HHS Public Access

Author manuscript

Early Educ Dev. Author manuscript; available in PMC 2015 July 01.

Published in final edited form as:

Early Educ Dev. 2014 July ; 25(5): 619–640. doi:10.1080/10409289.2014.844058.

The Role of Preschool Relational and Physical Aggression in the Transition to Kindergarten: Links with Social-Psychological Adjustment

Amy L. Gower, Ph.D.,
Department of Pediatrics, University of Minnesota

Katherine A. Lingras, Ph.D.,
University of Minnesota

Lindsay C. Mathieson, Ph.D.,
University of Minnesota

Yoshito Kawabata, Ph.D., and
University of Minnesota

Nicki R. Crick, Ph.D.
University of Minnesota

Abstract

Research Findings—The transition to kindergarten has important ramifications for future achievement and psychosocial outcomes. Research suggests that physical aggression may be related to difficulty during school transitions, yet no studies to date have examined the role of relational aggression in these transitions. This paper examined how engagement in preschool physical and relational aggression predicted psychosocial adjustment during the kindergarten school year. Observations and teacher reports of aggression were collected in preschool, and kindergarten teachers reported on student-teacher relationship quality, child internalizing problems, and peer acceptance in kindergarten. Results suggested that preschool physical aggression predicted reduced peer acceptance and increased conflict with the kindergarten teacher. High levels of relational aggression, when not combined with physical aggression, were related to more positive transitions to kindergarten in the domains assessed.

Practice or Policy—These data lend support to the need for interventions among physically aggressive preschoolers to target not only concurrent behavior but also future aggression and adjustment in kindergarten. Thus, educators should work to encourage social influence in more prosocial ways amongst aggressive preschoolers.

The transition from preschool to kindergarten has been identified as a contributing factor to children's academic achievement and school adjustment in elementary school and onward. The National Education Goals Panel (1995) placed having all children enter kindergarten "Ready to Learn" as a key policy goal in the United States. However, the focus of school

Address correspondence to Amy L. Gower, Ph.D., Department of Pediatrics, University of Minnesota, 717 Delaware St SE, 3rd Floor, Minneapolis, MN 55414, USA. gowe0009@umn.edu.

readiness research has traditionally centered on academic skills. Recent research has identified social-emotional abilities as equally important to success in school (e.g. Hadley, Wilcox, & Rice, 1994; Howes et al., 2008; Ling-Lin, Lawrence, & Gorrell, 2003), with engagement in aggressive behavior acting as a significant risk for kindergarten adjustment problems. Given that positive experiences in the early school years have significant implications for later academic competence, a smooth transition to kindergarten is optimal (e.g. Belsky & MacKinnon, 1994; Love, Logue, Trudeau, & Thayer, 1992; Pianta & Cox, 1999).

The transition to kindergarten involves helping children enter school ready to learn, as well as establishing positive relationships between teachers, parents, and children in order to provide a supportive learning environment for the child. Current research indicates that children's attitudes, feelings, and traits matter as much as their academic readiness; thus many transition-to-kindergarten programs focus on promoting positive relationships in addition to learning activities (e.g., La Paro, Kraft-Sayre, & Pianta, 2003). Children who have a difficult transition to kindergarten may suffer from a host of adjustment problems, including internalizing and externalizing symptoms (e.g., Belsky & MacKinnon, 1994). The presence of social problems and internalizing symptoms in young children's early school experiences has been associated with concurrent and future social and academic maladaptation for both boys and girls (Mesman, Bongers, & Koot, 2001; Olson & Rosenblum, 1998). These early internalizing symptoms and poor social experiences are predictive of negative outcomes over the long-term, through adolescence and adulthood (Burt, Obradović, Long, & Masten, 2008; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003). Furthermore, negative early experiences transitioning to school create gaps in academic and social success that only widen over time.

Rimm-Kauffman, Pianta, and Cox (2000) suggest that approximately 16% of kindergarteners experience significant adjustment difficulties during the transition, as reported by kindergarten teachers. Numerous studies have identified engagement in physical aggression in preschool as an important predictor of difficulties in this transition (e.g., Fantuzzo & McWayne, 2002; Ladd & Price, 1987; Pianta & Nimetz, 1991). Our understanding of the contributions of aggressive behavior to kindergarten adjustment is limited, however, by a lack of attention to both relationally and physically aggressive behavior. Because social-emotional competence has been noted as an important contributor to successful kindergarten adjustment, relational aggression, in addition to physical aggression, may be particularly important to consider in the transition from preschool to kindergarten as it may indicate less competent social-emotional abilities. The present study examines both forms of aggression in preschool to more fully understand factors that contribute to kindergarten adjustment for both boys and girls.

Forms of Aggression in Preschool

Relational aggression involves harm or threat of harm to relationships and includes behaviors such as excluding a child from the peer or play group, telling a peer, "I won't be your friend," or ignoring a peer (Crick & Grotpeter, 1995). Relational aggression can be either covert/indirect, in which the aggressor does not directly address the victim (e.g.,

spreading rumors) or overt/direct face-to-face acts (e.g., telling someone s/he cannot come to your birthday party; Crick et al., 1999; Nelson, Springer, Nelson, & Bean, 2008). Current theory suggests that relationally aggressive behaviors in preschool are generally more overt than covert, due to limitations in preschoolers' cognitive and social abilities (Crick et al., 1999). The presence of relationally aggressive behaviors has been well-documented in both preschool girls and boys (Crick, Casas, & Mosher, 1997; Ostrov & Keating, 2004) using a variety of informants, including teacher-, parent-, and peer-reports and observations. In general, observations in early childhood provide relatively more consistent evidence of sex differences when compared to other informants, with girls reported to engage in more relational aggression than boys (e.g., Crick et al., 2006; Ostrov & Keating, 2004). Regardless of informant, however, the evidence is mixed on sex differences in relational aggression in early childhood (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003; Card, Stucky, Sawalani, & Little, 2008; Carpenter & Nangle, 2006; Hart, Nelson, Robinson, Olsen, & McNeilly-Choque, 1998; Johnson & Foster, 2005; McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996).

Similar to physical aggression, studies of both preschool and school age children have documented associations between engagement in relational aggression and psychosocial adjustment problems. Current evidence supports the notion that relational aggression in preschool is associated with peer rejection both concurrently (Crick, Casas, & Mosher, 1997) and over a preschool year (Ostrov & Crick, 2007). In the first study to follow children through two preschool years, Crick and colleagues (2006) demonstrated that relational aggression in the first semester of preschool predicted peer rejection at the end of the second year for girls only. These findings suggest that relational aggression may have different implications for girls' early social functioning as compared to boys'. Similarly during the school years, a large number of studies provide evidence that relational aggression predicts future peer rejection (for a review, see Crick et al., 1999), as well as internalizing problems in preschool (depressed affect: Crick, Casas, & Mosher, 1997) and during the school years (Crick, 1997; Roach & Gross, 2003). However, to our knowledge, no published study to date has examined the role of preschool relational aggression in children's adjustment during the transition across peer groups from preschool to kindergarten.

The Impact of Aggression on Relationship Building during the Transition to Kindergarten

Relationships with teachers, familiar peers, and parents are crucial aspects of the transition to kindergarten, and these relationship partners can serve as sources of comfort during a period of transition and uncertainty (e.g., Pianta, Kraft-Sayre, Rimm-Kaufman, Gercke, & Higgins, 2001). The quality of early teacher-child relationships helps to shape children's efficacy for and expectations of future interactions with teachers, as well as children's feelings about school in general (Mantzicopoulous, 2005), and has implications for later school adjustment (Birch & Ladd, 1998; Howes, Matheson, & Hamilton, 1994). Specifically, relationships with preschool teachers are noted to predict the quality of the relationship with the kindergarten teacher (e.g. Howes, Phillipsen, & Peisner-Feinberg, 2000). Additionally, high quality teacher-child relationships are associated with positive

academic outcomes in both the short-term (e.g., Baker, Grant, & Morlock, 2008; Curby, Rimm-Kaufman, & Ponitz, 2009; Palermo, Hanish, Martin, Fabes, & Reiser, 2007; Peisner-Feinberg, et al., 2001; Pianta & Stuhlman, 2004) and the long-term (e.g. Hamre & Pianta, 2001; Silver, Measelle, Armstrong, & Essex, 2005). On the other hand, teacher-child relationships characterized by high levels of conflict and dependency predict lower levels of school readiness and problems in academic and social domains (Hamre & Pianta, 2001; Pianta, 1997; Pianta, Steinberg, & Rollins, 1995; Silver et al., 2005).

