%), consistent with the broader Canadian population (Statistics Canada, 2006). English was the first language in 93.1% of the homes. The level of education for the mothers and fathers was 3.2 and 3.3, respectively, with 3 indicating some college, university or apprenticeship programme and 4 indicating completion of a college/technical diploma. Eighty-one percent of the mothers and 94.3% of the fathers worked full-time. In terms of family structure, 61.2% of the students lived with both birth parents, 16% lived with either their birth father or their birth mother serving as a single parent, and 12.2% lived with one birth parent and one step-parent.

Procedure

The self-report Youth Lifestyle Choices-Community University Research Alliance (YLC-CURA) Youth Resilience Questionnaire was administered to youth in grades 9 to OAC (Ontario Academic Credit, equivalent to grade 13) in the students' classrooms. Further details of the administration of the questionnaire as well as other details about the project have been published elsewhere (YLC-CURA Niagara, 2001). Five measures from YLC-CURA's survey data were used for the current study.

Measures

Antisocial Beliefs. Antisocial beliefs were assessed using a scale adapted from Jessor et al.'s (1995) Attitudinal Intolerance of Deviance Scale, which assesses the adolescent's judged "wrongness" of engaging in certain antisocial behaviors such as physical aggression, theft, and damaging property (e.g., How wrong do you think it is to take little things that don't belong to you?). The current measure consisted of 11 items rated on a 4-

point Likert-type scale ranging from *not at all wrong* to *very wrong*, and Cronbach's alpha was high at .89. A high score on the antisocial beliefs measure indicates greater acceptance or tolerance (i.e., perceived as less wrong) of antisocial behavior.

Monitoring Knowledge. Monitoring knowledge was measured using a modified version of a strictness-supervision scale developed by Steinberg and colleagues (Lamborn, Mounts, Steinberg, & Dornbusch, 1991) assessing how much the students believed their parents really know about activities such as where their adolescent children go at night, who their friends are, and what they do (e.g., How much do your parents/guardians really know about what you do with your free time?). Response options to the nine items were on a 3-point Likert-type scale, ranging from *they never know* to *they always know* and the internal consistency reliability of the scale was high, alpha = .90.

Tracking. The tracking variable used in the current study consisted of the same nine items as for monitoring knowledge, except this time the adolescents rated their parents according to how often the parents *asked* them, rather than how much they really knew, about their whereabouts, activities, and friends (e.g., Do your parents/guardians ask you where you go at night?). The items were responded to on a 3-point scale, ranging from *they never ask* to *they often ask*, and Cronbach's alpha was .81.

Attachment Security. Attachment security was measured using a modified version of the parenting portion of Armsden & Greenberg's (1987) Inventory of Parent and Peer Attachment (IPPA) assessing the degree of trust, communication, and alienation (reverse scored) within the mother-child relationship as perceived by the adolescents. Sample items included, "I trust my mother" (trust, 8 items), "When we discuss things, my mother cares about my point of view" (communication, 3 items), and "I feel angry with my mother" (alienation, 6 items). The students responded to each of the 17 items on a 4-point Likert-type scale, ranging from *almost never or never* to *almost always or always*. An overall attachment security score was calculated by combining the 3 subscales (reversing alienation scores), following the scoring procedures of Armsden and Greenberg (1987). Internal consistency reliability of the scale was high, alpha = .90.

Temperament. Temperament was assessed with a modified version of Windle and Lerner's (1986) Dimensions of Temperament Survey-Revised (DOTS-R). All temperament items were responded to on a 4-point scale ranging from *almost never or never* to *almost always or always*, and two factors, activity level, alpha = .79, and approach-withdrawal, alpha = .70, were selected for analysis in the current study. Sample items included, "I have a hard time sitting still" (activity level, 3 items) and "I like meeting new people" (approach-withdrawal, 4 items). Higher scores indicated higher levels of either activity level or approach orientation.

