Published in final edited form as:

J Child Fam Stud. 2019 January ; 28(1): 140–151. doi:10.1007/s10826-018-1240-z.

Relations between Parent Psychological Control and Parent and Adolescent Social Aggression

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Abstract

Parent-child interactions and parenting behavior may be related to social aggression among adolescents, and adolescents' social aggression may relate to parents' social aggression. This study investigated (a) whether parent psychological control predicted future adolescent and parent social aggression in their own peer relationships, (b) whether parents' social aggression was related to their use of psychological control within the parent-adolescent relationship (c) whether adolescents' and parents' social aggression was associated with changes in each other's social aggression over time, and (d) change in psychological control. Participants were 174 racially/ethnically diverse parent-adolescent dyads assessed longitudinally for four years. Adolescents were approximately 15-years-old at the first time point. The adolescent sample was 52% girls and 56% identified as White, 22% as Black or African American, 16% as Hispanic, and 5% as mixed race/ethnicity. Ten percent of the parent participants were fathers. Parents self-reported their psychological control and social aggression, and their adolescents' teachers reported adolescents' social aggression. Hypotheses were tested using longitudinal structural equation modeling and a latent growth curve analysis. The hypothesized effect of parent's psychological control on parent's future aggression with their own peers was supported. Psychological control positively predicted parent aggression from T2 to T3 ($\beta = .28, p < .05$) and from T3 to T4 ($\beta = .37, p < .05$). Other hypotheses were not supported. The findings suggest that the parent-child relationship may influence the parent's functioning in their own peer relationships. Parents' peer relations seem to have important implications for their own wellbeing and the parent-child relationship.

Keywords

Aggression; Parents; Adolescents; Psychological control; Longitudinal

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Author Contributions DJM conducted the analyses and wrote the majority of the paper. SEE: collected the data and wrote portions of the introduction, methods, and discussion sections. MKU: was the principal investigator on all grants supporting this project, developed the project, collected the data, and collaborated on the writing and editing of the final manuscript.

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Texas at Dallas Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Adolescents and adults who engage in peer social aggression are at risk for a variety of adjustment problems ranging from externalizing and internalizing problems to relationship difficulties (Card et al. 2008; Ehrenreich et al. 2016; Werner and Crick 1999). Peer social aggression includes behavior enacted to cause harm to others through friendship manipulation, social exclusion, gossip, or back-stabbing, referred to as social, indirect, or relational aggression depending on the specific behaviors under study (Archer and Coyne 2005; Card et al. 2008).

Developmental origins of aggression include environmental factors (Espelage and Swearer 2010). In particular, parent-child interactions (Michiels et al. 2008) and specific parenting behaviors including psychologically controlling behaviors (Barber 1996) may be related to the development of aggression, and specifically social aggression, among adolescents. Although physical forms of aggression tend to decrease by the end of late childhood, social aggression tends to increase by early adolescence (Côté et al. 2007). It may desist as adolescents reach adulthood, but is still observed in young adult (Forrest et al. 2005) and older adult samples (Walker et al. 2000). The prevalence of social aggression during adolescence makes it an ideal developmental period in which to study social aggression.

The family is the “principal context in which human development takes place” (Bronfenbrenner 1986, p. 723), however, processes that influence and are influenced by adolescent development are not independent of each other. Different levels of the child’s environment all affect development: the microsystem, an individual’s immediate environment, the mesosystem, a second layer of environmental influence including features such as the school peer group, and the exosystem, such as parents’ relationships with their adult friends. Even contexts to which youth have limited exposure may impact their development (Espelage and Swearer 2010). For example, from an exosystem model perspective, although adolescents may have limited interaction with their parents’ peers or may be aware or witness to their parents’ relationships with friends infrequently, these external environments could affect adolescents through their impact on the parent (Bronfenbrenner 1986). In other words, although children’s social worlds may become more separated from the family as they develop into adolescents and develop more autonomy (Steinberg and Silverberg 1986), the parents’ interactions, which are in the adolescent’s exosystem, may still be influential.

Psychological control of adolescents occurs when caregivers constrain, invalidate, and manipulate adolescents’ thinking, self-expression, and emotions. Parental psychological control includes inducing guilt, love withdrawal, isolation, and shaming (Barber 1996; Barber et al. 2005). Numerous studies have found a positive association between parental psychological control and aggression among adolescents (Loukas et al. 2005; Shuster et al. 2012; Soenens et al. 2008). Among 6th and 7th grade boys and girls, maternal psychological control was positively associated with social aggression for Latino boys, but not European American boys (Loukas et al. 2005). Maternal psychological control was related to girls’ social aggression, although this relation was mediated by social evaluative anxiety. Another study of psychological control among Chinese middle and working class 7th grade boys and girls showed a positive relation between psychological control and later relational aggression