The teacher-child relationship has also been noted as relevant to the association between physically aggressive behavior and academic outcomes. Stipek and Miles (2008) followed children across elementary school and found that the effect of physical aggression on academic achievement was partially mediated by increased conflict with the teacher. Thus, in part, the academic difficulties of physically aggressive elementary students seem to be explained by lower quality relationships with teachers. However, this research did not take into account the role of different forms of aggression, such as relational aggression, in addition to physical aggression in predicting academic adjustment. Because of the importance of high quality relationships for future social competence and peer preference (Hughes, Cavell, & Wilson, 2001), in addition to academic adjustment, it is important to better understand how relational and physical aggression influence teacher-child and peer relationships.

Aggressive behavior, in particular, has been shown to interfere with building effective peer relationships and is a critical indicator of preschoolers' readiness and subsequent adaptation to school (e.g., Fantuzzo & McWayne, 2002; Ladd & Price, 1987; Pianta & Nimetz, 1991). Children with a history of physical aggression and/or negative peer interactions are likely to experience peer rejection in kindergarten and be rated as hostile-aggressive by their teachers (Ladd & Price, 1987). Additionally, the stability of peer rejected status across early school years is noted by both peers and teachers (Eivers, Brendgen, & Borge 2010), which means these negative peer experiences may persist over later school years and often contribute to future adjustment problems (Coie & Dodge, 1983). A host of negative psychological and social outcomes are associated with peer rejection, including low sense of self competence, biased social cognitions, depressive symptoms, and low social status in the future (see Gooren, van Lier, Stegge, Terwogt, & Koot, 2011 for a review). Thus, identifying factors that contribute to peer belonging and social status has implications for adjustment across the school years.

Limitations of Past Research

As reviewed above, existing work examining the role of aggressive behavior in the transition to kindergarten focuses on physical forms of aggression and does not include relational aggression. Because relational aggression is negatively associated with several key indicators of successful adjustment to kindergarten (e.g., interpersonal relationship difficulties, internalizing behavior problems), the exclusion of relational aggression has limited our understanding of its role in this transition.

Furthermore, relational and physical aggression tend to co-occur in preschool (e.g., Crick, Ostrov, & Werner et al., 2006), yet an important question that has received limited empirical attention in the preschool age group concerns the future adjustment of children who engage in high levels of both forms of aggression in preschool. Research indicates that, in some instances, this may serve as a "double-threat" for children's social-emotional heath. During middle childhood, as compared to non-aggressive children or children engaging in only one form of aggression, students with high levels of both physical and relational aggression are most at risk for developing internalizing and externalizing problems (Crick, 1997; Crick, Ostrov, & Werner, 2006). However, these studies used an extreme group approach, in which participants were dichotomized using a one standard deviation above the mean cutoff, to examine adjustment. The unique combination of high levels of both physical and relational aggression, rather than simply additive effects of both forms of aggression across the distribution of aggression score, may be most risky for future adjustment.

On the other hand, evidence suggests that physical aggression tends to dwindle for most children as they begin school and are provided with more structure and social expectations in the classroom. At the same time, relational aggression may increase as it is a more covert form of aggression that can go unnoticed by teachers (Bauman & Del Rio, 2006). One possibility is that preschoolers who continue to engage in age inappropriate physical aggression may experience social cognitive deficits that also underlie the use of relational aggression. As a result, the well-documented association between physical aggression and adjustment problems may be stronger for highly relationally aggressive preschoolers than those who do not also engage in relational aggression.

As children get older, the importance of the peer context increases significantly (Hartup & Stevens, 1997). How children interact with, and are perceived by, their peers can affect not only their social relationships but also their self-concept and internal motivation for academic and other activities. Further, early childhood is a critical period for children who are still learning appropriate ways to interact with their peers and adults. Interpersonal interaction styles which rely on the use of relational aggression at a young age may set the stage for difficulties with appropriate social communication and be indicative of future social challenges. Whereas physical aggression can often be addressed with behavioral strategies, aggression utilizing the relationship may be more complex and in need of intervention at multiple levels.

A second key limitation in our understanding of aggressive behavior problems has been a lack of attention to relationally aggressive behavior during transitions to new peer groups (e.g., from preschool to kindergarten). Preliminary evidence suggests that relationally aggressive behaviors are relatively stable over a preschool year for both boys and girls (Burr, Ostrov, Jansen, Cullerton-Sen, & Crick, 2005; Ostrov, 2008; Ostrov & Crick, 2007), and across two preschool years for girls (Crick et al., 2006). Similarly, moderate stability in relationally aggressive behavior is also seen during the later elementary school years (e.g., Werner & Crick, 2004). However, the period from kindergarten through second grade remains largely unexamined. Given that relationally aggressive acts harm interpersonal relationships, school transitions may provide children a new peer group in which to turn over a new leaf or may highlight social cognitive deficits underlying the use of aggressive

behavior in the first place. The transition to kindergarten may be particularly difficult if the aggressive tactics preschoolers use in peer interactions inhibit the development of more prosocial, effective social skills that predict positive adjustment outcomes in new groups.

The current study aimed to address these limitations by examining the ways in which children's use of physical and relational aggression in preschool contributes to social-psychological adjustment in kindergarten. Because of their previously discussed importance during this transition, student-teacher relationship quality, peer acceptance, and internalizing behavior problems served as the adjustment outcomes of interest. Multi-informant measures of preschool physical and relational aggression were employed, combining teacher reports and observational assessments to more accurately capture preschool aggressive behaviors. Based on research suggesting an association between externalizing problems and problematic student-teacher relationships, engagement in preschool relational and physical aggression were hypothesized to predict more conflictual and less close relationships with teachers. Furthermore, higher levels of preschool relational and physical aggression were expected to be positively associated with internalizing problems in kindergarten. As noted above, some evidence suggests that engaging in both relational and physical aggression may put children at an increased risk of adjustment problems as compared to engagement in only physical or relational aggression (Crick, 1997; Crick, Ostrov, & Werner, 2006). Thus, while main effects approaches were pursued, we also examined interactions between physical and relational aggression in the prediction of kindergarten adjustment. This allowed us to evaluate whether well-documented negative associations between physical aggression and adjustment problems were stronger among relationally aggressive preschoolers compared to those who rarely used relational aggression. Stability of physical and relational aggression across a school and peer-group transition was also examined. Given the prevalence of sex differences in the majority of aggression forms and adjustment outcomes in this study, sex was examined as a moderator of associations between aggression and adjustment.

Method

Sample

Participants in this study were part of a larger study examining the role of preschool relational aggression in the transition to kindergarten. A subset of the participants (n = 39) in the preschool portion of the study has been documented elsewhere (Crick et al., 2006); however, that study only examined the preschool data and did not include any assessments of kindergarten aggression or adjustment. The current sample includes 190 children (91 girls, 99 boys), ranging in age from 48 to 67 months (M = 57.16, SD = 3.98) at the time of the first data collection. Children and their parents were recruited from seven centers serving preschool aged children in a large, Midwestern metropolitan area, and all procedures were approved by the University of Minnesota Institutional Review Board. Recruitment schools reflected a range of settings, including half-day and full-day religious and secular preschools, full-day daycare centers, and Early Childhood Family Education programs. Recruitment materials were distributed to all children in each school who were attending their final year of preschool before kindergarten and who did not have an individual education plan (IEP) on file. Written parental consent was required for participation, except

at one preschool that operated under a blanket consent procedure. Families from this preschool were approached to obtain written consent when their child was entering kindergarten; 61% of parents from this school consented to the kindergarten assessment. At the remaining schools, consent rates averaged 47.46%. Participants were recruited in four cohorts in successive years. Children who participated in at least one of the preschool assessments and the kindergarten assessment were included in the following analyses.

In cohorts 3 and 4 (78% of sample), teachers reported participants' race/ethnicity. Parents of these participants who completed a questionnaire for a different part of this study not reported here also completed a demographic questionnaire at the time of the kindergarten assessment including race, ethnicity, and family income data. When discrepancies emerged between teacher and parent reports, parent report was used where available, yielding the following race/ethnicity makeup for the third and fourth cohorts combined: 82% European American, 5% Asian American, 2% African American, and 7% of children were of another race. Three percent of children were Hispanic/Latino. Annual income data were available for 70% of the sample, and indicated average household incomes in the following ranges for those families who provided income data: less than $60,000 for 5%, between $60,001 and $80,000 for 18%, and greater than $80,000 for 77%. Race, ethnicity, and household income were not available for cohorts 1 and 2; however, demographic data for the preschool from which this portion of the sample was recruited suggest similar socioeconomic status and race/ethnicity distributions to cohorts 3 and 4.