Results

Descriptive Statistics and Preliminary Analyses

Means and standard deviations, as well as zero-order correlations, for each of the predictors used in the current study, appear in Table 1. As can be seen, all of the study variables except age were significantly associated with antisocial beliefs, with monitoring knowledge and attachment being the strongest correlates.

Plan of Analysis

Missing data were addressed using one of two procedures. For those participants who completed at least 50% of the items within a scale, composite (mean) scores were computed. When fewer than 50% of the items in a scale were completed, mean scores were imputed using the EM (expectation-maximization) algorithm in SPSS. Further details concerning the missing data procedures employed in the present study are outlined in Willoughby, Chalmers & Busseri (2004) and Willoughby et al. (2007). All main effects and interactions were tested by means of a hierarchical multiple regression analysis. Consistent with previous research

involving the YLC-CURA database (Marini et al., 2006), we considered main effects accounting for at least 1% of the variance in antisocial beliefs ($sr^2 > .01$) to be of practical significance, as this value has been designated as a small but meaningful effect (Cohen, 1988; Cohen & Cohen, 1983; Cohen, Cohen, West, & Aiken, 2003). Interactions were plotted and the simple slopes were calculated as suggested by Aiken and West (1991) and Holmbeck (2002). Finally, following the approach suggested by Baron and Kenny (1986) and Holmbeck (1997), we used an additional regression procedure to test the hypothesis that monitoring knowledge mediated the link between attachment and antisocial beliefs; additional details are specified below.

Primary Regression Analysis

The results of the regression analysis are shown in Table 2. The model was significant, accounting for 24.6% of the variance in antisocial beliefs, $F(17, 7117) = 136.31$, $p < .001$. As hypothesized, adolescent perceptions of monitoring knowledge were negatively associated with antisocial beliefs and were by far the strongest predictor in the current study, uniquely accounting for almost 5% of the variance, $p < .001$. In contrast, tracking accounted for only .2% of the variance in antisocial beliefs. Consistent with expectations, attachment security was also negatively associated with antisocial beliefs, uniquely accounting for 2.3% of the variance in the criterion, $p < .001$. In terms of temperament, activity level was positively associated with antisocial beliefs, uniquely accounting for 1.2% of the variance, $p < .001$. Finally, as expected, gender was inversely associated with the outcome variable, indicating that males regarded antisocial behavior as more legitimate than did females, $sr^2 = .013$, $p < .001$.

The tracking by attachment security interaction term was significant, and to interpret the finding a simple slopes analysis was carried out as suggested by Aiken and West (1991) and by Holmbeck (2002). According to the simple slopes test, the negative association between tracking and antisocial beliefs was greater when attachment security was high, $\beta = -.10$, $p < .01$, than when it was low, $\beta = -.05$, $p < .02$. There was also a significant, albeit small ($sr^2 = .001$), curvilinear effect for tracking, though the increment in variance explained by the quadratic term over the linear term was extremely small, and thus we did not interpret the result any further.

The interaction between perceived monitoring knowledge and activity level was also significant (see Figure 1) and the simple slopes test revealed that the relation between monitoring knowledge and antisocial beliefs was greater when activity level was high, $\beta = -.29$, $p < .01$ than when it was low, $\beta = -.22$, $p < .01$.

The interaction between gender and monitoring knowledge was not statistically significant, $p = .75$, but attachment security was significantly moderated by gender, $p < .01$, as shown in Figure 2. The simple slopes test indicated that the relation between attachment security and antisocial beliefs was stronger for males, $\beta = -.26$, $p < .01$, than females, $\beta = -.13$, $p < .01$.

