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# The Intervening Role of Relational Aggression between Psychological Control and Friendship Quality

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## Abstract

*This study investigated the associations among psychologically controlling parenting, relational aggression, friendship quality, and loneliness during adolescence. A model was proposed in which relational aggression plays an intervening role in the relations between both parental psychological control and friendship outcomes. In a sample comprised of middle adolescents and their parents, process analyses revealed that psychological control (indexed by parent and adolescent reports) positively predicted adolescents' self-reported relational aggression that, in turn, negatively predicted friendship quality and positively predicted loneliness. The model held for both mothers and fathers and was not moderated by adolescent gender. The discussion focuses on possible mechanisms explaining the relations among psychological control, relational aggression, and friendship outcomes.*

*Keywords:* parenting; psychological control; relational aggression; friendship; loneliness

## Introduction

Current research on children's social development in general, and on the development of aggressive social behavior in particular, has witnessed an upsurge in interest in the construct of relational aggression (Crick et al., 1999; Underwood, Galen, & Paquette, 2001). One important reason for this increased research attention is that relational aggression, unlike physical aggression, is at least as common in girls as it is in boys (Crick et al., 1999). Relational aggression refers to behaviors that inflict social harm on others and is used by children who intend to damage their peers' relationships by such means as social exclusion, gossiping, and threatening to end the friendship (Crick, 1996; Crick & Grotpeter, 1995). Relational aggression differs from physical aggression in that the former may be expressed in a more subtle or manipulative fashion; for instance, by giving a friend the 'silent treatment' until he or she gives in to a demand or to a request.

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Notably, relational aggression has also been labeled *indirect* or *social aggression* (Underwood et al., 2001). There is growing consensus that these terms refer to the same basic construct, although slight definitional differences do exist (Crick et al., 1999).

Research has shown that both the use and the experience of relational aggression have detrimental consequences for children's social functioning, such as peer rejection, social exclusion, and loneliness (Crick et al., 1999). Unfortunately, this research has primarily addressed the role of relational aggression during the preschool years and middle childhood, whereas far less attention has been devoted to the impact of relational aggression on adolescents' social development (Crick et al., 1999). In addition, research is only now beginning to explore the (parental) antecedents of children's and adolescents' relational aggression (Nelson & Crick, 2002; Werner & Nixon, 2005). The present study aims to contribute to the extant literature by examining parental psychological control as an antecedent of adolescents' use of relational aggression and by examining how relational aggression affects the quality of adolescents' friendships. Specifically, we proposed and tested an integrated model in which psychological control is related to impairments in adolescents' friendships through the use of relational aggression.

### **Psychological Control and Relational Aggression**

Parental psychological control refers to a rearing style characterized by the excessive use of techniques that intrude upon the child's psychological world (Barber & Harmon, 2002; Barber, 1996). Psychologically controlling parents rely on intrusive and manipulative strategies such as guilt induction, shaming, and love withdrawal to make their child comply with their expectations. Psychological control has been shown to be predictive of maladjustment and internalizing problems (e.g., depression, anxiety, and loneliness) in both children and adolescents (e.g., Barber & Harmon, 2002; Soenens, Vansteenkiste, Luyten, Duriez & Goossens, 2005).

In the present research, we hypothesized that parents' use of psychological control may facilitate their adolescents' use of relational aggression in their friendships. This hypothesis fits with a social-learning perspective, which suggests that the parent-child relationship functions as a model for children's relationships with their friends. Children are likely to adopt relationally aggressive strategies in their friendships when they are exposed to intrusive or manipulative behaviors by their caregivers (Nelson & Crick, 2002). For instance, if parents are less responsive when their children fail to meet certain standards, children may engage in similar behaviors in their own friendships. Thus, based on social-learning principles, children of psychologically controlling parents are expected to engage in manipulative and intrusive strategies (e.g., relational aggression) with their friends, behaviors that parallel the strategies their caregivers used toward them (Nelson & Crick, 2002; Nelson, Hart, Yang, Olsen & Jin, 2006).

In spite of these theoretical arguments, research documenting the relations between psychological control and relational aggression has yielded mixed results and, moreover, has been mainly limited to preschool-aged children. Nelson and Crick (2002), for instance, found that paternal, although not maternal, psychological control was significantly associated with relational aggression among third-grade European-American girls. In a sample of Chinese preschool children, Nelson et al. (2006) found a positive association between parents' combined level of psychological control and girls', although not boys', relational aggression. Yang, Hart, Nelson, Porter, Olsen, and Robinson (2004) found that both maternal and paternal psychological control were

predictive of relational aggression in Chinese preschoolers, although maternal psychological control only predicted relational aggression in girls. Hart, Nelson, Robinson, Olsen, and McNeilly-Choque (1998) did not find any evidence for an association between psychological control and relational aggression among Russian preschool children. To date, only one study has examined the relation between psychological control and relational aggression during adolescence. In a sample of predominantly European-American early adolescents, Loukas, Paulos, and Robinson (2005) found a positive association between maternal psychological control and relational aggression, but they did not examine paternal psychological control.

The relative lack of consistent and strong relations between psychological control and relational aggression obtained in past research is surprising. One explanation for this may be that most studies have used parental reports of psychological control, which may not provide the most valid data. Sessa, Avenevoli, Steinberg, & Morris, (2001), for instance, found that parental reports of psychological control were less strongly related to observer reports, relative to children's reports. It has also been argued that parents tend to be biased toward presenting a favorable image of their own child-rearing behavior (Schwarz, Barton-Henry, & Pruzinsky, 1985). Contrary to the studies relying on parental reports, Loukas et al. (2005) relied on children's reports of the parenting constructs. However, an exclusive reliance on children's reports has limitations of its own, because any significant finding may be due to shared method variance. Therefore, and in line with suggestions made by Schwarz et al. (1985), the present study relied on both parental and children's reports of psychological control and used both reports as indicators of the same underlying construct in order to obtain a more valid estimation of the true level of psychological control. Similarly, we used both a self-report and a peer nomination instrument (i.e., an instrument that involves adolescents within classes nominating peers who fit a number of behavioral descriptors of relational aggression) to assess relational aggression with the aim of modeling both as indicators of the construct of relational aggression.