Procedures

Each child was assessed at three time points: fall (Time 1) and spring (Time 2) of the preschool year directly preceding kindergarten entry and winter (Time 3) of the kindergarten year. The Time 1 assessment occurred after preschool had been in session for at least two months to allow children to become familiar with one another before observations began. All preschoolers moved to a new school for kindergarten. At each time point, teachers completed a variety of rating scales about each child's behavior in the classroom, and researchers conducted naturalistic observations of relational and physical aggression.

Measures

Relational and physical aggression

Naturalistic observation: Naturalistic observations of children's relational and physical aggression were conducted during free play using an adaptation of procedures developed by Ostrov and Keating (2004) at time 1 and 2.[1] Using a focal child approach, each child was observed for 10 minutes per assessment by trained graduate and undergraduate observers who were located in an unobtrusive position that was close enough to hear children's conversation. Over an 8-week period, each child was observed 8 times, approximately once

[1]Observations of aggression were also conducted in kindergarten (time 3). However, the reduced amount of free play in kindergarten as compared to preschool made this challenging. Furthermore, based on anecdotal evidence, we felt that many instances of relational aggression may have been missed because kindergarteners appeared to huddle in groups and talk quietly, often outside of the observers' earshot, more often than preschoolers did. In fact, we did not code enough instances of relational or physical aggression in kindergarten to have usable data. However, teacher reports are often used in elementary school to assess aggression, and they were reliable in our sample.

per week (a total of 80 minutes). Order of children to be observed was determined randomly within a particular week of observation.

Prior to the start of the study, observers spent considerable time in each child's classroom and playground to facilitate children's adjustment to their presence and to minimize reactivity. During each 10-minute assessment interval, observers recorded the focal child's engagement in physical aggression (e.g., hitting, shoving, taking objects) and relational aggression (e.g., excluding a peer from an activity, saying "I won't be your friend" as a threat, covering ears to signal ignoring). The total number of instances of each behavior was summed then divided by the number of observations, yielding average scores for each behavior. Extensive observation training was documented in previous papers (Crick et al., 2006). Once trained, two coders conducted approximately 25% of the observations to maintain reliability and prevent drift over the course of the study. Observations of relational and physical aggression were reliable across time points with overall inter-rater reliability of .82 and .87, for relational aggression and physical aggression respectively, using intraclass correlations.

Teacher assessment: A teacher-rating measure of children's social behavior was used to assess children's aggressive behavior (Preschool Social Behavior Scale – Teacher; PSBS-T; Crick, Casas, & Mosher, 1997) at all three time points. The PSBS-T instrument consists of eight items that assess relational aggression (e.g., This child tries to get others to dislike a peer) and seven items that assess physical aggression (e.g., This child kicks or hits others). Teachers responded to the items on the teacher instrument by rating on a 5-point scale how true each item was for each of their students, and items were summed to create subscales. Because the version of the PSBS-T for older children, the Childhood Social Behavior Scale (CSBS; Crick, 1996), was designed for use with older elementary school aged children, the PSBS-T was also used at the kindergarten assessment. Teacher-reported relational aggression and physical aggression were reliable at each time point, with Cronbach's alphas for relational aggression and physical aggression greater than .85 at all three time points.

Student-teacher relationship quality—To assess the quality of the relationship between teachers and students, teachers completed the Student-Teacher Relationship Scale (STRS; Pianta, 1992) at times 1 and 3. Teachers rated the relationship they have with each student on a 5-point scale (1=definitely does not apply, 5=definitely applies). The STRS consists of three subscales: Dependency, Conflict, and Closeness. However, analyses were conducted only with Conflict and Closeness subscales due to low reliability in this sample for Dependency (alpha = .54). The Closeness scale includes 11 items, such as "I share an affectionate, warm relationship with this child," and "If upset this child will seek comfort from me." The Conflict scale includes 12 items, such as "This child and I always seem to be struggling with each other" and "This child sees me as a source of punishment and criticism." Both scales demonstrated acceptable reliability (closeness: alpha = .81 (time 1), .77 (time 3) and conflict: alpha = .89 (time 1), .85 (time 3)).

Social-psychological adjustment—The PSBS-T also included an assessment of peer acceptance. Two items assessed whether each child was well-liked by peers of the same and opposite sex, with rating on a 5-point scale. Items were summed to create the peer

acceptance subscale. The scale demonstrated adequate reliability at both time points (alpha = .81 (time 1), .83 (time 3)).

Kindergarten teachers also rated children's adaptive functioning and behavioral/emotional problems using the Achenbach System of Empirically Based Assessment (ASEBA) Child Behavior Checklist- Teacher Report Form (Achenbach & Rescorla, 2001), which consists of eight subscales. The response scale for each item ranges from 0 (not true of this child) to 2 (very true or often true of this child). Subscales used for these analyses included anxious/depressed (8 items) and withdrawn/depressed (10 items) behavior, and both subscales demonstrated acceptable reliability in this sample (α = .80 and .87, respectively).

Midway through the current study, the Teacher Report Form was updated by Achenbach and Rescorla (2001) to include different subscales and age ranges. As a result, the kindergarten teacher assessment for cohorts 3 and 4 was different than assessment for cohort 1 and 2. Because cohorts 3 and 4 comprised a majority of the children in the study (n = 132), only children with the updated form were included in analyses assessing outcomes related to behavioral/emotional problems. However, these children still had the previous version of the form (TRF: Achenbach, 1991) for the time 1 assessment (anxious/depressed alpha = .82, withdrawn behavior alpha = .84). All measures of internalizing behavior were standardized before analyses were conducted.

As recommended by Achenbach (1991), we standardized scores based on raw scores in our analyses rather than T scores, as the computation of T scores creates difficulties with the variation in scores that may be problematic for research purposes, particularly for syndrome subscales (e.g., withdrawn/depressed, anxious/depressed). Please see Table 1 for ranges of summed raw scores.

Results

Composite scores for preschool physical and relational aggression were created by combining observations and teacher reports across time points. The teacher report and observation variables were standardized and then summed to generate two composite scores describing physical or relational aggression over the course of the preschool year (time 1 and 2 combined). This decision was made because composite scores of relational and physical aggression were considered to reflect a broader constellation of aggressive behaviors, compared to aggression scores assessed by a single informant (e.g., an observer or a teacher). Preschoolers engaging in aggressive behaviors are often socially aware and skilled in deception (Ostrov, Ries, Stauffacher, Godleski, & Mullins, 2008), and some children may choose to enact these behaviors when teachers are not watching. Thus, the combination of observer and teacher reports allows for a more comprehensive and realistic depiction of children's aggressive behavior, including behaviors that may not be noticed by teachers. In fact, observation scores and teacher-reports were moderately correlated across preschool time points (*r*s range from .29–.78, all $p < .001$ for physical aggression and for relational aggression from .11 to .76, $p < .05$ except for the association between observed RA at time 1 and 2). These associations indicate that observers and teachers viewed somewhat different aspects of children's aggressive behavior.

Means and standard deviations for preschool and kindergarten relational and physical aggression as well as outcome variables are presented in Table 1. Independent samples t-tests were used to examine sex differences in the variables of interest. No sex differences were noted in relational aggression scores. Rates of physical aggression were significantly higher for boys than girls in preschool and kindergarten. Sex differences in teacher ratings of withdrawn/ depressed scores and peer acceptance were noted at a trend level, where girls had higher scores than boys. No sex differences emerged for anxious/depressed behavior or closeness in the student-teacher relationship. However, boys were rated higher on conflict in the teacher-student relationship than girls.

Zero-order correlations among study variables are presented in Table 2. Significant positive associations were found between both preschool and kindergarten relational and physical aggression and student-teacher conflict in kindergarten. Kindergarten physical aggression was associated with higher levels of concurrent withdrawn/depressed and anxious/depressed scores and lower levels of student-teacher closeness, and relational aggression was associated at a trend level with concurrent withdrawn/depressed scores. Peer acceptance was negatively related to preschool and kindergarten physical aggression and kindergarten relational aggression.

Stability of Physical and Relational Aggression

Because observations of kindergarten aggression were not available, associations between preschool aggression composites and kindergarten teacher reports of aggression reflect rank order stability. As noted in Table 2, both physical and relational aggression in preschool were associated with relational aggression in kindergarten, but neither form of preschool aggression predicted kindergarten physical aggression. Hierarchical linear regressions were conducted to examine the unique prediction of forms of preschool aggression to kindergarten physical and relational aggression. In the first step of the regressions, sex was entered as a control, and preschool relational and physical aggression were both entered as predictors. In step 2, the relational aggression × physical aggression interaction term was added. Although sex was examined as a moderator, it did not significantly contribute to the models, and the sex × aggression form interaction terms were removed from final analyses.