As hypothesized, age and perceived monitoring knowledge interacted in the prediction of antisocial beliefs in that the association between monitoring knowledge and antisocial beliefs was stronger for younger, $\beta = -.31$, $p < .01$, than for older adolescents, $\beta = -.21$, $p < .01$ (see Figure 3a). Age interacted with attachment security as well. The simple slopes analysis indicated that the relationship between attachment security and antisocial beliefs was larger for younger, $\beta = -.22$, $p < .01$, than for older adolescents, $\beta = -.16$, $p < .01$ (see Figure 3b).

Mediation Analysis: Attachment Security Mediated by Monitoring Knowledge

The hypothesis that the relationship between attachment security and antisocial beliefs would be partially mediated by perceived monitoring knowledge was supported. The data were initially analyzed according to Baron & Kenny's (1986; see also Holmbeck, 1997) model, in which four conditions must be fulfilled in order for a mediational hypothesis to be

supported: (1) the predictor must be significantly related to the mediator, (2) the predictor must be significantly related to the outcome, (3) the mediator must be significantly related to the outcome, and (4) the relationship between the predictor and the outcome must be significantly reduced when the relationship between the mediator and the outcome is statistically controlled. All of these conditions were fulfilled (see Table 3). Employment of Shrout & Bolger's (2002) technique for calculating the reduction in variance accounted for by the predictor after the mediator has been included in the equation compared to when it was not controlled revealed a 37% reduction. Furthermore, a subsequent Sobel Test (Preacher & Leonardelli, 2006) indicated this decrease in variance accounted for by attachment security was significant, $Z = 19.75, p < .001$.

Discussion

The results supported our prediction that adolescent perceptions of attachment security and parental monitoring would be independently associated with adolescent-reported antisocial beliefs, though as expected these relations were conditional, moderated by temperament, age, and gender. Whereas the monitoring knowledge variable accounted for the largest amount of unique variance in antisocial beliefs (4.9%), attachment security was also a significant predictor, uniquely accounting for the second-highest amount of variance (2.3%). This finding is consistent with the research of Vitaro et al. (2000), who reported significant zero-order correlations linking both monitoring and attachment to antisocial beliefs, however the present study provides additional evidence of unique, additive relations. From a theoretical standpoint, it is interesting that variables representing the two major dimensions of parenting—parental control and the parent-child relationship—are independently related to adolescent beliefs about antisocial activities. Although additional research is required to document the precise mechanisms accounting for these relations, and to determine the causal direction, the results are at least consistent with our predictions that parental monitoring may reduce antisocial beliefs by facilitating consistent discipline and regulating involvement with antisocial peers, whereas attachment may enhance the adolescent's acceptance of parental values that discourage antisocial behavior.

We also found evidence consistent with our prediction that the inverse link between attachment security and antisocial beliefs was partially mediated by youth perceptions of parental monitoring knowledge. Thus, although direction of causation is ambiguous in a cross-sectional design, this evidence is concordant with the prediction that a secure attachment relationship characterized by trust, communication, and a low level of alienation would provide a context for adolescents to self-disclose information about their activities, whereabouts, and friends. This in turn would provide parents with the knowledge necessary to use appropriate discipline strategies (e.g., privilege removal) to underline the inappropriateness of antisocial behavior, and to restrict access to antisocial peers who might otherwise model and reinforce the acceptability of antisocial activities. Such a process should enhance reinforcement contingencies that support the learning of prosocial rather than antisocial values, thereby reducing antisocial beliefs. This finding extends previous research by Kerns and colleagues (2001), whose sample involved younger children (Grades 3 to 6), in demonstrating that secure attachments appear to facilitate monitoring for parents of adolescents, despite normative changes in the parent-adolescent relationship that might make this more challenging, particularly adolescent demands for greater autonomy (Steinberg & Silk, 2002). It should be noted, however, that the link between attachment security and antisocial beliefs is only partially mediated by monitoring knowledge, with attachment security accounting for 2.3% of the variance in antisocial beliefs independent of its relation to parental monitoring. Therefore, these data suggest the possibility of there being a direct pathway between attachment security and beliefs about antisocial behavior in addition to the indirect route implied by the mediator model. As stated earlier, we suggested that adolescents in secure attachment relationships characterized by trust, communication, and low alienation

would be inclined to accept parental moral messages. This may be attributable to securely attached youth caring about pleasing their parents and not embarrassing them with their behavior, in accord with previous empirical and theoretical work in this area (Grusec, 2002; Eisenberg & Valiente, 2002; Vitaro et al., 2000).