In addition to extending previous research by obtaining multiple informants of psychological control, we also focused on an under-studied age group in this domain (i.e., adolescents). We believe that studying the relation of psychological control to relational aggression among adolescents is important because both constructs are particularly salient during this age period (Barber, 1996; Yoon, Barton, & Taiariol, 2004). Although parental psychological control is thought to create a vulnerability to maladjustment at any age period, children may be particularly sensitive to intrusive parenting during adolescence, an age period characterized by increased needs for independence (Barber, 1996; Hill & Holmbeck, 1986). In addition, adolescence is characterized by changes in both cognitive and social domains that may result in a more frequent and sophisticated use of relational aggression (Yoon et al., 2004). For instance, during adolescence, friendships become more exclusive and intense, and involve more intimate sharing and disclosure (Hill & Holmbeck, 1986). At the same time, adolescents have developed the cognitive abilities that are necessary to engage in the covert and manipulative behaviors that often characterize relational aggression (Yoon et al., 2004). Not surprising, then, relational aggression is hypothesized to escalate during early and middle adolescence (Werner & Nixon, 2005). Given the heightened salience of both parental psychological control and relational aggression during adolescence, this developmental period was considered to be highly relevant for the study of the relation between psychological control and relational aggression.

## **Relational Aggression and Social Functioning**

Although relational aggression is typically expressed in a more covert or subtle fashion than physical aggression, research has demonstrated that it yields social and personal costs that are comparable to those associated with physical aggression (see Crick et al., 1999, for an overview). Moreover, the negative outcomes associated with relational aggression are not limited to the victims of relational aggression, but also are experienced by the aggressors themselves. It has been found, for instance, that relationally aggressive children display more externalizing problems (Crick, 1997; Prinstein, Boergers, & Vernberg, 2001), are more frequently rejected by peers (Crick, 1996; Tomada & Schneider, 1997; Werner & Crick, 1999), and, perhaps as a consequence thereof, report more loneliness and depressive feelings (Crick & Grotpeter, 1995; Crick, 1997). Seemingly in contrast to these findings, it has also been shown that relational aggression is positively related to perceived popularity during adolescence (Rose, Swenson, & Waller, 2004). It is important to note, however, that adolescents who are perceived to be popular by their peers are not necessarily well-liked (Rose et al., 2004). Hence, although the use of relational aggression may be functional in boosting one's popularity, these gains in social status do not go hand in hand with an increase in the *quality* of social relationships.

Whereas initial research on relational aggression focused on children's general functioning and their functioning in the broader peer context (e.g., popularity or social acceptance), recent research has explored the impact of relational aggression on children's adjustment in more exclusive and dyadic relationships such as friendships (Crick & Nelson, 2002; Grotpeter & Crick, 1996) and romantic relationships (Linder, Crick, & Collins, 2002). Grotpeter and Crick (1996), for instance, reported that relationally aggressive middle school children experienced higher levels of conflict and jealousy in their relationships with their best friends. Similar to the studies on psychological control and relational aggression, however, this research has been limited to preschool and middle-childhood age groups (Crick et al., 1999). A second important aim of the present study, therefore, was to further examine the associations between relational aggression and the quality of friendships during middle adolescence.

Most of the studies cited in the preceding paragraphs are cross-sectional in nature and, as such, do not allow for inferences about the direction of effects in the association between relational aggression and social adjustment. A number of longitudinal studies did address the assumption that relationally aggressive behavior is detrimental to subsequent social adjustment. It has been found, for instance, that relational aggression predicts increased levels of peer rejection (Crick, 1996; Werner & Crick, 2004) and decreased social preference (Zimmer-Gembeck, Geiger & Crick, 2005). Although some of these studies also found some evidence for bidirectional relations between relational aggression and social outcomes (e.g., Zimmer-Gembeck et al., 2005), in the present study relational aggression was modeled as a predictor (rather than as an outcome) of social adjustment because this is in line with the prevailing direction of effects assumed and observed in research on aggression (Crick, 1996).

Specifically, we examined relational aggression in relation to a set of indicators of the quality of adolescents' friendships, such as companionship, support, felt security, and closeness (Bukowski, Hoza, & Boivin, 1994). By definition, relationally aggressive children inflict harm on their friends' interpersonal relationships when their friends do not behave in accordance with the children's personal wishes. Hence, the support and companionship within a friendship in which relational aggression is used

is conditional and manipulative, which most likely gives rise to feelings of distrust, resentment, and alienation in the friendship (Grotpetter & Crick, 1996), and thus is likely to undermine the quality of the relationship.

We also examined adolescents' feelings of loneliness as an outcome of relational aggression. Loneliness has been defined as a negative emotional response to a discrepancy between desired and achieved levels of social contact (Peplau & Perlman, 1982) and has been found to predict general maladjustment, particularly internalizing problems (e.g., Goossens & Beyers, 2002). To the extent that relationally aggressive adolescents tend to be rejected by their peers, they are likely to encounter difficulties in establishing close and satisfying friendships and, hence, are likely to experience feelings of loneliness.

### **Psychological Control, Relational Aggression, and Friendships: An Integrated Model**

As noted earlier, several studies have examined the hypothesized relations either between psychological control and relational aggression, or between relational aggression and friendship outcomes. The present study differs from previous research in its aim to test an integrated model that posits relational aggression as an intervening variable in the relation between psychological control and adolescents' functioning in friendships. A number of studies have documented empirical evidence on the direct link among psychological control and indicators of social development. For instance, children of psychologically controlling parents have been found to report higher levels of loneliness (Soenens, Vansteenkiste, Duriez, & Goossens, 2006) and lower levels of peer social support (Karavasilis, Doyle, & Markiewicz, 2003). Given that psychological control is thought to predict relational aggression and that relational aggression is thought to predict social maladjustment, we propose relational aggression as a possible pathway through which psychologically controlling parenting impairs relational functioning.

### **Gender Differences**

An important issue in research on relational aggression is the role of gender differences. Contrary to physical aggression, which is primarily evidenced among boys, girls have been found to be at least as relationally aggressive as boys (Crick & Grotpetter, 1995; Crick et al., 1999). Therefore, we examined gender differences and we controlled for possible gender effects in the proposed model. In addition, it has been argued that girls place more emphasis on relationships than do boys and that relational aggression may therefore be more detrimental to girls' social adjustment (e.g., Maccoby, 1990; Ruble & Martin, 1998; Updegraff, Thayer, Whiteman, Denning, & McHale, 2005). Therefore, we also explored whether gender would moderate relations among psychological control, relational aggression, and loneliness and friendship quality. Werner and Crick (1999) found that, despite gender differences in relational aggression and indicators of social-psychological adjustment, relationally aggressive late adolescent men were as likely as relationally aggressive women to be at risk for adjustment difficulties. Similarly, Soenens et al. (2006) found that psychologically controlling parenting was equally predictive of adolescents' maladjustment for boys and for girls. On the basis of these studies, it was anticipated that, despite possible mean-level differences in the study constructs, the structural relations among the variables would hold across gender.