(Shuster et al. 2012). Mother and father psychological control was found to be associated with adolescent relational aggression for 10th through 12th grade boys and girls in Belgium (Soenens et al. 2008). In a meta-analysis investigating the association between parent psychological control and child and adolescent relational aggression, a significant positive correlation was observed (Kuppens et al. 2013). Another meta-analysis that investigated clusters of parenting behavior including psychologically controlling parenting found a small but significant correlation between paternal psychological control and relational aggression across studies, but the effect was not significant among mothers within the whole sample. When only adolescents 11–19 years were considered, the same effect was found for father's psychological control, and a significant association between maternal psychological control and relational aggression was reported (Kawabata et al. 2011). Whereas some researchers have found an association between psychological control and social aggression, others have not found this relation. Albrecht et al. (2007) did not find an association between psychological control and relational aggression among their community sample of 12–19-year-old Canadian mostly Caucasian boys and girls (Albrecht et al. 2007). Meta-analytic reviews of this topic suggest that the association between psychological control and relational aggression are moderate in range (Kuppens et al. 2013; Kawabata et al. 2011).

When parents use psychologically controlling strategies to discipline and control their adolescent's behavior, their children may learn the effectiveness of hostile and manipulative behavior (Kawabata et al. 2011) via learning processes (Bandura 1973, 1978), which could generalize to aggression with peers. Descriptions of psychologically controlling parenting have parallels with relational aggression (Nelson et al. 2006); in both cases an individual is purposefully victimized often in retribution for behavior, or to establish control in the relationship. Both psychological control and social aggression may involve psychological manipulation within a relationship. There is strong similarity between parental love withdrawal until a child meets the parent's expectations and an individual threatening to end a friendship with a peer if they do not comply with the individual's wishes, as was described in a study of psychological control and relational aggression among 8–10-year-olds (Kuppens et al. 2009). However, social aggression is most commonly operationalized as aggression directed at a peer, while psychological control is behavior enacted by caregivers toward children.

From the limited research on the topic, it seems that psychological control is quite stable over time as seen in a study of parents of 8–10-year-olds (Kuppens et al. 2009). In another study of middle to late adolescents, correlations between psychological control at T1 and, two years later, at T2, were medium in size (Albrecht et al. 2007). Few studies have investigated change in the construct over time, or how parental psychological control potentially affects adolescents' and parents' own outcomes across the child's adolescence.

In a study of the effect of psychological control on relational aggression among 2nd–4th graders, there were significant parent and child effects across time in a model with maternal data, and significant parent effects only for the paternal data (children's relational aggression at home did not predict change in fathers' psychological control; Kuppens et al. 2009). Another study of the longitudinal effects of psychological control on relational aggression found no effect of earlier perception of psychological control on adolescents' relational

aggression two years later, but did find an association between relational aggression at T1 and the adolescent's perception of parent's psychological control at the second time point (Albrecht et al. 2007). The authors concluded that there was more evidence for adolescent than parent effects, because adolescents' perceptions of psychological control did not impact adolescent relational aggression over time (Albrecht et al. 2007).

Reinforcement processes are also relevant for psychological control; reinforcement is an *intra*-individual variable that influences future behavior (Snyder and Patterson 1995). Parents' use of psychological control could unintentionally lead to increases in socially aggressive behaviors by developing a pattern of coercive cycles (Reid and Patterson 1989). Coercive cycles refers to an escalating process of negatively reinforced behaviors. They develop when one party's aversive behavior (e.g. the parent engaging in psychologically intrusive behaviors to get the child to end a romantic relationship) is met with the other party's own aversive response (e.g. the child excludes the parent until they accept the romantic partner). The parent and child engage in increasingly aversive behaviors, until eventually one party gives in to end the conflict (e.g. the parent acquiesces on the child continuing to date this person so the child no longer refuses to communicate their about their social life). If the child escapes the demand, this reinforces their use of this aversive behavior. Evidence suggests that engaging in these coercive cycles leads to increasing levels of aggression that, importantly, generalize to other relationships (Dodge et al. 2008). Parents' psychologically controlling behavior may lead to a coercive cycles dynamic, that leads to increases in the use of manipulative, controlling, and aversive behaviors from the child.

These coercive cycles could also reinforce the use of manipulative and psychologically controlling behaviors for parents. When parents' psychological control is reinforced by compliance (such as if their child does terminate their romantic relationship) they may learn that psychologically controlling behavior is an effective way of dealing with conflict and getting what one wants (Barber et al. 2002). Concurrently, parents who use manipulative strategies with their adolescent might also use them with their adult peers; however, it is also possible that engaging in psychologically controlling strategies with adolescents may also relate to parents' aggressive interactions with their own peers over time. This is important, because improvement (or deterioration) in a parent's relational style with their adolescent could have implications for the parent's relationships outside of the family. Further, it is possible that parents' aggression towards their adult peers could have an effect on aggression within the family.