Another notable result was the major difference between parental tracking and parental monitoring knowledge in the magnitude of their relations with antisocial beliefs. The linear tracking term accounted for only .2% of the variance in antisocial beliefs, whereas monitoring knowledge predicted a comparatively large 4.9%. Consistent with the research of Kerr and Stattin (2000), this finding suggests that it is critical to distinguish what a parent knows about an adolescent's activities (i.e., monitoring knowledge) from the means used to obtain this knowledge, in this case asking questions (i.e., tracking). If a parent does not have accurate information about inappropriate activities or worrisome companions, monitoring activities may not provide a foundation for applying consistent discipline or diverting adolescents from antisocial peers. In light of previous research on parental monitoring by Kerr and Stattin (2000), parents should consider using other means to obtain monitoring-related information instead of asking, such as encouraging self-disclosure.

As stated previously, the relations of adolescent-reported attachment and monitoring with antisocial beliefs were conditional upon several factors, including temperament, gender, and age. Specifically, parental monitoring knowledge was more strongly associated with beliefs about antisocial behavior when adolescents were high in activity level, in accord with the results of Colder et al. (1997). Adolescents high in activity level are less able to self-regulate their behavior and may therefore benefit to a greater extent from external regulation by parents. As stated previously, parental monitoring knowledge affords parents opportunities to regulate involvement with deviant peers and to provide clear feedback by means of consistent discipline as to the appropriateness or inappropriateness of various activities. For these particular adolescents, parental monitoring may play a critical role in reducing opportunities for involvement with antisocial peers or in deviant behavior, which in turn may lessen their exposure to modeling or reinforcement that could foster antisocial beliefs. The temperament dimension of approach/withdrawal differed from that of activity level in not moderating the link between monitoring knowledge and antisocial beliefs, indicating that this relation may depend more on the adolescent's ability to self-regulate behaviour (e.g., a high activity level) than on reactivity to novelty or potentially rewarding stimuli (i.e., approach orientation). However, it should be noted that, as predicted, both activity level and approach/withdrawal were independently associated with antisocial beliefs, with each temperament variable accounting for approximately 1% of the variance, though the effect size for approach/withdrawal fell just shy of the level that we selected to indicate that the relation was of a meaningful magnitude.

In contrast to the results for parental monitoring and to our predictions, parent-adolescent attachment did not interact with temperament. The present study differs in several important ways from previous research in which the relation between attachment and the internalization of parental values was moderated by child fearfulness (Kochanska, 1995; 1997), which may account for the discrepant results. In particular, key differences include examining adolescents as opposed to toddlers, measuring attachment using a self-report rather than a parent-rated measure, assessing antisocial beliefs using a self-report questionnaire instead observing compliance to maternal demands, and examining temperament dimensions pertaining to approach-avoidance and activity level rather than fearfulness.

In accordance with our predictions, larger relations with antisocial beliefs were observed with younger adolescents for both perceived monitoring knowledge and attachment security. In the case of parental monitoring we expected that parents would externally regulate the behavior of younger adolescents more than older ones because it is normative for adolescents to expect greater autonomy as they grow older, and that the lessening of parental restrictions would reduce the potential for monitoring to influence youth choices regarding