## Method

### *Participants and Procedure*

Participants were tenth- to twelfth-grade students from two secondary schools in Flanders (Belgium) and their parents. Active informed consent was obtained from the adolescents. Adolescents received a form explaining the purpose and method of the study and were invited to sign this form if they were willing to participate in the study. All students agreed to participate. The adolescent questionnaires were administered during a class period. Students had approximately 45 minutes to complete the survey. In addition, passive informed consent was obtained from parents. Parents received a letter that explained the purpose and method of the study two weeks prior to the data collection and they were asked to fill out a form if they did not want their child to participate in the study. In addition, parents received a questionnaire that they were asked to fill out and to deliver to the school's principal by the time data collection would take place. A passive (rather than active) consent procedure was used because active consent procedures with parents may result in sampling biases that overrepresent well-functioning adolescents and families (Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Only two parents did not allow their children to participate, reducing the potential sample of 286 adolescents to 284 (140 boys and 144 girls). The adolescents ranged in age from 15 to 20 years ( $M = 16.93$  years;  $SD = .96$ ), and 98 percent were between 15 and 18 years of age. One hundred seventy-seven mothers (62 percent) and 140 fathers (49 percent) participated. Mothers' mean age was 45 years ( $SD = 3.75$ ) and their mean educational level was 3.92 ( $SD = 1.17$ ), indicating an average of about 15 years of education. Fathers' mean age was 47 years ( $SD = 4.51$ ) and their mean educational level was 4.01 ( $SD = 1.34$ ), also indicating an average of about 15 years of education.

To examine whether adolescents of participating parents differed from adolescents from non-participating parents on the study variables, we ran a series of independent samples *t*-tests. No significant differences were found between the two groups of adolescents on any of the study variables (all  $ps > .05$ ). In addition, no association was found between gender of the child and whether mothers or fathers participated in the study (both  $ps > .05$ ). These analyses show that the final sample of adolescents whose parents participated in the study ( $n = 177$  for the maternal data and  $n = 140$  for the paternal data) represented a non-selective subgroup of the initial sample.

### *Measures*

All questionnaires were translated into Dutch, the participants' mother tongue, according to the guidelines of the International Test Commission (Hambleton, 1994). Unless otherwise indicated, responses were made on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and scale scores were computed by taking the mean of the scale items.

*Psychological Control.* The psychological control scale—youth self report (PCS-YSR; Barber, 1996) assessed psychological control (eight items, e.g., 'My mother/father is less friendly to me if I don't see things like he/she does'). Adolescents responded to the items for both mothers and fathers, and parents responded to the items with regard to their own parenting behavior. For parent respondents, the items were slightly revised to make them amenable to parent self-report (e.g., the prior sample item was revised to 'I tend to be less friendly to my son/daughter if he/she does not see things

like I do') (see Soenens, Elliot, Goossens, Vansteenkiste, Luyten, & Duriez, 2005). Principal components analysis (PCA) on the psychological control items yielded one-factor solutions across reporters (adolescent vs. parent report) and across parent gender (mother vs. father). Percentages of explained variance ranged between 37 and 45 percent and factor loadings ranged between .49 and .75. The reliabilities for these measures (Cronbach's alpha) were .82 for adolescent report of maternal psychological control, .75 for adolescent report of paternal psychological control, .76 for mother report of psychological control, and .79 for father report of psychological control.

*Relational Aggression.* We used both a peer nomination instrument and a self-report instrument to assess relational aggression. Six items from a peer nomination instrument that was developed and validated by Werner and Crick (1999) were used (e.g., 'When angry, gives others the "silent treatment"'). One item ('When angry with same-sex peer, tries to steal that person's dating partner') was deleted from the original instrument because it was deemed less relevant to the Belgian context, as it is not characterized by a formal 'dating' system (Goossens & Luyckx, in press). The peer nomination instrument was assessed within classes. In the initial sample of adolescents ( $n = 284$ ), there were 15 classes and the number of participants within classes ranged from 10 to 25 (average class size = 19). For each item, participants were asked to nominate three classmates who best fit each description. The number of nominations each participant received from his or her classmates was summed for each item and standardized within classes. Next, a total relational aggression score was computed by taking the mean of the six standardized item scores (see Werner & Crick, 1999, for this procedure). PCA on these six items yielded a single factor explaining 74 percent of the variance. Item loadings ranged from .67 to .91. Cronbach's alpha for this measure was .92.

In addition, this peer nomination instrument was made amenable to self-report by slightly rewording the items. For instance, the original item 'When angry, gives others the "silent treatment" ' was reworded into 'When angry, I give others the "silent treatment" ' (see Loudin, Loukas & Robinson, 2003 for a similar approach). PCA on this scale revealed a single-factor solution (explaining 42 percent of the variance), with item loadings ranging from .44 to .78. Cronbach's alpha was .70.

*Friendship Quality.* Adolescents completed four subscales of the friendship qualities scale (FQS; Bukowski et al., 1994): companionship, help/support, closeness, and security. In the present study, reliability estimates ranged from .62 to .80 and these levels of reliability are comparable to the reliability estimates reported by Bukowski et al. (1994). Correlations among the four scales ranged from .55 to .67 (all  $ps < .001$ ). A PCA on the four subscales showed that a single factor (with loadings ranging from .78 to .87) accounted for the variance shared by these four subscales. Accordingly, as an index of friendship quality in the correlational analyses, an overall score was calculated by averaging the four subscales (see Markiewicz, Doyle, & Brendgen, 2001, for this procedure). In the latent path analyses, these four subscales were used as indicators of the friendship quality construct.

*Loneliness.* The state-trait loneliness scales (STLS; Gerson & Perlman, 1979) assessed adolescents' state levels of loneliness (nine items, e.g., 'During the past days, nobody really knew me'). A PCA on the loneliness items yielded a single factor explaining 44 percent of the variance. Item loadings ranged from .41 to .83. Cronbach's alpha was .83.