Existing research suggests that, similar to children and adolescents, college students and older adults (55 and older) may engage in social aggression towards their broader peer groups (Walker et al. 2000; Werner and Crick 1999). Physical aggression decreases across adolescent development as indirect aggression increases (Côté et al. 2007); therefore social forms of aggression are expected to be more typical among high schoolers, but social aggression is also observed among adults. As with adolescents, peer social aggression in adulthood has been associated with psychosocial maladjustment (Walker et al. 2000; Werner and Crick 1999). Despite possible bidirectional effects, few studies have assessed the effect of parents' own aggression on their adolescent's aggression, and vice versa. In one study,

parents' relational aggression and their psychological control of their adolescent positively predicted 11–17-year-old mostly Caucasian, socioeconomically diverse boys' and girls' aggression after controlling for participant gender (Lau et al. 2016). However, the effect of parent aggression on adolescent aggression varied depending on the interaction with gender and the interaction between the three constructs. Specifically, for boys, having relationally aggressive parents who also engaged in psychological control predicted higher levels of child relational aggression than was the case for boys whose parents were high on relational aggression, but low on psychological control. Girls whose parents were low on relational aggression but high on psychological control were higher on relational aggression themselves; parental psychological control did not predict girls' relational aggression if the parents were also high on relational aggression. When girls' parents were high on relational aggression but low on psychological control, these girls also engaged in more relational aggression than parents low in both constructs. Girls whose parents were high on psychological control but low on relational aggression did not differ from girls whose parents were high on both constructs (Lau et al. 2016). Another investigation of socioeconomically diverse mostly Caucasian 5–15-year-old middle childhood to adolescent participants did not find a significant correlation between self-reported maternal relational aggression and teacher reported relational aggression (Reed et al. 2008).

Existing literature on the association between psychological control and children's or adolescents' relational aggression is limited in several ways. First, most studies are concurrent and cannot disentangle the direction of effects over time. Second, studies on these topics tend to include preschool or childhood samples (e.g. Hart et al. 1998; Kuppens et al. 2009; Nelson and Crick 2002; Nelson et al. 2006, as mentioned in Albrecht et al. 2007), and even fewer include adolescent high school samples (but see Albrecht et al. 2007 and Soenens et al. 2008). Many samples include participants of broad age ranges, but do not necessarily test for age differences within the sample. Research on parent social aggression is especially limited in that few researchers have investigated the construct among this population.

The informant who reports on psychological control and aggression may impact associations found in previous work. Youth may respond in socially desirable ways when asked to report on their own aggression (Casper et al. 2015). Most studies on the topics of interest rely on self-report measures of aggression (Kuppens et al. 2013) and many include data from a single informant (e.g. Albrecht et al. 2007), which has the potential to inflate correlations between aggression and psychological control. The inclusion of information from multiple reporters decreases the chance of spurious effects from shared method variance.

Adolescence is a period of development marked by need for autonomy (Albrecht et al. 2007; Nelson and Crick 2002), which suggests that this would be an important time to study the autonomy-inhibiting behavior of psychological control in conjunction with child outcomes. A meta-analytic review of the association of psychological control and child's relational aggression found the association to be stronger during adolescence as compared to the elementary school period (Kuppens et al. 2013). These theoretical and empirical factors suggest that longitudinal, bidirectional research is needed to examine parent and child

effects during adolescence on each other's aggression, and the effect of psychological control on aggression.

This study investigated the relations between psychological control and adolescent and parent social aggression over four years. The guiding questions for this study were: Does psychological control predict future adolescent and parent aggression? We predicted that due to parents' modeling of coercive problem-solving strategies when using psychological control, adolescents would increase their aggression in association with psychological control. We also expected that using psychological control to control child behavior would reinforce coercive mechanisms of reaching relationship goals, which would lead to an increase in aggression by parents with their own peers over time. Does parents' aggression with their peers predict psychological control within the parent-adolescent relationship? We hypothesized that due to parallels between aggressive behavior toward peers and psychologically controlling behavior toward children (Nelson et al. 2006), that parents who engage in more aggression with peers would increase psychological control of their adolescent. Do parent and child aggression bidirectionally predict each other over time? We predicted that parents and adolescents' use of aggression toward their own peers would reinforce the other's aggression, leading to increases over time. Is there longitudinal change in parent psychological control across adolescence? Previous research suggests auto-regressive stability in psychological control. Because our study included more time points than previous research, we tested auto-regressive stability and whether there was a significant increase or decrease in the rate of change in psychological control across adolescence.

Method

Participants

This study utilized a community sample that was racially/ethnically and socioeconomically representative of the suburb of the large, metropolitan city in the southern U.S. where the participants resided. Participants included in the final sample were 174 adolescents (15–17 years old) and the parent most knowledgeable about the child's life. These participants were part of a larger longitudinal study that followed the socioeconomically and racially/ethnically diverse youth from the 3rd grade until they reached about 21 years old (Underwood et al. 2012).