friends and activities, thereby diminishing parents' ability to shield their children from social contexts in which modeling and reinforcement processes would present antisocial behaviour as an acceptable activity (Kerr & Stattin, 2000; Rubin et al., 2006). We also anticipated that the normative growth in adolescent friendships and romantic relationships would result in parents becoming just one of several individuals with whom the adolescent has a relationship characterized by closeness, intimacy, and emotional and instrumental support, and that the potential influence of mother-adolescent attachment would wane accordingly over the adolescent period (Bouchev & Furman, 2003; Brown & Klute, 2006; Steinberg & Silk, 2002). Moreover, given that relationships with friends and romantic partners are voluntary, and are therefore susceptible to dissolution should disagreements arise, an adolescent may be more swayed to conform to the belief systems of friends and romantic partners than those of parents should there be a discrepancy between the two, in order to better fit in or to preserve relationships that are inherently less stable (Laursen, 1998). However, although links between parenting and antisocial beliefs were weaker for older adolescents, it is important to note that they were still statistically significant. This suggests that parents continue to play an important role in their lives, despite the increase in demands for adolescent autonomy and independence.

The findings were partially consistent with our hypothesis that gender would moderate link between the two dimensions of parenting and adolescent beliefs about antisocial behaviour, given the greater likelihood of male involvement in antisocial behavior (Marini et al., 2006; Piquero et al., 2005; Salmivalli et al., 2000). Unexpectedly, we found that attachment, but not parental monitoring, interacted with gender, with insecure attachments to mother putting males at greater risk than females for endorsing antisocial beliefs. This attachment by gender interaction is consistent with many previous studies showing gender differences in the links between attachment and various psychosocial outcomes, (Leaper, 2002). In light of the interactions that we observed between parenting and gender, the inclusion of males and females in the present study represents a unique contribution, in that much previous research relating to antisocial beliefs has dealt primarily with males (e.g., Silverberg et al., 1998; Vitaro et al., 2000).

Limitations and Future Research

An important limitation of the present study is its cross-sectional research design, which precludes causal inferences. Although we have presented evidence consistent with predictions that parental monitoring and attachment security, moderated by temperament, age, or gender, are associated with adolescents' antisocial beliefs, it is important to note that one cannot ascertain from these data whether it is more difficult to monitor or develop a secure relationship with youth whose beliefs are more antisocial, or whether monitoring and high attachment security promotes less antisocial beliefs. The employment of self-report questionnaires is another limitation, given the potential for social desirability and single-informant biases. However, researchers have stated that self-report questionnaires provide a critical perspective on parenting, as authors have suggested that it is the adolescents' subjective experience of the parenting they receive, and not the actual parenting, that is most strongly related to adjustment (e.g., Cottrell, Li, Harris, D'Alessandri, Atkins, Richardson, et al., 2003; Gray & Steinberg, 1999). In addition, it would be difficult to measure antisocial beliefs using a methodology other than self-report. Moreover, self-reports have been used extensively with adolescents and this methodology appears to yield reliable and valid results (e.g., Crick & Bigbee, 1998). Caution should also be exercised in generalizing the present results to populations with greater ethnic diversity, as the region of Ontario, Canada that was sampled is more ethnically homogenous than larger urban centres. Finally, although regression analyses were deemed appropriate for the present study because of their suitability for analyzing interactions involving continuous variables, a limitation of this method of analysis is that it does not address the nesting of students within classrooms and schools.

In future, longitudinal studies would be useful for investigating causal directions and developmental changes in the relationships. Furthermore, it would be of interest to use mediator models to test the theoretical mechanisms that we proposed to explain how parental monitoring and attachment security are linked to antisocial beliefs. Finally, it would be of interest to extend the present research by incorporating a measure of antisocial behaviour into a broader model, and to consider socialization agents other than parents, such as friendships with antisocial peers.

Conclusion and Implications

The results supported our hypothesis that constructs representing the two major dimensions of parenting—parental monitoring and attachment security—would be associated with adolescent beliefs about antisocial behavior. Furthermore, several significant interaction terms indicated that the relations between parenting and antisocial beliefs are conditional upon adolescent temperament, gender, and age. Finally, attachment and parental monitoring were inter-related, with monitoring partially mediating the negative association between attachment and antisocial beliefs.