**Table 1. Descriptive Statistics**

Measure	<i>M</i>	<i>SD</i>	<i>n</i>	Observed range	Possible range
1. Maternal PsyCon—YSR	2.10	.74	162	1.0–4.3	1.0–5.0
2. Maternal PsyCon—PR	2.11	.61	176	1.0–3.9	1.0–5.0
3. Paternal PsyCon—YSR	2.09	.64	156	1.0–4.0	1.0–5.0
4. Paternal PsyCon—PR	2.24	.63	137	1.0–3.9	1.0–5.0
5. Relational aggression—YSR	1.80	.56	162	1.0–4.0	1.0–5.0
6. Relational aggression—PN	.00	1.00	147	–1.0–3.1	—
7. Friendship quality	4.20	.45	162	2.1–5.0	1.0–5.0
8. Loneliness	1.83	.55	162	1.0–3.8	1.0–5.0

PsyCon = psychological control; YR = youth self-report; PR = parent report; PN = peer nomination.

## Results

### *Descriptive Statistics*

Table 1 shows the descriptive statistics of the study variables. Due to missing values, scale scores could not be computed for some of the participants and, accordingly, NS varied somewhat between scales. Univariate ANOVAs indicated that gender differences were found for friendship quality ( $F(1, 160) = 12.62, p < .001$ ) and peer nomination scores for relational aggression ( $F(1, 145) = 4.55, p < .05$ ). Girls scored higher on both friendship quality ( $M = 4.31; SD = .42$ ) and peer nominated relational aggression ( $M = .04; SD = .90$ ), relative to boys ( $M = 4.07; SD = .45$  and  $M = -.24; SD = 1.06$ , respectively). In contrast, no gender differences were found for self-reported relational aggression, or for any of the other study variables.

### *Correlational Analyses*

Table 2 shows the correlations among the study variables. Mothers' and adolescents' reports of maternal psychological control were positively correlated,  $r = .43, p < .001$ , and fathers' and adolescents' reports of paternal psychological control were also positively correlated,  $r = .39, p < .001$ . The magnitude of these relations is similar to those observed in other research using parent and child reports of parental socialization (e.g., Schwarz et al., 1985). As in previous studies (e.g., Simons, Whitbeck, Conger, & Chyi-In, 1991; Soenens, Elliot, et al., 2005), the parent and adolescent reports of psychological control were used as indicators of the same underlying construct in the primary analyses. The correlation between the peer nomination assessment and the self-report assessment of relational aggression was low but significant,  $r = .22, p < .01$ . Because this correlation fell below commonly accepted levels for adequate convergence between multiple informants (around .30; e.g., Schwarz et al., 1985) we did not use them as indicators of the same underlying construct in the primary analyses.

Psychological control was positively related to self-reported relational aggression across parent and adolescent reports of psychological control and across parental

**Table 2. Correlations among Study Variables**

Measure	1	2	3	4	5	6	7
1. Gender	—	.05	.01	-.05	.17*	.27***	.11
2. PsyCon— YSR	.07	—	.39***	.28***	.07	-.06	.18*
3. PsyCon— PR	.12	.43***	—	.35***	.02	-.06	.12
4. Relational aggression —YSR	-.05	.32***	.15*	—	.22**	-.21**	.27***
5. Relational aggression —PN	.17*	.12	.11	.22**	—	-.07	.14
6. Friendship quality	.27***	-.08	.04	-.21**	-.07	—	-.36***
7. Loneliness	.11	.22**	-.03	.27***	.14	-.36***	—

*Note:* Lower diagonal: correlation matrix of the maternal data; upper diagonal: correlation matrix of the paternal data.

PsyCon = psychological control; YR = youth self-report; PR = parent report; PN = peer nomination.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

gender. In contrast, correlations between assessments of psychological control and peer-nominated scores of relational aggression failed to reach significance. Both paternal and maternal psychological control scores were positively related to adolescent loneliness, although the correlations only obtained significance for adolescent reports of psychological control. No significant correlations were found between measures of psychological control and friendship quality. Self-reported relational aggression was negatively related to friendship quality and positively related to loneliness. Again, in contrast to the self-report on relational aggression, peer nominated relational aggression was not significantly related to the friendship outcomes.

As only self-reported (but not peer-nominated) scores for relational aggression were significantly related to assessments of both psychological control and friendship outcomes, only self-reported relational aggression could be considered as a possible intervening variable in the relations between psychological control and the friendship outcomes. Accordingly, only the self-report instrument of relational aggression was included in the path analyses described further in the text.

### *Structural Equation Modeling*

Structural equation modeling (SEM) with latent variables was used to examine the hypothesis that relational aggression functions as an intervening variable between psychological control and friendship outcomes. Analysis of the covariance matrices was conducted using LISREL 8.54 (Jöreskog & Sörbom, 1996) and solutions were generated on the basis of maximum-likelihood estimation. Four latent constructs were

modeled (i.e., psychological control, relational aggression, friendship quality, and loneliness). Parent and adolescent reports of psychological control served as indicators of the psychological control construct. The relational aggression construct was defined by three parcels, each consisting of two randomly selected relational aggression items. We used the four subscales of the FQS as indicators of the friendship quality construct. Finally, in order to model loneliness as a latent variable, three item parcels were created, each consisting of three randomly selected loneliness items. See Appendix 1 for the covariances among all observed indicators for the maternal (lower diagonal) and the paternal (upper diagonal) data.

Data screening of the observed indicators indicated partial data non-normality, both at the univariate and at the multivariate level. Therefore, in all subsequent models we used the asymptotic covariance matrix between all indicators as input and inspected the Satorra-Bentler scaled chi-square (SBS- $\chi^2$ ; Satorra & Bentler, 1994). To evaluate model goodness of fit, the comparative fit index (CFI) and the root mean squared error of approximation (RMSEA) were selected. According to Hu and Bentler (1999), combined cutoff values close to .95 for CFI and close to .06 for RMSEA indicate good model fit. All analyses were performed separately for maternal and paternal psychological control.<sup>1</sup>

*Confirmatory Factor Analyses (CFAs).* In the measurement phase, we conducted a CFA for the maternal and paternal models separately ( $n = 162$  and  $n = 137$  for the maternal and paternal model, respectively). Gender was indexed by a single indicator with the error variance fixed to zero. No correlations between errors of indicators or cross-loadings were allowed. Estimation of the measurement model with 13 indicators and five latent variables (i.e., gender, psychological control, relational aggression, friendship quality, and loneliness) indicated an acceptable model fit for both the maternal (SBS- $\chi^2(56) = 84.73$ ; CFI = .97; RMSEA = .06) and the paternal (SBS- $\chi^2(56) = 79.41$ ; CFI = .97; RMSEA = .06) data. In the final measurement models, all indicators had significant ( $p < .01$ ) and moderate-to-strong loadings on the respective latent factors, ranging from .46 to .96 (mean lambda = .72) for the maternal data and ranging from .52 to .85 (mean lambda = .71) for the paternal data. In sum, reliable measurement models were obtained.