In regard to the data included in this study, we included data from adolescents after they completed their 9th grade year of high school (T1) and from the next three annual assessments (T2–T4) ($M = 15.02$ years old, $SD = .51$). For clarity, we refer to this time point as 9th grade. We surveyed participants and their parents annually for three more years. The sample was approximately 52% girls and 56% identified as White, 22% as Black or African American, 16% as Hispanic, and 5% as mixed race/ethnicity. Two participants were Asian and one was Middle Eastern. Ten percent of the parent participants were fathers.

Although participants who were missing individual data points were still included in the model, the parent participant had to be the same parent for all waves in which they did participate (e.g. Dad filled out questionnaires at each time point) in order for the parent and

child data to be included in the analysis. In all, 48 dyads were not included in the analyses because the parent reporting on psychological control and parent social aggression was not consistent across time. We conducted attrition analyses to (a) investigate differences in the constructs of interest between parents and adolescents who were removed from the sample because a different parent responded at different time points, or were retained, (b) to investigate whether there were differences among the retained sample on the constructs of interest between those who no missing data and some missing data and (c) whether there were differences in the constructs and interest and demographic variables between retained participants with some missing teacher-reported data and no missing teacher-reported data.

When comparing those retained and those not retained, we found no evidence of any significant differences between the groups on the constructs of interest. We did find a marginally significant effect of those with a different parent reporting across time points (who were not included in the analyses reported in the results section) tending to have lower family income, $B = -.57, p = .046$. There was no significant difference in whether participants were removed or retained for this reason based on parent age, adolescent ethnicity (with Asian, Middle Eastern, Native American, and Mixed participants collapsed into one category due to small numbers), nor was there a significant difference based on adolescent gender. In regard to the attrition analyses based on missing teacher-report data, 56% of the sample were missing at teacher report data on at least one indicator, but only 33% were missing data on any one indicator. There were no significant differences in any of the variables of interest depending on whether there was missing teacher-reported data or no missing teacher-reported data. There was no difference in whether there was missing data based on family income, child gender, parent gender, or child ethnicity, but there was a significant difference depending on parent age; compared to families with no missing teacher-reported data, families with at least some missing data tended to have a younger parent reporter, $B = -2.33, p < .05$.

Informed consent/assent was obtained prior to each data collection from all raters. All study procedures and measures were approved annually by the National Institutes of Health and the university's Institutional Review Board.

Procedure

Parents participated in annual visits in the lab or at their homes according to their preference. During these visits they provided information about their adolescent's and their own psychosocial development and family life. After being consented by a trained graduate or undergraduate research assistant, parents completed a battery of paper/pencil assessments. Completing all questionnaires took approximately 60–90 min. Parents were compensated for their participation. At the end of each school year, adolescent participants identified a teacher who "knew them the best." These teachers were then invited to provide ratings of the adolescent participants. Since the adolescents took classes from many teachers during the high school years, we anticipated this nomination procedure would identify teachers who would likely have more knowledge about the particular student and be more knowledgeable about the adolescent's interactions with peers than a teacher with whom the adolescent had a

less significant relationship. Teachers sent their questionnaire responses directly to the research team. Teachers were compensated for their time.

Measures

Parent's psychological control—Parent's psychological control of their child was measured with the three self-report subscales based on Barber 1996 and Nelson et al. 2006. The subscales were Guilt Induction (5 items, "I tell my child all the things I have done for him/her") Love Withdrawal (3 items, "When my child hurts my feelings, I stop talking to her/him until she/he pleases me again,") and Invalidating Feelings (2 items, "I tell my child how to feel or think about things.") Items within each subscale were parceled into three indicators of parent's psychological control (Little et al. 2002). Because subscales of psychological control already existed (guilt induction, love withdrawal, invalidating feelings), items within each subscale were averaged and each subscale served as an indicator of the construct of parent's psychological control. McDonald's Omega (ω_h) was calculated using semTools (semTools Contributors 2015). At T1, $\omega_h = .67$, T2 $\omega_h = .67$, T3 $\omega_h = .68$, T4 $\omega_h = .67$. Two other subscales, Verbal Constraint and Shaming were considered for inclusion, but were removed due to low loadings on the psychological control construct, leading to poor model fit.

Adolescent's social aggression—An adapted version of the Social Behavior Scale, Teacher Version (Crick 1996) measured adolescent's aggression. Three items served as indicators of social aggression: "This student gossips or spread rumors about people to make other kids not like them." "This student gives others dirty looks, rolls her/his eyes, or uses other gestures to hurt others' feelings, embarrass them or to make them feel left out." "This student tries to turn others against someone for revenge or exclusion." At T1, $\omega_h = .89$, T2 $\omega_h = .86$, T3 $\omega_h = .89$, T4 $\omega_h = .67$.