The present findings may inform practitioners who employ parent-focused interventions for the treatment or prevention of antisocial behaviour, such as the Incredible Years Training Series (Webster-Stratton & Reid, 2010). Beyond the standard aspects related to the use of praise and discipline techniques, this program has components pertaining to the enhancement of the parent-child relationship, parental monitoring, parental communication skills, and family problem-solving, all of which are related to study variables in the present research. Our results, in combination with previous research (e.g., Stattin & Kerr, 2000; Kerns et al., 2001; Vitaro et al., 2000), suggest some discussion points that may be usefully incorporated into these program components. For example, in programs targeting parents of adolescents, one could discuss the benefits of increasing trust and communication in the parent-adolescent relationship to enhance monitoring knowledge, and how both monitoring knowledge and secure attachment relationships are related to adolescents' moral beliefs about antisocial behaviour. We hope the present study will stimulate further research and discussion along these lines.

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Table 1

Means, Standard Deviations, and Zero-Order Correlations

	1. 8	2.	3.	4.	5.	6.	7.	
Mean	15.70	---	1.93	1.46	3.02	2.33	3.02	1.96
SD	1.39	---	.56	.43	.55	.82	.58	.55
1. Age	---	.01	-.07***	-.02	.00	-.02	.05***	.01
2. Gender		---	.14***	.12***	.07***	-.01	.06***	-.18***
3. Monitoring Knowledge			---	.44***	.43***	-.11***	.13***	-.40***
4. Tracking				---	.29***	-.06***	.13***	-.25***
5. Attachment Security					---	-.23***	.14***	-.35***
6. Activity Level						---	.08***	.18***
7. Approach							---	-.16***
8. Antisocial Beliefs								---

***p < .001, two-tailed.

Note. For gender scoring, male = 1 and female = 2.

Table 2

Hierarchical Multiple Regression Analysis Predicting Antisocial Beliefs From Parenting, Temperament, Gender and Age.

Predictor	R ² Δ	β	sr ²
Step 1	.236***		
Age		-.01	<.001
Gender		-.12***	.013 ^θ
Monitoring Knowledge		-.27***	.049 ^θ
Tracking		-.05***	.002
Attachment Security		-.17***	.023 ^θ
Activity Level		.11***	.012 ^θ
Approach/Withdrawal		-.10***	.009
Step 2	.010***		
Tracking ² (test for curvilinearity)		.05**	.001
Tracking X Attachment Security		-.04**	.001
Activity Level X Monitoring Knowledge		-.04**	.001
Activity Level X Attachment Security		.01	<.001
Monitoring Knowledge X Approach		.02	<.001
Attachment Security X Approach		.01	<.001
Gender X Monitoring Knowledge		.00	<.001
Gender X Attachment Security		.06***	.003
Age X Monitoring Knowledge		.17***	.001
Age X Attachment Security		.16***	.001
Step 3	.000		
Tracking ² X Attachment Security		.03	<.001
Total R ²	.246***		
n	7135		

Note. The β value shown here is the value at the point at which the predictor was entered into the equation.

p<.01. *p<.001. ^θsr²≥.01 (main effects only).

Table 3

Hierarchical Multiple Regression Analysis of Monitoring Knowledge as a Mediator of the Link between Attachment Security and Antisocial Beliefs

	R ² Δ	B	sr ²
Regression 1.			
Age		-.03	.005
Gender		.12	.011
Attachment Security		.43***	.180
Regression 2.			
Age		.00	<.001
Gender		-.08***	.024
Attachment Security		-.33***	.114
Regression 3.			
Age		-.01	<.001
Gender		-.07***	.015
Monitoring Knowledge		-.38 ***	.146
Regression 4.	.069***		
Age		.00	<.001
Gender		-.07***	.015
Monitoring Knowledge		-.29***	.069
Attachment Security		-.21***	.037

***p<.001, two-tailed

Note. In regression 1, outcome variable = monitoring knowledge. In regressions 2, 3, & 4, outcome variable = antisocial beliefs.