Correlations between the latent constructs indicated that psychological control was significantly related to higher levels of relational aggression, both in the maternal ( $r = .46$ ,  $p < .001$ ) and in the paternal ( $r = .59$ ,  $p < .001$ ) model. Psychological control was also positively related to loneliness ( $r = .28$ ,  $p < .001$  and  $r = .29$ ,  $p < .001$  in the maternal and paternal models, respectively), but did not relate significantly to friendship quality ( $r = -.08$ , NS in both models). Relational aggression was positively related to loneliness ( $r = .33$ ,  $p < .01$  and  $r = .34$ ,  $p < .01$  in the maternal and paternal models, respectively) and negatively related to friendship quality ( $r = -.23$ ,  $p < .05$  and  $r = -.26$ ,  $p < .01$  in the maternal and paternal models, respectively). In sum, with the exception of the non-significant relation between psychological control and friendship quality, all correlations were significant and in line with predictions.

*Structural Models.* To examine the proposed model in which parental psychological control relates to the friendship outcomes through relational aggression, structural models involving these constructs were estimated. We followed Holmbeck's (1997) recommendations to test for intervening effects. According to Holmbeck (1997), two

types of intervening effects can be distinguished; specifically, mediated effects and indirect effects. Mediation is considered to be evident when (1) there is initially a significant association between the independent (psychological control) and the dependent (e.g., loneliness) variable, and (2) this association is substantially reduced after taking account of the intervening variable (relational aggression). An indirect effect is considered to be evident when there is no initial relation between the independent and the dependent variable, but the indirect effect of the independent variable on the dependent variable through the intervening variable is significant. The Sobel (1982) test was used to assess the significance of an indirect effect in this study.

Two structural models were tested and compared. In the first model, relational aggression functioned as an intervening variable between psychological control and the two friendship outcomes (i.e., friendship quality and loneliness). In this model, psychological control was related to the outcomes through relational aggression. Next, a model was tested in which psychological control was directly related to the outcomes above and beyond the indirect effect through relational aggression. It was deemed important to test the latter model because psychological control was found to be directly and significantly related to loneliness and because we wanted to determine whether this association would disappear after taking into account the effect of the intervening variable (i.e., relational aggression). In other words, comparing these models allowed us to test whether relational aggression mediates the association between psychological control and loneliness. According to Holmbeck (1997), mediation is shown when the addition of a direct path from the independent variable to the dependent variable does not improve model fit compared to the indirect model. As indicated before, gender was significantly related to friendship quality. To control for gender differences in the integrated model, gender was allowed to correlate with each of the exogenous variables and paths were specified from gender to each of the endogenous variables.

Estimation of the first (indirect, or fully mediated) model yielded an acceptable fit for both the maternal ( $SBS-\chi^2(58) = 86.49$ ; CFI = .97; RMSEA = .06) and the paternal ( $SBS-\chi^2(58) = 81.31$ ; CFI = .97; RMSEA = .06) data. Results of both the maternal and the paternal models showed that psychological control positively predicted relational aggression that, in turn, positively predicted loneliness and negatively predicted friendship quality. It should be noted that the path from relational aggression to friendship quality was only significant in the maternal model. However, the path coefficients obtained in the maternal and paternal models were virtually identical ( $\beta = .21$  and  $\beta = .20$ , respectively). The lack of statistical significance with the paternal data may be due to the fact that the sample size was somewhat smaller. Accordingly, the analyses involving the paternal data had comparatively less statistical power than the analyses involving the maternal data, which may explain why the path from relational aggression to friendship quality only reached significance in the maternal data.

Because both maternal and paternal psychological control were significantly related to loneliness in the CFA models, we tested whether adding a direct path from psychological control to loneliness would improve the model fit compared to the fully mediated model. Consistent with a mediation hypothesis, adding a direct path from psychological control to loneliness did not result in a significantly improved model fit, neither for the maternal ( $\Delta SBS-\chi^2(1) = 1.61$ , NS) nor for the paternal ( $\Delta SBS-\chi^2(1) = 1.27$ , NS) data. Moreover, the initially significant associations ( $r = .33$  and  $r = .34$  for mothers and fathers, respectively) were reduced to non-significance ( $\beta = .14$  and  $\beta = .15$  for mothers and fathers, respectively) after modeling relational aggression as an intervening variable in the model. Because maternal and paternal psychological

control were not directly related to friendship quality, no model comparison could be executed, indicating that relational aggression played an indirect (rather than a mediating) role in the relation between psychological control and friendship quality.

Finally, we inspected the strength of the indirect relation of psychological control to the friendship outcomes through relational aggression, using the Sobel test for intervening effects. Using the maternal data, the indirect effects on both friendship quality ( $z = -2.47, p < .05$ ) and loneliness ( $z = 2.89, p < .01$ ) were significant. Using the paternal data, the indirect effect on loneliness ( $z = 2.71, p < .01$ ) was significant, but the indirect effect on friendship quality was not ( $z = -1.55, NS$ ).

In sum, for both the maternal and the paternal data, the model in which psychological control is indirectly related to the friendship outcomes provides the most parsimonious representation of the data. Moreover, the indirect effects of psychological control on the outcomes through relational aggression were significant in three of the four cases, indicating that relational aggression generally plays a significant intervening role in each of the models tested. The structural models that provide the best fit to the data are depicted in Figure 1.