Parent's social aggression—Parents completed the Indirect Aggression Scale-T (Forrest et al. 2005) which includes self-report questions about parents' engagement in indirect aggression among their own peers. The scale measured three forms of indirect aggression: ten items assessed Social Exclusion ("Withheld information from them that the rest of the group is let in on,") nine items measured Malicious Humor ("Done something to try and make them look stupid,") and six measured Guilt Induction ("Used my relationship with them to try and get them to change a decision.") Items from the scale were parceled into three indicators (Social Exclusion, Malicious Humor, and Guilt Induction) of parent's social aggression. Because subscales of psychological control already existed, items within each subscale were averaged and each subscale served as an indicator of the construct of parent's social aggression. At T1, $\omega_h = .78$, T2 $\omega_h = .99$, T3 $\omega_h = .78$, T4 $\omega_h = .88$.

Data Analyses

First, using a series of confirmatory factor analyses (CFAs), we tested measurement invariance over time. We began with a configural invariance model, followed by a loading invariance model, and finally a strong invariance model. Each model included the constraints of the previous model (Little 2013).

After establishing measurement invariance across time, we tested the longitudinal relations between variables using a longitudinal panel model in a structural equation modeling (SEM) framework. Covariances between variables over time were converted to regressive paths; each variable predicted itself at the following time point, along with the other two latent constructs. Residual variances of the same latent indicators were allowed to covary over time. Latent constructs were allowed to covary within time. All predictors were specified to predict all outcomes over time.

The last analysis was a growth curve analysis to test whether there was change in parent psychological control over the high school years. For this analysis, we averaged the three indicators of parent psychological control within each time point and allowed those indicators to load on the latent intercept and latent slope constructs of the growth curve model.

Analyses were run using packages lavaan (Rosseel 2012) and semTools (semTools Contributors 2015) in R version 3.2.3 (R Core Team 2015). Missing data ranged from less than 5% on parent aggression indicators to 33% on teacher reported child aggression indicators. Missing data were handled using Full Information Maximum Likelihood (FIML) while fitting confirmatory factor analyses and structural equation models. FIML has been shown to perform better at smaller sample sizes than multiple imputation (Jia et al. 2014). The Little MCAR test conducted using R package BaylorEdPsych showed that the data were missing completely at random (MCAR), $X^2(1913) = 1196.204, p = .09$.

Results

Measurement invariance across time was tested. Regular and robust model fits of invariance testing models are available in Table 1. There were some negative variances in the configural invariance model that included no equality constraints; once equality constraints were added in subsequent models, this error was no longer present. There was evidence of strong invariance across time, suggesting a similar pattern of loadings and intercepts across the four waves (Little 2013). Overall model fit was acceptable, with RMSEA in the .08 to .05 range, and CFI in the .90–.99 range (Little 2013). Covariances between latent constructs from the strong invariance model are provided in Table 2. All indicator loadings were significant at the $p < .01$ level (see Table 3). In the CFA, all constructs were significantly associated with themselves over time with the exception of T1 adolescent aggression and T4 adolescent aggression. Parent aggression and psychological control were significantly associated within each time point. The four time point longitudinal panel model is depicted in Fig. 1. Significant regressive paths are depicted in Fig. 1, but regression estimates between all constructs are available in Table 4. Paths were not compared in nested models because bi-directional paths did not emerge.

Psychological control, parent social aggression, and adolescent social aggression all showed auto-correlated stability across time. There were no significant associations between T1 predictors and T2 outcomes. Between both T2 and T3 and T3 and T4 (sophomore to junior, and junior to senior year, respectively), parent's psychological control of their adolescent was associated with parents' own aggression with peers after controlling for prior levels of

aggression (hypothesis 1), although the effect sizes were not large. Psychological control did not predict adolescent aggression over time (hypothesis 1). Together these findings provided partial support for our first hypothesis. Over time, parent aggression did not predict psychological control (hypothesis 2), nor were there significant bidirectional associations between parent and adolescent aggression (hypothesis 3).

Because of the small sample size and large number of pathways tested in our model, we applied the Benjamini-Hochberg False Discovery Rate correction to the p -values for the estimates between predictive paths. When we applied the correction with $Q = .05$, only the p -values that were originally $< .01$ were significant. This includes psychological control predicting itself between all time points and adolescent social aggression predicting itself between T2 and T3. We include this information to aid the reader's interpretation of this results.

Results of the growth curve analysis suggested that parent psychological control did not change over time. The standardized intercept for psychological control was 3.80, $p < .01$. The slope, $-.30$, was not statistically significant. The intercept varied significantly ($p < .01$), but the slope did not. The latent intercept and slope did not covary ($-.04$, $p = .87$), suggesting that an individual's starting level on psychological control in their child's 9th grade year was unrelated to change in psychological control over time.

In addition to the analyses presented in this manuscript, we additionally tested a model including adolescent reports of psychological control, but did not find that adolescent-reported psychological control predicted parent social aggression, nor any other variables in the model. There is some evidence to suggest that adolescents may have extreme feelings (Larson and Richards 1994). This, along with our lack of findings in the adolescent-reported psychological control model, led us to rely on parent-reports of psychological control, which are also commonly used in literature on parent psychological control of adolescents.