Results indicated that preschool physical aggression significantly predicted teacher reports of relational aggression in kindergarten ($F(4,137) = 2.88$, $p < .05$; $R^2 = .08$; physical aggression b = .43, $p < .05$). Preschool physical and relational aggression did not significantly predict kindergarten physical aggression.

Prediction of Kindergarten Adjustment

To examine whether preschool relational aggression added significant information to preschool physical aggression in the prediction of kindergarten adaptation, hierarchical multiple regressions were computed in which kindergarten adaptation scores served as the dependent variables (e.g., conflict, withdrawn/depressed symptoms). A square root transformation was used to correct the skewness and kurtosis of the standardized CBCL withdrawn/depressed and anxious/depressed scores prior to the main analyses. Due to the mean level sex differences previously noted in a number of variables, child sex was entered

as a control in the first step of each regression in addition to the time 1 measure of the outcome variable.[2] Preschool relational and physical aggression were also entered at step 1, and the relational aggression by physical aggression interaction term was included at step 2. Where addition of the interaction term resulted in a significant change in the R^2 value, the Johnson-Neyman technique was used to interpret significant interaction terms using the MODPRODE macro for SPSS (Hayes & Matthes, 2009). This technique identifies regions of significance, that is, values of the moderator at which the relation between the independent variable and dependent variable is significant (Preacher, Curran, & Bauer, 2006). Use of the Johnson-Neyman technique is recommended when there are not clear values of the moderator at which to probe simple slopes.

Student-teacher relationship quality—Preschool physical aggression positively predicted teacher-reported conflict in the student-teacher relationship in kindergarten after controlling for sex and student-teacher conflict at time 1 (Table 3). No interaction effects emerged.

Preschool aggression also predicted student-teacher closeness in kindergarten (Table 3). The relational aggression × physical aggression interaction qualified the significant main effect of relational aggression. Follow-up probing of the interaction using the Johnson-Neyman technique indicated that the association between preschool physical aggression and student-teacher closeness became significant when preschool relational aggression reached 8.60 (Figure 1). In other words, for children engaging in high levels of relational aggression in preschool (>8.60, or 3SDs, above the mean on teacher report), preschool physical aggression predicted less closeness in the kindergarten teacher-student relationship. Overall, high preschool relational aggression appeared to predict higher student-teacher closeness in kindergarten, particularly when accompanied by low levels of physical aggression.

Social-psychological adjustment—With respect to peer acceptance, no evidence emerged of an interaction between preschool forms of aggression (Table 4). Instead, main effects of both physical and relational aggression in preschool were seen. The direction of these effects, however, was opposite. After controlling for preschool peer acceptance and child sex, preschool physical aggression tended to negatively predict kindergarten peer acceptance, whereas preschool relational aggression positively predicted teacher reports of peer acceptance.

A similar regression approach was used to examine the role of preschool aggression in psychological adjustment in kindergarten. Neither preschool relational nor physical aggression predicted teacher-reported anxious/depressed problems in kindergarten. The preschool aggression interaction predicted withdrawn/depressed scores in kindergarten at a trend level after controlling for child sex and withdrawn symptoms in preschool (Table 4). Johnson-Newman follow up probing indicated that when relational aggression was high (6.60 and above), physical aggression was positively related to withdrawn/depressed symptoms. Inspection of simple slopes (Figure 2) clarifies these findings, with the lowest

[2]Sex was examined as a moderator in each analysis. However, in no case did the sex interaction terms significantly increase the R^2 value or was the interaction beta significant. These analyses are therefore not presented.

withdrawn/depressed scores among children who were high in preschool relational aggression but low in preschool physical aggression.

Discussion

The current study investigated the contribution of preschool physical and relational aggression to the transition to kindergarten, addressing two primary goals. First, we examined the stability of physical and relational aggression across time and across a peer group transition. In this sample of preschoolers, we did not find evidence of stability within forms of aggression across the transition to a new peer group. It is noteworthy that preschool relational aggression did not uniquely predict either form of kindergarten aggression. Several studies suggest moderate stability in relational aggression in preschool across one school year (e.g., Burr et al., 2005; Ostrov, 2008), and the only study to date to examine early childhood relational aggression over a longer time span documented modest stability in relational aggression for girls only over two years (Crick et al., 2006). However, the Crick and colleagues (2006) study was conducted across two preschool years, rather than across transitions to new school and peer contexts.

A number of potential explanations for this lack of association exist. On the one hand, preschoolers may use relational aggression more transiently or experimentally than children in elementary school do, possibly due to advances in self-regulation and conflict resolution occurring at these times. On the other hand, it may be the case that the new peer group and classroom demands inherent in the transition to kindergarten allow relationally aggressive preschoolers to "turn over a new leaf," either forming friendships and interacting with peers in less aggressive ways or beginning to use relational aggression for the first time. Further research examining factors that promote, maintain, or inhibit the use of relationally aggressive behaviors across peer group transitions will be critical to elucidating these findings.

Interestingly, engagement in preschool physical aggression was associated with greater use of relationally but not physically aggressive behaviors in kindergarten. This heterotypic continuity in aggression, changing form from physical to relational, during the transition from preschool to kindergarten illustrates the need for further study of relational aggression among early elementary school aged children. One possible explanation for this aggression form shift is the changing structure and expectations of a kindergarten classroom environment. Generally speaking, kindergarten classrooms provide fewer opportunities for unstructured play, and teachers may be less tolerant of behavior that disrupts the learning environment (Rimm-Kaufman et al., 2000). Moreover, several studies have demonstrated that teachers and mothers view relationally aggressive acts as less hurtful and less important events in which to intervene than physically aggressive acts (e.g., Hurd & Gettinger, 2011; Werner, Senich, & Przepysznk, 2006). As a result, relationally aggressive acts may be easier to carry out without disrupting classroom activities or being sanctioned, as compared to physically aggressive behaviors. Given that relational aggression has been associated with higher levels of deception, sometimes conceptualized as one indicator of perspective-taking (Ostrov, 2006), children displaying this heterotypic form shift in aggression may be particularly attuned to times during the school day when relational aggression may go

unnoticed. Alternatively, the increasing importance of peer acceptance in elementary school may heighten the salience of peer relations, such that relationships become a more effective means of harm than physical or property harm.

A second focus of this study concerned the role of preschool aggression in predicting kindergarten adjustment as reported by the kindergarten teacher – student relationship quality, internalizing problems, and peer acceptance. Results extended past studies indicating that physical aggression predicts conflict with teachers, which is important information given that conflict in the student-teacher relationship in kindergarten has been noted to predict academic, social, and discipline problems later in elementary school (Hamre & Pianta, 2001; Pianta, 1997; Pianta, Steinberg, & Rollins, 1995). Results for student-teacher closeness, on the other hand, suggested that closeness was highest among children who engaged in very high levels of preschool relational aggression but low preschool physical aggression. The closer student-kindergarten teacher relationships among children who were highly relationally aggressive in preschool were attenuated when combined with high physical aggression. The ability to deceive or manipulate relationships demonstrated by some relationally aggressive children may influence their ability to form close relationships with teachers. In particular, these children may be skilled at hiding aggressive impulses while interacting with teachers in ways that increase closeness. However, it is noteworthy that student-teacher closeness functions as a protective factor for numerous social and behavioral outcomes in the school years. Thus, elucidating the factors that contribute to the ability to form close relationships with teachers without engagement in aggressive behaviors will be key in promoting positive kindergarten transitions.

Similar to the aforementioned findings for student-teacher closeness, children who were highly relationally but not physically aggressive in preschool experienced the fewest withdrawn/depressed symptoms in kindergarten after controlling for preschool withdrawn symptoms. Again this effect of relational aggression was attenuated in the context of high preschool physical aggression. It is likely that engagement in relational aggression requires a certain level of social interaction with others. For example, it is difficult to exclude someone from a playgroup if one only plays by him/herself. Thus withdrawn behavior may be less likely among preschoolers using aggression based on social relationships.

Finally, we examined the association between preschool aggression and kindergarten peer acceptance. While physical aggression tended to predict decreased peer acceptance, relational aggression positively predicted peer acceptance. Some children may try to establish their standing in the peer group by excluding certain classmates from important activities (Hawley, 2003). These children, bistrategic controllers, combine aggressive behaviors with prosocial behavior. Thus some relationally aggressive preschoolers may have the ability to control peer relations to enhance their own position as a group leader, and these children may have social skills upon kindergarten entry that position them to achieve higher status in the peer group. In an adolescent sample, Prinstein and Cillessen (2003) documented positive associations between relational aggression and both perceived popularity and social preference. More research is needed to examine whether the association seen here between preschool relational aggression and kindergarten peer acceptance is specific to certain

functions of relational aggression and to tease apart the roles of peer acceptance and perceived popularity in the preschool and early elementary period.