*Moderation by Adolescent Gender*

To examine whether adolescents' gender moderated any of the structural relations in the proposed model, SEM multi-group modeling was used. Multi-group analysis compares a constrained model, in which the structural coefficients of the model are set equal across gender, and an unconstrained model, in which these coefficients are allowed to vary across gender. Models are compared in terms of the chi-square

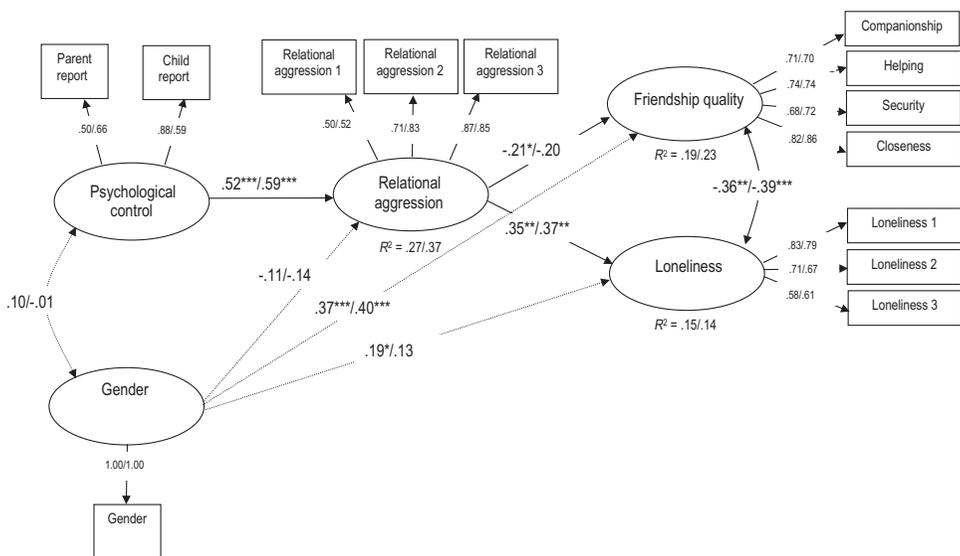


Figure 1. Structural model of the relationships between parental psychological control, relational aggression, friendship quality, and loneliness. The first coefficient shown is for the mother model (n = 162), the second coefficient shown is for the father model (n = 137). Gender was coded as 1 = male; 2 = female. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

difference corresponding to the number of degrees of freedom. A significant difference implies that the model differs significantly across gender. In contrast, a non-significant difference implies that the model is invariant across gender.

Preliminary multi-group analysis at the level of the measurement model indicated that the factor loadings in the measurement model were equivalent across gender ( $\Delta\text{SBS-}\chi^2(8) = 6.12$ , NS for the maternal data, and  $\Delta\text{SBS-}\chi^2(8) = 10.86$ , NS for the paternal data). Next, we examined whether the three main structural paths depicted in Figure 1 (psychological control to relational aggression, relational aggression to friendship quality, and relational aggression to loneliness) would be moderated by gender. Multi-group analysis showed that these three paths were not significantly moderated by gender, neither in the maternal ( $\Delta\text{SBS-}\chi^2(3) = 1.36$ , NS) nor in the paternal ( $\Delta\text{SBS-}\chi^2(3) = 2.10$ , NS) model. Together, the results clearly demonstrate that gender did not significantly moderate the relations in the proposed model.

## Discussion

The aim of this study was to contribute to the extant literature by providing data on the hypothesized antecedents (i.e., parents' psychological control) and consequences (i.e., friendship quality and loneliness) of relational aggression during middle adolescence. First, findings revealed that both mothers' and fathers' use of psychological control relate to greater use of relational aggression by their children. Second, relational aggression related to lower levels of friendship quality and higher levels of loneliness among adolescents. Finally, evidence for an integrated model was found in which adolescents of psychologically controlling mothers and fathers felt lonelier and had poorer quality friendships because they were more relationally aggressive toward peers. Each of these findings is discussed in more detail further in the text.

### *Psychological Control and Relational Aggression*

From a social learning perspective, it is argued that parental psychological control plays a significant role in the development of a relationally aggressive interpersonal style (Nelson & Crick, 2002), as children who experience intrusive and manipulative behaviors in the relationship with their parents may learn to engage in similar behaviors in their own friendships. Despite the clear theoretical basis for the relation between psychological control and relational aggression, empirical evidence has been equivocal and mainly limited to the age periods of preschool and middle childhood. To date, only one study has examined this relation during (early) adolescence. Loukas et al. (2005) found that adolescent ratings of maternal psychological control were positively related to self-reported relational aggression. Through structural equation modeling, the present study extended these findings by showing both maternal and paternal psychological control (as indexed by adolescent-report and parent-report), positively predicted self-reported relational aggression. The use of multiple informants to assess psychological control allows for greater certainty that parents' use of psychologically controlling strategies relate to adolescent use of relationally manipulative techniques with their peers. Moreover, our findings indicated that the relation between psychological control and relational aggression was replicated in the maternal and paternal models, which provides further confidence in these findings. This result is consistent with past studies demonstrating that the negative consequences of parental psychological control on adolescents' well-being and development are replicable across parental gender (e.g., Barber & Harmon, 2002).

It is important to note that the associations between psychological control and relational aggression were only obtained for adolescent self-reports of relational aggression, but not for peer nomination scores of relational aggression. At first sight, one might conclude from this finding that the association between psychological control and relational aggression is not very strong and consistent, or may even be due to shared method variance. However, an important argument against such a conclusion is that the association between psychological control and self-reported relational aggression was obtained across parent and adolescent reports of psychological control. As a consequence, this association cannot be fully accounted for by shared method variance. Rather than concluding that the association between psychological control and relational aggression is inconsistent and weak, it could be argued that there is a problem with the peer nomination assessment. Not only was the peer nomination assessment of relational aggression only weakly correlated with the self-report instrument ( $r = .22$ ), it also did not yield the theoretically expected associations with the friendship outcomes to the same extent as the self-report instrument did. Together, these findings raise some questions about the validity of peer nomination assessments within classrooms during adolescence. As adolescents age and as they interact with an increasing number of peers, their social networks expand beyond the classroom. As a consequence, an adolescent's classmates witness only a limited part of his or her interaction style and behavioral repertoire. Hence, at a certain age, adolescents themselves may become the best informants of their general use of relational aggression, which may explain why ratings of psychological control were more strongly related to self-reported relational aggression than to a peer nomination assessment of relational aggression. To the best of our knowledge, however, this is the first study during adolescence to include both a self-report and a peer nomination instrument of relational aggression and more studies (possibly also including other informants, such as teachers) are needed to draw more definitive conclusions about the validity of these different types of assessment in this age period.