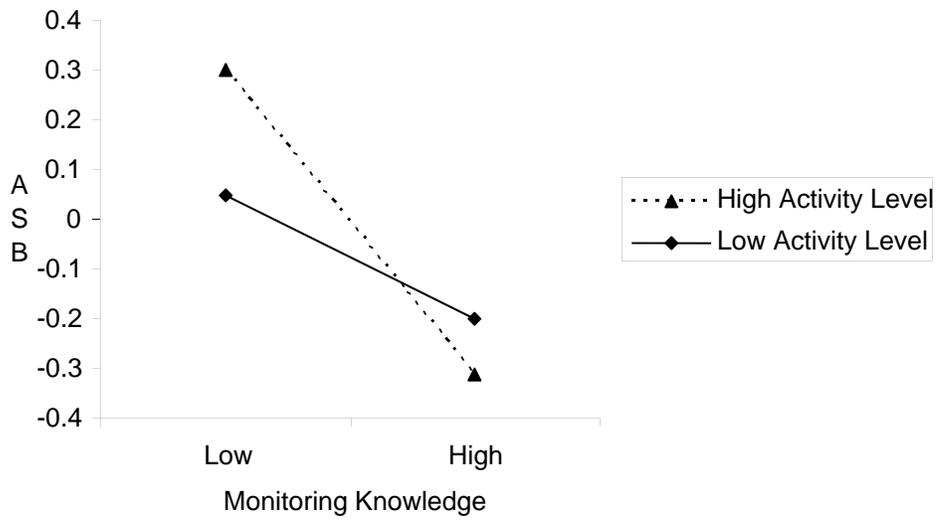


Figure 1. Plot of monitoring knowledge moderated by activity level interaction in the prediction of antisocial beliefs.

Note. ASB = antisocial beliefs

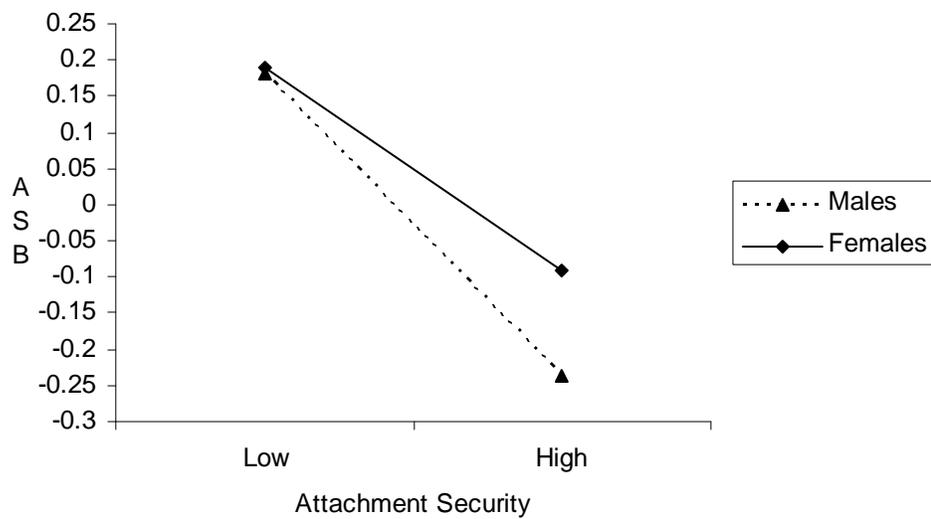
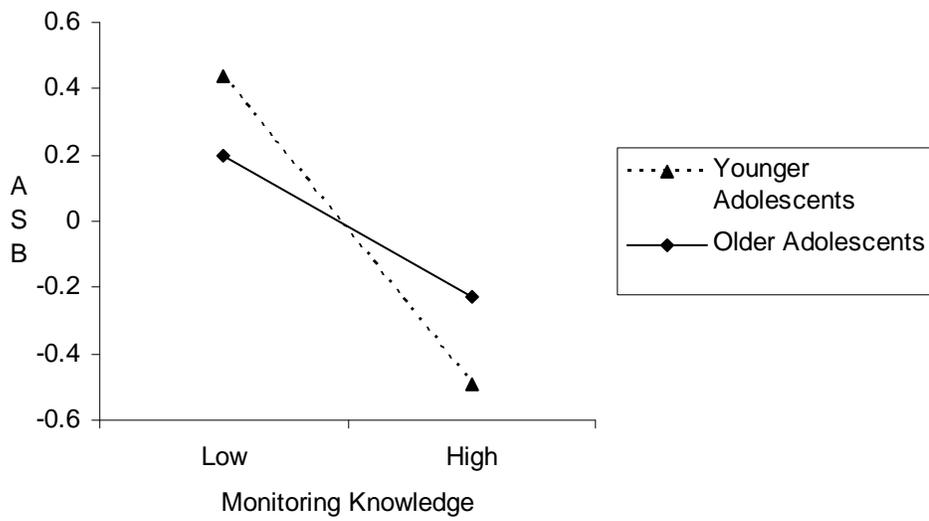