Taken together, these findings indicate that, contrary to our hypotheses, preschoolers engaging in relational aggression without concurrent physical aggression experience social success in kindergarten as indexed by student-teacher closeness, peer acceptance, and reduced withdrawn/depressed symptoms. Importantly, the cutoffs for high relational aggression that emerged in this study were at two to three standard deviations above the mean. Most previous studies use a one standard deviation approach; thus, these findings relate to a more extreme group of relationally aggressive preschoolers than past studies. Furthermore, it is important to consider that relational aggression in preschool may be associated with adjustment difficulties other than those that were assessed in the current study. Future research could expand on the current findings by examining other indices of adjustment (e.g., academic readiness skills, emotion regulation).

Past research has established that children who use relational aggression have friend relationships in preschool (Burr et al., 2005) and increased concurrent peer acceptance (Crick, Casas, & Mosher, 1997). In turn, having friends or involvement in the peer group may serve as a protective factor that compensates for the potential negative effects of relational aggression when not accompanied by positive peer relations on adjustment in other domains. Therefore, it is possible that children who are relationally aggressive (but not physically aggressive) in preschool may interact more socially and may have more friends than other children, which is why they experience higher levels of peer acceptance and fewer withdrawn/depressed symptoms in kindergarten. Future research should examine associations between preschool relational aggression, depressive symptoms, and peer acceptance longitudinally, given meta-analytic evidence that relational/indirect aggression is associated with increased internalizing symptoms in middle childhood and adolescence (Card, Stucky, Sawalani, & Little, 2008; Murray-Close, Ostrov, & Crick, 2007).

The lack of stability of relational aggression in this sample suggests that relationally aggressive preschoolers did not engage in relational aggression in kindergarten. Thus the more positive adjustment seen among kindergarteners who were relationally but not physically aggressive in preschool occurred for children who were likely *not* engaging in concurrent relational aggression. Examination of bivariate associations suggests that kindergarten relational aggression was negatively associated with kindergarten social-emotional adjustment. If this is the case, then it is possible that the relationally aggressive preschoolers in our relatively low-risk sample were particularly attuned to social relationships in preschool, when formation of peer relationships is quite salient. They may also have been attuned to the value of manipulating these relationships as tools to gain social status, access to resources, or as a means of harm. If so, then these underlying social cognitive abilities may have been harnessed in non-aggressive ways during the kindergarten transition. Future studies examining longitudinal trajectories of relational aggression, particularly in a higher-risk sample of preschoolers may shed further light on the effects of relational aggression on future adjustment.

Although relational aggression, on its own, was associated with positive kindergarten adjustment for aggressors, numerous studies have documented the negative consequences of relational aggression on victims, such as peer rejection, internalizing problems, and less positive peer relationships (e.g., Crick, Casas, & Ku, 1999). Peer victimization also predicts declines over time in school engagement (Buhs, Ladd, & Herald, 2006). Care should be taken in interpreting these findings in light of the fact that although not detrimental to the adjustment of relational aggressors in the domains assessed here, victims of these acts experience psychosocial adjustment problems that may influence their own transitions to kindergarten.

It is notable that the only sex-specific findings to emerge were well-replicated mean-level sex differences in physical aggression and student-teacher conflict. Mean level sex differences in relational aggression have been mixed, particularly in the preschool years, and the parity in levels of relational aggression reported here contributes to that literature. These findings should be interpreted in light of the fact that our measure of relational aggression combined both observations and teacher reports, and observational reports have yielded somewhat more consistent sex differences than teacher reports. The lack of sex as a significant moderator in all cases, for both stability and kindergarten adjustment analyses, indicates that these processes may operate largely the same for boys and girls at this age. Studies utilizing larger samples may be appropriately powered to examine three-way interactions between relational aggression, physical aggression, and sex, particularly in predicting student-teacher closeness and withdrawn/depressed symptoms.

Strengths and Limitations

This study has a number of strengths. It is the first study that we are aware of to examine the impact of both physical and relational aggression on adjustment across the transition from preschool to kindergarten. Our approach of examining not just the independent contributions, but also the interactive effects of relational and physical aggression adds complexity to our understanding of the role of preschool aggression. The fact that we followed the same children longitudinally from preschool to kindergarten, rather than using a cross-sectional approach, allows us to examine the effects of forms of aggression on future adjustment outcomes. This study also benefits from the use of multiple informants, including teacher reports and observations, which together provide a more comprehensive measure of aggression than any single measure. This approach should provide a more thorough assessment of physical and relational aggression and extend previous work, which has relied heavily on single teacher's ratings of aggressive behavior.

Despite these strengths, this study is not without limitations. First, our sample is relatively homogenous, consisting of predominantly European American families. Although a few child care centers offered either financial aid or evening programs for parents working the night shift, the majority of centers from which children were recruited served middle to upper-middle SES families. Because some evidence suggests that relational aggression may be more common among higher SES preschoolers (e.g., Bonica et al., 2003; McNeilly-Choque et al., 1996) and European American school age children (e.g., Kawabata & Crick, 2013), findings should be interpreted within this context. Moreover, given the finding of

Kawabata and Crick (2013) showing that the link between relational aggression (but not physical aggression) and internalizing symptoms was moderated by the ethnicity of the child, it is conceivable that the findings concerning the main and interactive effects of relational and physical aggression may vary, depending on the ethnic composition of the sample. Generalization of these findings should be limited to children of similar demographic characteristics and in similar types of early childhood programs. Future research will be needed to validate these findings in a more ethnically and socioeconomically diverse sample.

Moreover, the present study, which was a short-term longitudinal study, did not allow us to examine long-term consequences of preschool relational and physical aggression. Given literature demonstrating that peer relationships become more salient with age (Hartup & Stevens, 1997), the impact of relational aggression, which includes damage and manipulation of interpersonal relationships, may amplify across childhood. Further investigation of age differences may clarify the unexpected negative association in the present study between relational aggression and depressive symptoms in early childhood, despite findings of a meta-analytic study demonstrating positive associations between relational aggression and internalizing symptoms in middle childhood (Card et al., 2008).

Another limitation is the lack of observational data in kindergarten. As noted previously, reduced amounts of unstructured time in kindergarten, as compared to preschool, resulted in fewer opportunities to observe aggression. Additionally, the relatively low-risk sample used here likely influenced the extremely low rates of both physical and relational aggression observed in kindergarten. Much of the unstructured play occurred on playgrounds, where maintaining unobtrusive, close proximity to children's conversations was difficult. These challenges present further evidence of the challenge of conducting naturalistic observations among school age children. Future work should consider the use of microphones or other sound amplification technology (e.g., Craig, Pepler, & Atlas, 2000) to more closely, yet unobtrusively, observe increasingly covert uses of relational aggression during the school years.

Implications

The results of this study add important information to the field of relational aggression research, specifically with regard to this young population. In this sample, relational aggression in preschool was only problematic in the context of high levels of physical aggression. When not combined with physical aggression, relationally aggressive preschoolers were more accepted in kindergarten, had fewer teacher-reported withdrawn/depressed symptoms and had closer relationships with kindergarten teachers. These findings suggest that in preschool, relational aggression that is unaccompanied by physical aggression may predict better functioning in kindergarten in the domains assessed in this study. However, numerous studies demonstrate the deleterious nature of relational aggression in middle childhood and adolescence; thus, examining these associations across elementary school is warranted. In early childhood, measuring multiple forms of aggression may give a broader picture of children's risk for adjustment difficulties.

The findings discussed above have implications for intervention and prevention efforts. Physically aggressive preschoolers engaged in relational aggression in kindergarten and experienced lower quality student-teacher relationships. Given work demonstrating adjustment problems among elementary school aged children engaging in relational aggression and the deleterious effects of low quality relationships with kindergarten teachers (Hamre & Pianta, 2001), preschool may be a key time to intervene. Interestingly, relationally aggressive preschoolers demonstrated positive relations with both teachers and peers in kindergarten. These findings suggest that relationally aggressive preschoolers who do not also engage in physical aggression may be fairly successful with relationship building in kindergarten. Whether these relationships evidence higher levels of exclusivity (e.g., Sebanc, 2003) requires further study. If these relationships are used as tools for manipulation, then relationship-based interventions may be appropriate for highly relationally aggressive preschoolers to facilitate a smoother transition to kindergarten. Efforts to improve teacher-student relationship quality during the kindergarten transition, particularly by promoting closeness in these relationships, may improve outcomes for physically aggressive preschoolers.