Discussion

This study investigated the longitudinal stability of parent psychological control, the association between psychological control and aggression, and bidirectional effects between parent and adolescent aggression. Psychological control predicted future parent aggression. Psychological control was associated with increases in parent's aggression from 10th to 11th and 11th to 12th grades. Longitudinally, there was auto-regressive stability for psychological control across the four time points. Further, there was not a rate of change in psychological control significantly different from zero. Other hypotheses were not supported; parental psychological aggression did not predict adolescent aggression and nor did parent aggression predict psychological control.

Parents' use of psychological control was a significant predictor of parents' own aggression towards peers over time. If psychologically controlling interactions with their adolescent are viewed as effective means of interacting with the adolescent, adults may see that aggression within their own peer relationships is a viable way of achieving goals within their peer interactions. If this is indeed true, it suggests an important advancement beyond the parent-

effect models that predominate much of the parenting research. Evidence suggests that adolescents who successfully use coercive, aggressive strategies to manage and escape their parents' demands will increase the use of these behaviors and generalize these aversive behaviors (Reid and Patterson 1989) to other contexts and relationships. The findings from this study indicate that a parallel process might be unfolding for parents. If parents view psychologically controlling behaviors as an effective means of bringing about change in their adolescent, it would not only reinforce these tactics within the parent-child relationship, but might also encourage the use of manipulative, controlling behaviors in their own peer relationships. In the current study, the perceived effectiveness or psychological control was not measured. This would be an important future direction for understanding the effect of psychological control with one's adolescent on a parent's increased aggression with his or her own peers over time.

This study was unable to provide evidence of a significant rate of change in parents' psychological control behaviors across adolescents' high school years. Adolescence is a period of significant change in the parent-child relationship, as adolescents seek greater emotional autonomy from their parents and become more peer-oriented (Steinberg and Silverberg 1986). The findings suggest that parents did not significantly decrease in the extent to which they deploy psychologically controlling parenting strategies across this developmental period. Future research should examine if consistent psychological control inhibits the developmental task of building autonomy, or is perhaps reflective of problematic parent-child relationship dynamics established during early years. An examination of parents' use of psychological control across both childhood and adolescence is an important next step, as is understanding whether intervention could impact parents' use of psychological control.

Parents' psychological control did not predict their adolescent's aggression. Although some studies have found an association between psychological control and adolescent aggression, not all have, and the effect size of this association tends to be small, especially if parental control and aggression are reported by different informants (Kuppens et al. 2013), as was the case in this study. By late adolescence, individuals may interact differently in their peer relationships than they do in family contexts. In studies of influence, some researchers have asserted that influence is domain specific, and that parents may influence some domains, while peers influence others (Laursen and Collins 2009). Among older adolescents, their interpersonal behavior with peers may be more influenced by friends and peers than it is by their parents, as youth become less dependent on and more individuated from parents (Steinberg and Silverberg 1986).

Parents' own aggression did not predict increases in psychological control. Psychological control is used as a means to gain control over the adolescent's behavior (Barber 1996). The fact that the parents' aggression with peers did not predict their use of psychological control suggests that their interaction style with their peers may not necessarily be spilling over into their parenting relationship, as we expected it to.

Parents' and adolescents' aggression did not predict the other's aggression. We proposed that parents' involvement in aggression might model these behaviors for adolescents,

however it is possible that adolescents may have limited opportunities to directly observe their parent interacting with the parent's own peers. Although parents may have greater opportunity to observe their adolescent's interactions with peers in comparison to the adolescent observing the parent's peer interactions, by high school, parents also may not have enough opportunities to observe their adolescent's aggression. Also, parents may not generally use their adolescent's behavior with peers as a model for their own peer relationships.

Limitations and Future Research

These findings must be understood in light of several limitations. First, the strong stability of parents' psychological control in the SEM could make it statistically difficult to predict psychological control from other variables. Although this is a limitation, we also find the stability in psychological control seen in the SEM to be an interesting finding. It suggests that youth whose parents use psychologically controlling behavior with their adolescent tend to do so consistently over many years. The latent growth modeling results did not show evidence of significant change in psychological control over time. In future research, it might be of interest to investigate whether there are different profiles of parents who engage in consistent and fleeting psychological control over time, and whether there are differential effects on parents, children, and the parent-child relationship depending on whether psychological control is stable or fleeting. Researchers may also want to measure psychological control via observational coding, to decrease possible socially desirable responding to questions about these negative behaviors.

In our study parents reported psychological control and their own aggression. Not only could shared-method variance be a factor, but it is also the case that the survey items measuring aggression among adults were quite similar to the types of manipulative behaviors parents might use to psychologically control their adolescents. Future work could present older adolescents with the adult indirect aggression scale, which has been used successfully with college samples and may be applicable to older adolescents. This analysis could help to disentangle whether the nonsignificant association was due to a true lack of association between parents' and adolescents' aggression across time, and between psychological control and adolescent's aggression across time, or whether the lack of effect was due to the difference in measures used to study adult and adolescent aggression.