Together, our findings generally lend support to the notion that, through their use of psychological control, parents model their children's use of manipulative behaviors in the children's own relationships with peers and friends. In addition to this modeling mechanism, however, adolescents' attachment security or sense of relatedness in the parent-child relationship may serve as additional (yet related) mechanisms to explain why psychologically controlling parenting relates to higher levels of relational aggression. Both attachment theory (Bowlby, 1980, 1988) and self-determination theory (SDT; Deci & Ryan, 2000) argue that people possess a fundamental need for relatedness (Baumeister & Leary, 1995) or a need to be involved in secure, supportive, and close relationships with others. To the extent that children and adolescents grow up in inconsistent or controlling parenting environments, their sense of security and authentic relatedness within the parent-child relationship is likely to be hampered. Moreover, according to attachment theory, insecurity within the parent-child relationship carries over into children's relationships with others, including peers and friends (see also La Guardia, Ryan, Couchman, & Deci, 2000). Hence, children of psychologically controlling parents may not only feel less secure in their relationships with their parents, but they may also expect that they will be rejected and conditionally accepted by their peers. This generalized expectancy most likely results in feelings of insecurity within peer relationships and friendships, which children might compensate for by using negative and aggressive behaviors toward their friends (Deci & Ryan, 2000). Relationally aggressive behaviors would then help adolescents to cope with a sense of

insecurity and with the anticipation of rejection in relationships and would serve to protect their personal status in those relationships.

Future research may examine in greater detail whether the association between psychological control and relational aggression emerges because psychologically controlling parents function as model figures, as suggested by a social learning perspective, or because they undermine a general human need for relatedness, which results in frustration and, in turn, provokes relationally aggressive behavior toward peers. Future research might also examine links between psychological control and adolescents' adoption of a socially aggressive attitude towards their siblings, which may in turn hamper the quality of their sibling relationships (see, for instance, Updegraff et al., 2005).

### *Relational Aggression and Friendship Outcomes*

A second important finding of this study is that self-reported relational aggression related to lower levels of friendship quality and to higher levels of loneliness. This finding extends previous research in samples of preschool and middle childhood children. Although this research has consistently shown relations between relational aggression and impairments in children's social functioning, the present study is among the first to establish this relation among adolescents. We believe that these findings are important because adolescence represents an age period that is hypothesized to be characterized by an increased use of relational aggression (e.g., Yoon et al., 2004) and by the development of intense, and more frequent, intimate friendships (e.g., Hill & Holmbeck, 1986). Most likely, the use of relational aggression elicits negative feelings (e.g., jealousy and resentment) within peer relationships and friendships that may result in stronger feelings of loneliness and lower levels of experienced friendship quality. An interesting avenue for future research could be to test the role of such negative emotions as mechanisms through which relational aggression gives rise to decreased feelings of friendship quality and to increased feelings of loneliness. At the methodological level, future research would do well to rely on a multi-method assessment of the friendship outcomes because at least part of the associations among relational aggression, loneliness, and friendship quality observed in our final model may be due to shared method variance.

### *An Integrated Model*

A third major aim of this study was to examine a fully integrated model in which (self-reported) relational aggression would act as an intervening variable in the relation between psychological control and the friendship outcomes. Past research has demonstrated that parenting styles impact children's social competence and peer relationships (see Ladd & Pettit, 2002; Parke & Buriel, 1998, for reviews). Specifically, with respect to psychological control, it has been shown that this parenting dimension relates positively to impairments in social functioning (e.g., Karavasilis et al., 2003; Soenens et al., 2006). However, there is a dearth of studies documenting the intervening processes between parenting and peer or friendship outcomes (Ladd & Pettit, 2002).

The present study suggests one important mechanism through which parenting and friendship outcomes may be linked. Any direct association between psychological control and loneliness disappeared after taking into account the impact of relational aggression, indicating that relational aggression *mediates* the effects of psychological control on loneliness. Although there was no significant direct association between psychological control and friendship quality, psychological control

was significantly related to friendship quality through self-reported relational aggression. As such, there is an *indirect* effect of psychological control on friendship quality through relational aggression. It should be noted that the latter indirect effect was only significant in the maternal (but not in the paternal) data. As the size of the indirect effect was virtually identical in both models, however, this discrepancy seemed likely to be due to the smaller sample size and, accordingly, to the lower statistical power in the paternal data.

Together, these findings suggest that, to the extent that psychologically controlling parents model and instigate their children's use of relationally aggressive behaviors, they put their children at risk for impairments in their social development. Besides the role of a behavioral mechanism such as relational aggression, future research may additionally look at the role of intra-personal psychological processes in the link between psychological control and friendship outcomes, such as the ability to empathize with peers' and friends' feelings (e.g., Clark & Ladd, 2000) and the degree of volition, or relative autonomy, felt within friendships (e.g., Ryan & Connell, 1989; Soenens & Vansteenkiste, 2005).

With regard to gender differences, it was found that, although girls were rated as more relationally aggressive than boys by their peers, they did not differ on self-reported relational aggression. This finding is consistent with past studies that have found that there are gender differences in peer and teacher reports of relational aggression, but not in self-reports of relational aggression (e.g., Crick & Grotpeter, 1995; Linder et al., 2002; Loukas et al., 2005). There are at least two possible explanations for this discrepancy. Girls may underreport their use of relational aggression in self-report measures or, in contrast, external raters (e.g., teachers and peers) may overestimate girls' use of relational aggression. The latter effect may be due to the fact that teachers' and peers' ratings are guided by the lay assumption that relational aggression is more typical of girls than of boys (rather than by the actual use of relational aggression by girls and boys). Future research may attempt to address this issue by explicitly assessing and controlling for external raters' lay theory on relational aggression. As in previous research, girls also scored higher than boys on the measure of friendship quality (Rose & Rudolph, 2006).

Perhaps more important than the mean-level gender differences observed, our study revealed that the structural relations among psychological control, self-reported relational aggression, and friendship outcomes generally held across adolescent gender. Thus, the results of our study are consistent with increasing evidence that relational aggression—although often viewed as a typically female feature—has a detrimental impact on the well-being (e.g., Werner & Crick, 1999) and interpersonal functioning (e.g., Crick, 1996) of both males and females. Our results are also consistent with Loukas et al. (2005), who found that associations between maternal psychological control and relational aggression were similar for boys and girls. At a more general level, the lack of moderation by gender obtained in this study meshes with evidence that psychologically controlling parenting is equally predictive of negative adjustment outcomes for males and females (e.g., Soenens et al., 2006).