Although highly relationally aggressive preschoolers may not experience psychosocial adjustment problems of the type measured in this study, victims of relational aggression in early childhood have higher levels of psychosocial maladjustment in general as well as future school difficulties. Thus from a classroom-wide perspective, educators should work to encourage social influence in more prosocial ways amongst all aggressive preschoolers, regardless of form. Understanding the dynamic ways in which different forms of aggression relate to each other over the course of preschool and kindergarten will help to create interventions that are sufficient for addressing the full spectrum of aggressive behavior.

References

Achenbach, TM. Manual for the Child Behavior Checklist/4–18 and 1991 Profile. Burlington, VT: University of Vermont, Department of Psychiatry; 1991.

Achenbach, TM.; Rescorla, LA. Manual for the ASEBA School-Age: Forms & Profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families; 2001.

Baker JA, Grant S, Morlock L. The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. School Psychology Quarterly. 2008; 23:3–15.

Bauman S, Del Rio A. Preservice teachers' responses to bullying scenarios: Comparing physical, verbal, and relational bullying. Journal of Educational Psychology. 2006; 98:219–231.

Belsky J, MacKinnon C. Transition to school: Developmental trajectories and school experiences. Early Education and Development. 1994; 5:106–119.

Birch S, Ladd G. Children's interpersonal behaviors and the teacher-child relationship. Developmental Psychology. 1998; 34:934–946. [PubMed: 9779740]

Bonica C, Arnold DH, Fisher PH, Zeljo A, Yershova K. Relational aggression, relational victimization, and language development in preschoolers. Social Development. 2003; 12:551–562.

Buhs ES, Ladd GW, Herald SL. Peer exclusion and victimization: Processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? Journal of Educational Psychology. 2006; 98:1–13.

Burr JE, Ostrov JM, Jansen EA, Cullerton-Sen C, Crick NR. Relational aggression and friendship during early childhood: "I won't be your friend!". Early Education and Development. 2005; 16:161–184.

Burt KB, Obradović J, Long JD, Masten AS. The interplay of social competence and psychopathology over 20 years: Testing transactional and cascade models. Child Development. 2008; 79:359–374. [PubMed: 18366428]

Card NA, Stucky BD, Sawalani GM, Little TD. Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. Child Development. 2008; 79:1185–1229. [PubMed: 18826521]

Carpenter EM, Nangle DW. Caught between stages: Relational aggression emerging as a developmental advance in at-risk preschoolers. Journal of Research in Childhood Education. 2006; 21:177–188.

Coie JD, Dodge KA. Continuities and changes in children's social status: A five-year longitudinal study. Merrill-Palmer Quarterly. 1983; 29:261–282.

Craig WM, Pepler D, Atlas R. Observations of bullying in the playground and in the classroom. School Psychology International. 2000; 21:22–36.

Crick NR. The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. Child Development. 1996; 67:2317–2327. [PubMed: 9022243]

Crick NR. Engagement in gender normative versus non-normative forms of aggression: Links to social-psychological adjustment. Developmental Psychology. 1997; 33:610–617. [PubMed: 9232376]

Crick NR, Casas JF, Ku H. Relational and physical forms of peer victimization in preschool. Developmental Psychology. 1999; 35:376–385. [PubMed: 10082008]

Crick NR, Casas JF, Mosher M. Relational and overt aggression in preschool. Developmental Psychology. 1997; 33:579–588. [PubMed: 9232373]

Crick NR, Grotpeter JK. Relational aggression, gender, and social-psychological adjustment. Child Development. 1995; 66:710–722. [PubMed: 7789197]

Crick NR, Ostrov JM, Burr JE, Cullerton-Sen C, Jansen-Yeh E, Ralston P. A longitudinal study of relational and physical aggression in preschool. Applied Developmental Psychology. 2006; 27:254–268.

Crick NR, Ostrov JM, Werner NE. A longitudinal study of relational aggression, physical aggression, and children's social-psychological adjustment. Journal of Abnormal Child Psychology. 2006; 34:127–138.

Crick NR, Werner NE, Casas JF, O'Brien KM, Nelson DA, Grotpeter JK, et al. Childhood aggression and gender: A new look at an old problem. Nebraska Symposium on Motivation. 1999; 45

Curby TW, Rimm-Kaufman SE, Ponitz CC. Teacher-child interactions and children's achievement trajectories across kindergarten and first grade. Journal of Educational Psychology. 2009; 101:912–925.

Eivers AR, Brendgen M, Borge AIH. Stability and change in prosocial and antisocial behavior across the transition to school: Teacher and peer perspectives. Early Education & Development. 2010; 21:843–864.

Gooren EMJC, van Lier PAC, Stegge H, Terwogt MM, Koot HM. The development of conduct problems and depressive symptoms in early elementary school children: The role of peer rejection. Journal of Clinical Child & Adolescent Psychology. 2011; 40:245–253. [PubMed: 21391021]

Fantuzzo J, McWayne C. The relationship between peer-play interactions in the family context and dimensions of school readiness for low-income preschool children. Journal of Educational Psychology. 2002; 94:79–87.

Hadley PA, Wilcox KA, Rice ML. Talking at school: Teacher expectations in preschool and kindergarten. Early Childhood Research Quarterly. 1994; 9:111–129.

Hamre BK, Pianta RC. Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. Child Development. 2001; 72:625–638. [PubMed: 11333089]

Hart CH, Nelson DA, Robinson CC, Olsen SF, McNeilly-Choque MK. Overt and relational aggression in Russian nursery-school-age children: Parenting style and marital linkages. Developmental Psychology. 1998; 34:687–697. [PubMed: 9681260]

Hartup WW, Stevens N. Friendships and adaptation in the life course. Psychological Bulletin. 1997; 121:355–370.

Hawley PH. Strategies of control, aggression, and morality in preschoolers: An evolutionary perspective. Journal of Experimental Child Psychology. 2003; 85:213–235. [PubMed: 12810036]

Hayes AF, Matthes J. Computational procedures for probing interations in OLS and logistic regression: SPSS and SAS implementations. Behavior Research Methods. 2009; 41:924–936. [PubMed: 19587209]

Howes C, Matheson CC, Hamilton CE. Maternal, teacher, and child care history correlates of children's relationships with peers. Child Development. 1994; 65:264–273. [PubMed: 8131652]

Howes C, Phillipsen LC, Peisner-Feinberg E. The consistency of perceived teacher-child relationships between preschool and kindergarten. Journal of School Psychology. 2000; 38:113–132.

Howes C, Burchinal M, Pianta R, Bryant D, Early D, Clifford R, et al. Ready to learn? Children's pre-academic achievement in pre-kindergarten programs. Early Childhood Research Quarterly. 2008; 23:27–50.

Hughes J, Cavell T, Willson V. Further support for the developmental significance of the quality of the teacher-student relationship. Journal of School Psychology. 2001; 39:289–301.

Hurd HD, Gettinger. Mothers' and teachers' perceptions of relational and physical aggression in preschool children. Early Child Development and Care. 2011; 181:1343–1359.

Johnson DR, Foster SL. The relationship between relational aggression in kindergarten children and friendship stability, mutuality, and peer liking. Early Education & Development. 2005; 16:141–160.

Kawabata Y, Crick NR. Relational and physical aggression, peer victimization, and adjustment problems in Asian American and European American children. Asian American Journal of Psychology. 2013; 39:301–315.

Ladd GW, Price JM. Predicting children's social and school adjustment following the transition from preschool to kindergarten. Child Development. 1987; 58:1168–1189.

La Paro KM, Kraft-Sayre M, Pianta RC. Preschool to kindergarten transition activities: Involvement and satisfaction of families and teachers. Journal of Research in Childhood Education. 2003; 17:147–158.

Ling-Lin H, Lawrence FR, Gorrell J. Kindergarten teachers' view of children's readiness for school. Early Childhood Research Quarterly. 2003; 18:225–237.

Love, JM.; Logue, ME.; Trudeau, JV.; Thayer, K. Transitions to kindergarten in American schools. Portsmouth, NH: U.S. Department of Education; 1992. (Contract No. LC 88089001)

Mantzicopoulos P. Conflictual relationships between kindergarten children and their teachers: Associations with child and classroom context variables. Journal of School Psychology. 2005; 43:425–442.

McNeilly-Choque MK, Hart CH, Robinson CC, Nelson DA, Olsen SF. Overt and relational aggression on the playground: Correspondence among different informants. Journal of Research in Childhood Education. 1996; 11:47–67.