We chose to avoid use of adolescents' self-reports of aggression, because adolescents may respond in socially desirable ways, and because we found no evidence of effects in a model we ran including adolescent reports. We chose to rely on teacher reports of aggression, rather than parent reports, to limit shared method variance between reports of parent and adolescent aggression. It is possible that different results would have emerged with a different combination of reporters, but these decisions were made to investigate effects above and beyond those that may occur due to shared method variance. The use of favorite teacher reports, while potentially resulting in raters more knowledgeable about the child, may have issues of its own. First, the stability of teacher-reported adolescent aggression, while statistically significant, was small. Participants may have asked different teachers to report on their behavior at different time points across the study (although evidence suggests

that unique teachers provide reliable ratings of adolescents' aggression over time; see Ehrenreich et al. 2014). Further, the adolescent's favorite teacher may have a positively biased perception of the child. Last, although we avoided using adolescent self-reports, which could be biased by socially desirable responding, we did include parent self-reports in our analyses, which might also be biased by socially desirable responding. Although we believe the benefit of multiple reporters of the different constructs is a strength of this manuscript, we acknowledge these possible limitations. Finally, there is some evidence that maternal and paternal psychological control may affect children differently (Kawabata et al. 2011). With only 10% of parent participants being fathers, we did not compare gender differences in parent variables. We did, however, conduct the analyses with only mothers as raters and found a similar pattern of effect.

We also were unable to investigate all aspects of coercive cycles in the current study. Namely, we were unable to test whether reaching relationship goals mediated the associations between psychological control and social aggression. However, we did include all possible regression paths between constructs in our model, allowing us to test the impact of parent and child social aggression on psychological control, psychosocial control on parent and child social aggression, and parent and child social aggression on each other's social aggression over time. This study also included a relatively small sample size for the complexity of the tested models. We did not have sufficient power to detect medium and small effect sizes and therefore the results should be interpreted with caution.

Despite these limitations, this study makes several contributions to existing research. This is one of few studies to investigate the effects of parent psychological control longitudinally. The finding that parents' psychological control was predictive of aggression with their own peers highlights theoretical issues in the possible role of parenting (both parent- and adolescent-effects) in adults' own peer relationships. Researchers have generally viewed features of the parent-adolescent relationship as variables of interest primarily for adolescent outcomes; a great deal of research has examined how the parent-adolescent relationship relates to the adolescent's functioning. However, these findings remind us that the parent-adolescent relationship may also influence the parent's functioning in other relationships.

Acknowledgements

We gratefully acknowledge the support of the children and families who participated in this research, an outstanding local school system that wishes to be unnamed, a talented team of undergraduate research assistants, and NIH grants R01 MH63076, K02 MH073616, R56 MH63076, and R01 HD060995. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Funding This study was funded by National Institutes of Health grants R01 MH63076, K02 MH073616, R56 MH63076, and R01 HD060995. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Fig. 1.

Robust model fit $\chi^2(537)=824.12, p < .01$, RMSEA=.06[.05, .06], CFI=.91. Indicators of latent constructs not depicted. Residual variance of same indicator allowed to covary over time. Estimates are stancardized completely. Only significant regression paths shown in this figure

Table 1

Regular and robust model fits of invariance testing models

Model	χ^2	χ^2 *	df	p	Scaling correction	CFI	CFI*	TLI	TLI*	RMSEA	RMSEA*	RMSEA 90% CI	RMSEA 90% CI*	χ^2
Configural invariance	719.43	734.51	474	<.01	.98	.92	.92	.90	.89	.06	.06	[.05, .06]	[.05, .06]	
Loading invariance	762.21	746.99	492	<.01	1.02	.92	.92	.89	.89	.06	.06	[.05, .06]	[.05, .06]	20.39 (18), p = .31
Strong invariance	773.84	758.17	510	<.01	1.02	.92	.92	.90	.90	.06	.05	[.05, .06]	[.05, .06]	11.31 (18), p = .88
Structural equation model	842.13	824.12	537	<.01	1.02	.90	.91	.89	.90	.06	.06	[.05, .06]	[.05, .06]	

CFI comparative fit index, TLI/Tucker–Lewis index, RMSEA root mean square error of approximation

* Robust. Each nested model contained its constraints, plus the constraints of all tenable models

Unstandardized and completely standardized loadings from the strong invariance model