#### *Directions for Future Research*

Although it is assumed in this study that parental psychological control functions as an antecedent of relational aggression, the possibility also exists that relationally aggressive children elicit more intrusive parenting. Recent longitudinal research, for instance,

suggests that psychological control does not only increase adolescent depression, but that depression also elicits higher psychological control (e.g., Barber, Stolz, & Olsen, 2005). Hence, psychological control and relational aggression may be reciprocally related, such that both reinforce and strengthen each other over time. In order to address this intriguing possibility, future cross-lagged panel research is needed. Cross-lagged longitudinal research may also shed further light on the nature of the relations among friendship quality, satisfaction of the need for relatedness, and relational aggression. Continuing the line of reasoning developed earlier, our integrated model points to the possibility that thwarted satisfaction of one's need for relatedness is both an antecedent and a consequence of relational aggression. As children of psychologically controlling parents feel less secure in their relationships with their parents and anticipate to be less genuinely accepted among their peers, they engage in relational aggression that, in turn, enhances the likelihood of experiencing poorer quality friendships that do not satisfy their need for relatedness. It seems likely that such negative friendship outcomes may in turn increase the likelihood of relational aggression, and indeed recent research has empirically documented such bidirectional effects in middle childhood (Werner & Crick, 2004; Zimmer-Gembeck et al., 2005).<sup>2</sup> Over time, adolescents of psychologically controlling parents may become trapped in a vicious and self-sustaining cycle of increasing levels of relational aggression and decreasing levels of friendship quality. In sum, a major challenge for future research is to further unravel the (possibly) transactional relations among parenting, relational aggression, and children and adolescents' social development.

### Conclusion

The findings of this study show that psychological control relates positively to adolescents' use of relational aggression that, in turn, creates a vulnerability to lower levels of satisfaction and security in friendships and higher levels of loneliness. As such, teaching parents to avoid the use of psychologically controlling practices (e.g., shaming, guilt induction, and conditional approval) may provide an important path through which relational aggression can be avoided and through which adolescents' friendship quality and social competence can be bolstered.

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## Notes

1. We chose to estimate separate models for maternal and paternal psychological control, rather than having both in the same structural model, for a number of reasons. First, we did not have *a priori* theoretical expectations about which parent would be more influential in fostering relational aggression. Rather than assessing the relative contribution of mothers and fathers in the development of relational aggression, we were more interested in replicating a process model across paternal and maternal ratings of psychological control. Secondly, there are also some methodological arguments against entering paternal and maternal psychological control simultaneously into one model. The approach of entering both variables simultaneously into the predictive model often yields contradictory, unstable, and sample-specific results (see Stolz, Barber, & Olsen, 2005 for an elaborate discussion of this problem).

2. To test the possibility that friendship outcomes precede, rather than follow, from relational aggression, an alternative model was tested that considered friendship quality and loneliness as direct outcomes of psychological control. Both friendship outcomes, in turn, predicted relational aggression. We compared the fit of this alternative model to the fit of the hypothesized model by means of Akaike's (1987) information criterion (AIC), which allows for a direct comparison of non-nested models. Models with lower AIC are preferred over models with higher AIC. Although the alternative model fit the data reasonably well (SBS- $\chi^2$  (57) = 99.93; CFI = .95; RMSEA = .07 for the maternal data and SBS- $\chi^2$  (57) = 93.06; CFI = .95; RMSEA = .07 for the paternal data), the AIC favored the hypothesized model (AIC = 152.49 and AIC = 147.31 for the maternal and paternal data, respectively) over the alternative model (AIC = 167.93 and AIC = 161.06, respectively). This was primarily due to the fact that psychological control is related to relational aggression beyond the friendship outcomes, suggesting that relational aggression is the most proximal outcome of psychological control, an outcome that related to poor friendship outcomes. However, longitudinal data are clearly needed to draw more sound conclusions about the direction of effects in the relations between relational aggression and friendship quality.

**Appendix**  
**Covariance Matrix of All Observed Indicators in the SEM-Analyses**

Indicator	1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Variance</i>	1.00	.42	.40	.42	.22	.33	.33	.56	.61	.45	.33	.64	.44
1. Gender		-.01	.00	.11	.15	.23	.22	.05	-.20	-.03	.06	.00	.01
2. PsyCon—YR	.06		.16	.00	-.04	-.05	.02	.10	.13	.14	.06	.08	.07
3. PsyCon—PR	.08	.20		.00	-.02	-.04	-.01	.10	.14	.15	.05	.02	.06
4. Companionship	.11	-.04	.02		.15	.18	.23	-.07	-.04	-.05	-.12	-.13	-.19
5. Help	.13	-.03	.00	.15		.14	.17	-.03	-.08	-.04	-.08	-.07	-.07
6. Security	.18	-.05	-.01	.16	.13		.20	-.07	-.10	-.06	-.07	-.07	-.15
7. Closeness	.19	-.01	.02	.22	.16	.17		-.03	-.11	-.06	-.06	-.04	-.15
8. Relational aggression 1	-.03	.15	.04	-.10	-.03	-.07	-.06		.26	.22	.06	.11	.11
9. Relational aggression 2	-.12	.12	.04	-.03	-.04	-.08	-.08	.23		.37	.06	.10	.16
10. Relational aggression 3	.00	.21	.09	-.06	-.03	-.05	-.06	.20	.32		.07	.12	.12
11. Loneliness 1	.11	.10	.01	-.11	-.08	-.05	-.05	.05	.07	.07		.27	.17
12. Loneliness 2	.06	.15	-.01	-.12	-.06	-.05	-.03	.10	.14	.14	.30		.19
13. Loneliness 3	.03	.07	-.01	-.19	-.11	-.15	-.13	.10	.14	.10	.18	.20	
<i>Variance</i>	1.00	.57	.35	.40	.22	.30	.32	.56	.61	.43	.35	.66	.46

*Note:* Lower diagonal: variances and covariance matrix of the maternal data (n = 162); upper diagonal: variances and covariance matrix of the paternal data (n = 137).  
 PsyCon = psychological control; YR = youth self-report; PR = parent report.

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