Mesman J, Bongers IL, Koot HM. Preschool developmental pathways to preadolescent internalizing and externalizing problems. Journal of Child Psychology and Psychiatry. 2001; 42:679–689. [PubMed: 11464972]

Murray-Close D, Ostrov JM, Crick NR. A short-term longitudinal study of growth of relational aggression during middle childhood: Associations with gender, friendship, intimacy, and internalizing problems. Development and Psychopathology. 2007; 19:187–203. [PubMed: 17241490]

National Education Goals Panel. National education goals report executive summary: Improving education through family-school-community partnerships. Washington, D.C.: National Education Goals Panel; 1995.

Nelson DA, Springer MM, Nelson LJ, Bean NH. Normative beliefs regarding aggression in emerging adulthood. Social Development. 2008; 17:638–650.

Olson SL, Rosenblum K. Preschool antecedents of internalizing problems in children. Early Education and Development. 1998; 9:117–129.

Ostrov JM. Deception and subtypes of aggression during early childhood. Journal of Experimental Child Psychology. 2006; 93:322–336. [PubMed: 16325845]

Ostrov JM. Forms of aggression and peer victimization during early childhood: A short-term longitudinal study. Journal of Abnormal Child Psychology. 2008; 36:311–322. [PubMed: 17899360]

Ostrov JM, Crick NR. Forms and functions of aggression during early childhood: A short-term longitudinal study. School Psychology Review. 2007; 36:22–43.

Ostrov JM, Keating CF. Gender differences in preschool aggression during free play and structured interactions: An observational study. Social Development. 2004; 13:255–277.

Ostrov JM, Ries EE, Stauffacher K, Godleski SA, Mullins AD. Relational aggression, physical aggression and deception during early childhood: A multimethod, multi-informant short-term longitudinal study. Journal of Clinical Child & Adolescent Psychology. 2008; 37:664–675. [PubMed: 18645756]

Palermo F, Hanish LD, Martin CL, Fabes RA, Reiser M. Preschoolers' academic readiness: What role does the teacher-child relationship play? Early Childhood Research Quarterly. 2007; 22:407–422.

Peisner-Feinberg ES, Burchinal MR, Clifford RM, Culkin ML, Howes C, Kagan SL, et al. The relation of preschool child care quality to children's cognitive and social developmental trajectories through second grade. Child Development. 2001; 72:1534–1553. [PubMed: 11699686]

Pianta, RC. The Student-Teacher Relationship Scale. University of Virginia; 1992.

Pianta RC. Adult-child relationship processes and early schooling. Early Education and Development. 1997; 8:11–26.

Pianta, RC.; Cox, MJ. The changing nature of the transition to school: Trends for the next decade. In: Pianta, RC.; Cox, MJ., editors. The transition to kindergarten. Baltimore, MD: Paul H. Brookes Publishing; 1999. p. 363-380.

Pianta RC, Kraft-Sayre M, Rimm-Kaufman S, Gercke N, Higgins T. Collaboration in building partnerships between families and schools: The National Center for Early Development and Learning's Kindergarten Transition Intervention. Early Childhood Research Quarterly. 2001; 15:117–132.

Pianta RC, Nimetz SL. Relationships between children and teachers: Associations with classroom and home behavior. Journal of Applied Developmental Psychology. 1991; 12:379–393.

Pianta RC, Steinberg MS, Rollins KB. The first two years of school: Teacher–child relationships and deflections in children's classroom adjustment. Development and Psychopathology. 1995; 7:295–312.

Pianta RC, Stuhlman MW. Teacher-child relationships and children's success in the first years of school. School Psychology Review. 2004; 33:444–458.

Preacher KJ, Curran PJ, Bauer DJ. Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. Journal of Educational and Behavioral Statistics. 2006; 31:437–448.

Prinstein MJ, Cillessen AHN. Forms and functions of adolescent peer aggression associated with high levels of peer status. Merrill-Palmer Quarterly. 2003; 49:310–342.

Reinherz HZ, Paradis AD, Giaconia RM, Stashwick CK, Fitzmaurice G. Childhood and adolescent predictors of major depression in the transition to adulthood. The American Journal of Psychiatry. 2003; 160:2141–2147. [PubMed: 14638584]

Rimm-Kaufman SE, Pianta RC, Cox MJ. Teachers' judgments of problems in the transition to kindergarten. Early Childhood Research Quarterly. 2000; 15:147–166.

Roach CN, Gross AM. Assessing child aggression: A tale of two measures. Child & Family Behavior Therapy. 2003; 25(4):19–38.

Sebanc AM. The friendship features of preschool children: Links with prosocial behavior and aggression. Social Development. 2003; 12:249–268.

Silver RB, Measelle JR, Armstrong JM, Essex MJ. Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher-child relationship during the school transition. Journal of School Psychology. 2005; 43:39–60.

Stipek D, Miles S. Effects of aggression on achievement: Does conflict with the teacher make it worse? Child Development. 2008; 79:1721–1735. [PubMed: 19037945]

Werner NE, Crick NR. Maladaptive peer relationships and the development of relational and physical aggression during middle childhood. Social Development. 2004; 13:495–514.

Werner N, Senich S, Przepyszny K. Mothers' responses to preschoolers' relational and physical aggression. Applied Developmental Psychology. 2006; 27:193–208.

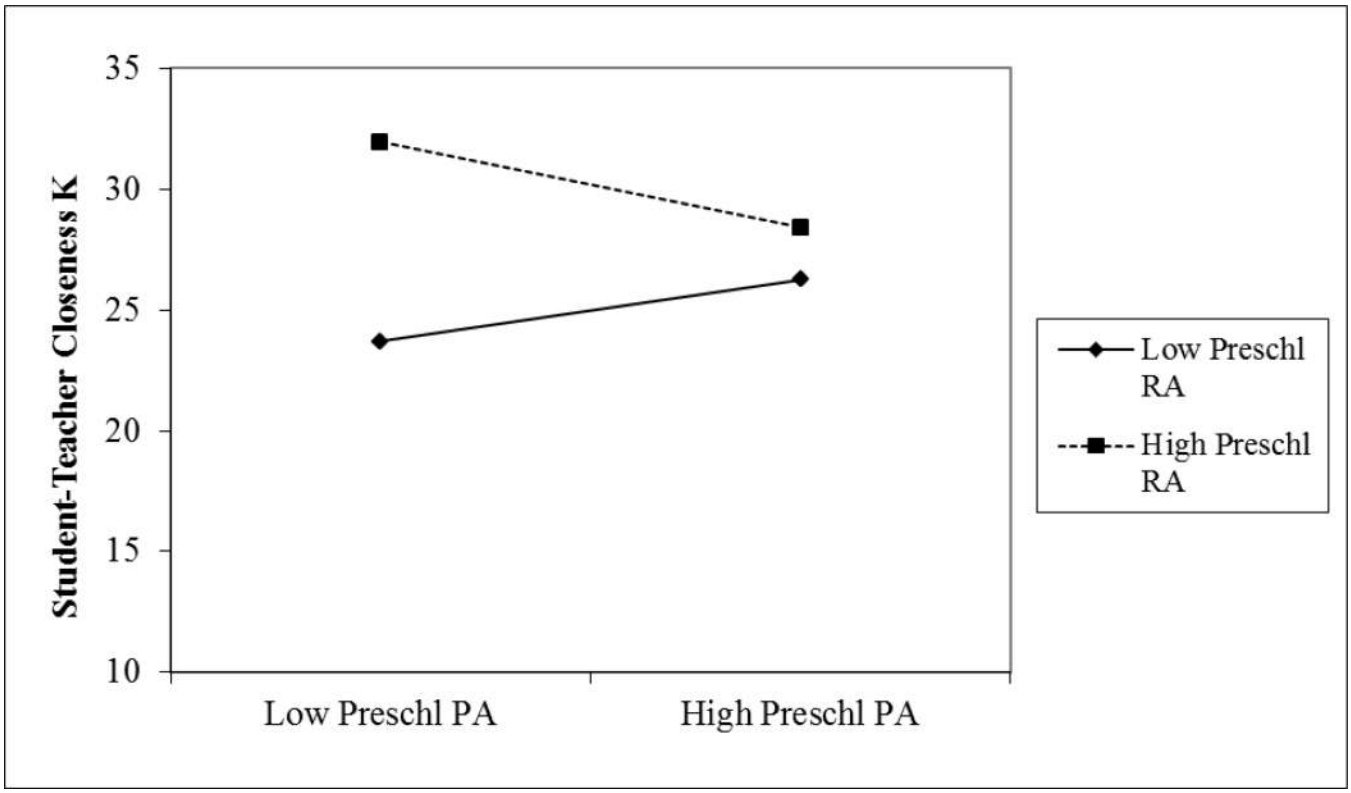

Figure 1.