Table 2

Construct	Unstandardized estimate (SE)	Completely standardized estimate
Parent social aggression T1		
Social exclusion parcel T1	.24 (.04)	.69
Malicious humor parcel T1	.24 (.04)	.78
Guilt induction parcel T1	.27 (.05)	.69
Psychological control T1		
Guilt induction parcel T1	.48 (.06)	.77
Love withdrawal parcel T1	.43 (.05)	.75
Invalidating feelings parcel T1	.52 (.06)	.57
Adolescent social aggression T1		
Item 1 T1	.75 (.09)	.90
Item 2 T1	.73 (.07)	.72
Item 3 T1	.59 (.07)	.78
Parent social aggression T2		
Social exclusion parcel T2	.24 (.04)	.88
Malicious humor parcel T2	.24 (.04)	.92
Guilt induction parcel T2	.27 (.05)	.77
Psychological control T2		
Guilt Induction parcel T2	.48 (.06)	.72
Love withdrawal parcel T2	.43 (.05)	.67
Invalidating feelings parcel T2	.52 (.06)	.51
Adolescent social aggression T2		
Item 1 T2	.75 (.09)	.98
Item 2 T2	.73 (.07)	.74
Item 3 T2	.59 (.07)	.81
Parent social aggression T3		
Social exclusion parcel T3	.24 (.04)	.79
Malicious humor parcel T3	.24 (.04)	.81
Guilt induction parcel T3	.27 (.05)	.71

Construct	Unstandardized estimate (SE)	Completely standardized estimate
Psychological control T3		
Guilt induction parcel T3	.48 (.06)	.80
Love withdrawal parcel T3	.43 (.05)	.68
Invalidating feelings parcel T3	.52 (.06)	.54
Adolescent social aggression T3		
Item 1 T3	.75 (.09)	.88
Item 2 T3	.73 (.07)	.76
Item 3 T3	.59 (.07)	.83
Parent social aggression T4		
Social exclusion parcel T4	.24 (.04)	.80
Malicious humor parcel T4	.24 (.04)	.90
Guilt induction parcel T4	.27 (.05)	.83
Psychological control T4		
Guilt induction parcel T4	.48 (.06)	.75
Love withdrawal parcel T4	.43 (.05)	.76
Invalidating feelings parcel T4	.52 (.06)	.63
Adolescent social aggression T4		
Item 1 T4	.75 (.09)	.78
Item 2 T4	.73 (.07)	.57
Item 3 T4	.59 (.07)	.71

A robust estimator was used (MLR) when estimating this model. All loadings were significant at the $p < .01$ level

Table 3

Standardized covariances between latent constructs from the strong invariance model

	1	2	3	4	5	6	7	8	9	10	11
1. Parent social aggression T1	–										
2. Parent psychological control T1	.48**	–									
3. Adolescent aggression T1	.11	.23	–								
4. Parent Social aggression T2	.52**	.28*	.06	–							
5. Parent psychological control T2	.18	.71**	.30**	.35**	–						
6. Adolescent social aggression T2	.10	.10	.32*	.13	–.02	–					
7. Parent social aggression T3	.63**	.49**	.17	.53**	.41**	.05	–				
8. Parent psychological control T3	.22*	.73**	.21	.33**	.87**	–.07	.53**	–			
9. Adolescent social aggression T3	–.09	.02	.54**	–.02	.07	.50*	–.11	–.06	–		
10. Parent social aggression T4	.28*	.39**	.34*	.32**	.52*	–.01	.70**	.64**	–.02	–	
11. Parent psychological control T4	.19	.71**	.24*	.25*	.82**	–.03	.47**	.91*	.00	.64**	–
12. Adolescent social aggression T4	.11	.40**	.21	.20	.08	.30	.11	.06	.49*	.08	.23

* $p < .05$ ** $p < .01$

Table 4

Predictive paths between time points

Predictor	Outcome	Estimate	SE	<i>p</i>	Std. completely
Parent SA T2					
Parent SA T1		.74	.28	.01	.57
PC T1		.03	.22	.88	.03
Child SA T1		-.05	.19	.80	-.04
Parent SA T3					
Parent SA T2		.30	.14	.04	.28
PC T2		.23	.11	.04	.28
Child SA T2		-.01	.07	.87	-.01
Parent SA T4					
Parent SA T3		.76	.23	<.01	.50
PC T3		.50	.23	.03	.38
Child SA T3		.05	.07	.44	.04
PC T2					
Parent SA T1		-.19	.16	.24	-.18
PC T1		.85	.15	<.01	.83
Child SA T1		.13	.08	.11	.13
PC T3					
Parent SA T2		-.01	.06	.86	-.01
PC T2		.85	.11	<.01	.90
Child SA T2		-.05	.07	.47	-.05
PC T4					
Parent SA T3		-.04	.13	.74	-.04
PC T3		1.01	.12	<.01	.95
Child SA T3		.10	.07	.17	.10
Child SA T2					
Parent SA T1		.05	.14	.72	.05
PC T1		-.01	.13	.93	-.05
Child SA T1		.37	.12	<.01	.37
Child SA T3					
Parent SA T2		-.10	.07	.11	-.14
PC T2		.20	.11	.07	.20
Child SA T2		.57	.14	<.01	.56
Child SA T4					
Parent SA T3		.11	.12	.36	.17
PC T3		.02	.09	.79	.04
Child SA T3		.29	.09	<.01	.55

SA social aggression, *PC* psychological control