Figure 2. Plot of attachment security moderated by gender interaction in the prediction of antisocial beliefs.

Note. ASB = antisocial beliefs

(a)



(b)

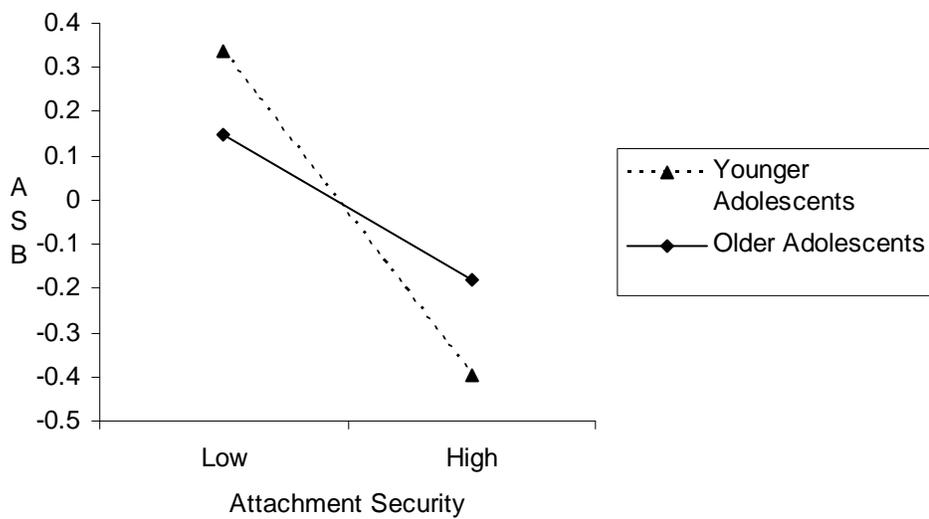


Figure 3. Plots of (a) monitoring knowledge moderated by age interaction, and (b) attachment security moderated by age interaction, in the prediction of antisocial beliefs.

Note. ASB = antisocial beliefs

Acknowledgement

The research reported in this manuscript was supported by a grant from the Social Sciences and Humanities Research Council of Canada to The Youth Lifestyle Choices Community-University Research Alliance (YLC-CURA). We gratefully acknowledge the support we received from Teena Willoughby and Heather Chalmers, co-directors of the YLC-CURA, as well as the schools, parents, and participants involved with the study. Finally, we thank the editors and two anonymous reviewers for their helpful comments on an earlier version of this manuscript.