Illustration of preschool PA × RA composite interaction in prediction of student-teacher closeness in kindergarten, controlling for sex and preschool student-teacher closeness. Note: High and low physical aggression evaluated at one standard deviation above and below the mean. High relational aggression calculated at 8.60, the value identified as defining the region of significance in the Johnson-Neyman analysis. Low relational aggression calculated at −3.63, the scale minimum in this sample.

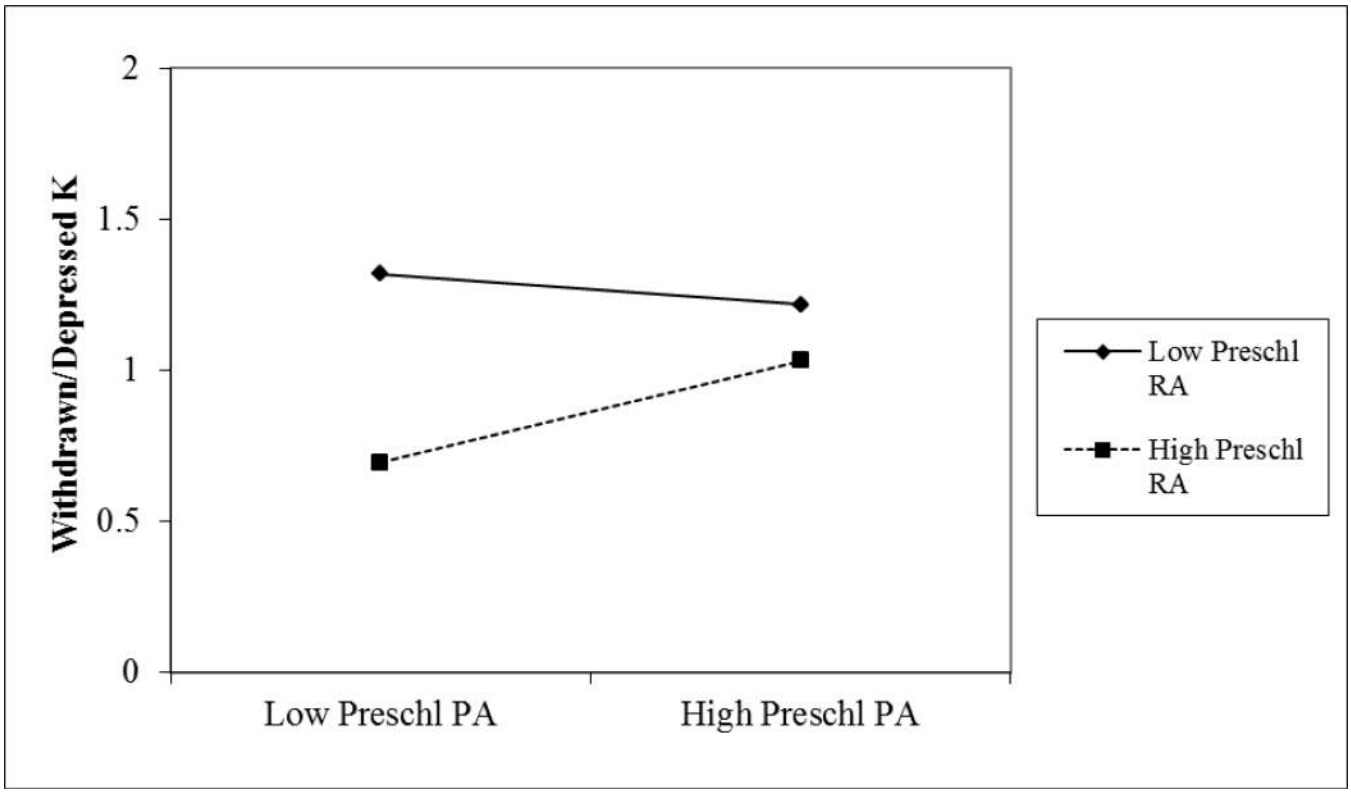

Figure 2.

Illustration of preschool PA × RA composite interaction in prediction of withdrawn/depressed symptoms in kindergarten, controlling for sex and preschool withdrawn symptoms. Note: High and low physical aggression evaluated at one standard deviation above and below the mean. High relational aggression calculated at 6.60, the value identified as defining the region of significance in the Johnson-Neyman analysis. Low relational aggression evaluated at −3.63, the scale minimum in this sample.

Table 1

Means and Standard Deviations for Primary Study Variables

	N	All	Girls	Boys
Preschool Relational Agg composite	166	.10(2.83)	.32 (2.86)	−.10 (2.81)
Preschool Physical Agg composite	167	.08 (3.04)	−.86 (1.97)[a]	.90 (3.56)[b]
Relational Agg – teacher (K)	176	11.98 (4.41)	11.75 (4.24)	12.18 (4.57)
Physical Agg – teacher (K)	170	8.22 (2.97)	7.72 (2.02)[a]	8.68 (3.58)[b]
Student-Teacher Conflict (K)	179	19.30 (6.15)	18.15 (4.80)[a]	20.33 (7.03)[b]
Student-Teacher Closeness (K)	181	42.76 (5.80)	43.15 (6.14)	42.40 (5.48)
Anxious/depressed[c] (K)	128	1.97 (2.65)	2.02 (2.52)	1.93 (2.77)
Withdrawn/depressed[c] (K)	132	1.26 (2.37)	1.67 (2.88)[d]	.90 (1.77)[e]
Peer Acceptance (K)	181	8.35 (1.56)	8.56 (1.47)[d]	8.16 (1.63)[e]

Note. Numbers in parentheses are standard deviations. Preschool aggression scores were composites derived from standardized observations and teacher reports. Time 3 aggression scores (Kindergarten) are teacher reports.

[a,b]Mean sex differences are noted with differing superscript ($p < .05$).

[c]Raw sum scores; standardized values with square-root transformations were used in regression analyses.

[d,e]Mean sex differences at a trend level noted with differing superscript ($p < .10$).

Table 2

Zero-order Correlations between Aggression and Kindergarten Outcomes

	1	2	3	4	5	6	7	8
1. Preschool RA	-							
2. Preschool PA	.51***	-						
3. RA (K)	.15t	.27**						
4. PA (K)	−.04	.08	.67***			-		
5. S-T Closeness (K)	.08	−.02	−.10	−.16*			-	
6. S-T Conflict (K)	.23**	.45***	.64***	.60***	−.22**			
7. Anxious/dep[a] (K)	−.10	−.08	.16t	.35***	−.22*	.20*		
8. Withdrawn/dep[a] (K)	.01	.00	.09	.19*	−.44***	.30**	.51***	
9. Peer acceptance (K)	.02	−.18*	−.39**	−.41**	.37**	−.54**	−.28**	−.43**

Note.

*$p < .05$;

**$p < .01$;

***$p < .001$.

[a]Square root transformed, not standardized.

Table 3

Summary of Regressions Predicting Student-Teacher Relationship Quality in Kindergarten

	B	*SE*	β	R^2	ΔR^2
DV: Student-Teacher Conflict				.31	
Sex	−.98	.92	−.09		
STRS Conflict Time 1	.23	.06	.30**		
Preschool PA	.42	.20	.23*		
Preschool RA	−.07	.18	−.03		
Preschool PA × RA	.05	.03	.14		.01
DV: Student-Teacher Closeness				.19	
Sex	−.83	1.00	−.07		
STRS Closeness Time 1	.39	.09	.37**		
Preschool PA	.13	.22	.06		
Preschool RA	.43	.19	.20*		
Preschool PA × RA	−.08	.04	−.21*		.03*

Note.

* $p < .05$;

** $p < .01$.

Table 4

Summary of Regressions Predicting Kindergarten Social-Psychological Adjustment

	B	*SE*	β	R^2	ΔR^2
DV: Peer Acceptance				.17	
Sex	.15	.24	.05		
Peer Acceptance Time 1	.33	.08	.35**		
Preschool PA	−.10	.05	−.22^t		
Preschool RA	.10	.05	.20*		
Preschool PA × RA	.01	.01			.00
DV: Withdrawn/Depressed				.13	
Sex	.34	.12	.31*		
Withdrawn Time 1	.10	.05	.19^t		
Preschool PA	.01	.03	.06		
Preschool RA	−.04	.03	−.20		
Preschool PA × RA	.01	.00	.23^t		.03^t

Note.

** $p < .01$;

* $p < .05$;

^{t} $p < .06$.