

Preschool Precursors of Children's Peer Rejection during the Late School-Age Years:
The Roles of Early Aggressive Behavior and Harsh Parental Discipline

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Abstract

This longitudinal study focused on harsh parenting and early externalizing behavior in preschool as precursors of individual differences in children's peer rejection during the late school-age years. Participants were 245 children (118 girls) 3-year-olds who were reassessed in the later school age years (10 years). Children's levels of early externalizing behavior were assessed by both teacher reports and mother-ratings. Harsh parenting ratings (corporal punishment) were assessed using interview-based and questionnaire measures. Additionally, age 10 peer liking and total peer aggression was assessed using teacher reports. My findings were consistent with past research revealing that the higher levels of aggressive behavior in preschool the increased likelihood of peer rejection at age 10. Furthermore, I found that preschool-age externalizing behavior was an enduring trait that expanded across time to encompass peer aggression in the later school years. Early harsh parenting was associated with age 10 outcomes, albeit to a modest degree. Additionally, I assessed pathways to peer rejection and found harsh discipline partially mediated associations between mother ratings of externalizing behavior and age 10 outcomes. Lastly, I assessed gender differences in pathways to peer rejection with my findings indicating separate paths for boys and girls. These data indicate the need to assess risk pathways to peer rejection during the early childhood years.

Keywords: peer rejection, harsh parental discipline, externalizing problems, aggression

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Peer rejection has increasingly been recognized as a major social problem. Studies have shown that up to 1 in 10 youth have been the target of some form of aggression during the school year (Rigby, 2002; Solberg & Olweus, 2003). In addition, approximately 10% of children have been identified as chronic or severe victims of peer aggression (Nansel et al., 2001). Targets of victimization, especially chronic victims, have been found to be at an elevated risk for a wide-array of psychosocial and behavioral adjustment problems. For example, consequences that have been associated with peer rejection and victimization have included depression, loneliness, low self-esteem, physical health problems, social withdrawal, alcohol and/or drug use, school absence and avoidance, decrease in school performance, self-harm, and suicidal ideation (Hanish & Guerra, 2002; Kochenderfer-Ladd & Skinner, 2002; Kochenderfer-Ladd & Wardrop, 2001; Leadbeater & Hoglund, 2009). Furthermore, evidence has shown that the adjustment problems associated with peer victimization impair a victim's emotional health, having lasting negative consequences long after victimization has ceased (Kochenderfer-Ladd & Wardrop, 2001). Thus, understanding factors in early childhood that place children at risk for later peer rejection is an important research objective. Accordingly, the main aim of my study was to explore one possible pathway from early preschool risk factors to later school-age peer rejection. This study will focus on how the risk of aggressive behavior is associated with harsh parenting, eventually leading to later peer rejection. The contributions of early aggression and harsh parenting to individual differences in peer rejection are discussed below.

Peer Rejection

Peer victimization has been defined as repeated exposure to negative actions on the part of one or more people, often involving a real or perceived imbalance in strength or power (Camodeca, Goossens, Terwogt, & Schuengel, 2002; Olweus, 1991). Peer victimization is pervasive in schools, with over $\frac{3}{4}$ of all children and adolescents reporting harassment by peers within the last year (Hoover, Oliver, & Hazler, 1992). More importantly, approximately 10% of children have been identified as chronically, frequently, or severely victimized by their peers (Nansel et al., 2001). It is believed that targets of aggression become increasingly stable over time, with the same children enduring peer victimization and rejection throughout childhood and adolescences (Barker et al., 2008). For example, Kochenderfer-Ladd (2003) found that children who were central targets of peer aggression were already established by late elementary school. Additionally, studies have shown that early experiences of victimization were carried into middle school and beyond (Kochenderfer-Ladd & Wardrop, 2001; Schwartz, Dodge, Pettit, & Bates, 1997; Schwartz, Proctor, & Chien, 2001). With these ideas holding true, it is important to study why and how victims are tagged early on. What makes some children chronic victims of peer victimization? How early in development are targets established?

The preschool years are an important period for understanding the developmental processes that explain why some children may become chronic targets of victimization. Preschool is a time when many children have their first experience in a cohesive peer group. In addition, it is a time of rapid social, emotional, cognitive, and personality development (Ladd, 1999; Olweus, 1993). Short-term longitudinal evidence has shown that individual differences in peer rejection can be reliably assessed in preschool-age children, and remain stable across the preschool year (Olson, 1992). Preschool is clearly an important period for understanding why

some but not other children are repeatedly rejected by their peers and how changes in peer rejection reflect changes in life stressors (especially family experiences) over time. However, there are gaps in the literature regarding the unique social processes that influence the developmental roots of peer rejection in early childhood (Olson, Lopez-Duran, Lunkenheimer, Chang, & Sameroff, 2011). In what follows, I discuss the role of high levels of aggressive and disruptive behavior in early childhood (“externalizing problems”) as key risk factors.

Early Externalizing Problems

Externalizing problems can develop in early childhood and place children on a developmental pathway to peer rejection. More specifically, early signs of aggression have been shown to predict rejection by peers (Lansford, et al., 2010). Control of aggression is learned during the context of rapid developmental changes that unfold across the preschool period (Olson, Sameroff, Lunkenheimer, & Kerr, 2009). Learning to regulate impulses is a task that is usually mastered in early childhood (Bradley, 2000; Shonkoff & Phillips, 2000). It is normal for children to struggle with learning how to deal with aggressive impulses with control being learned over time (Tremblay, 2000). However, a subgroup of children will continue to struggle with aggressive impulses into the school years. These children are at an elevated risk for establishing conflicted and coercive relationships with peers (Hughes, White, Sharpen, & Dunn, 2000; Keown & Woodward, 2006; Olson, Bates, Sandy, & Schilling, 2002). Therefore, lack of control over aggressive impulses early on may represent a critical pathway to pervasive peer problems and rejection. Johnson, Ironsmith, Snow, and Poteat (2000) found that elementary school children who behaved aggressively were more likely to be rejected by peers than other children. For example, when children in their studies said they did not like to play with a classmate, the reasons they gave were “he hit me” or other forms of aggressive behavior. The

findings held true for preschool-age children as well. In fact, aggression was the only behavior that was related to peer rejection at age 3.

Barker et al. (2008) found that children who displayed aggressive behaviors during the toddler period (17 months) were more likely to experience peer rejection in preschool. In addition, aggression was the best predictor for placing children on both the high and moderate trajectories for later peer victimization. However, mechanisms that explain how early displays of aggression affect later peer victimization remain poorly understood. As shown below, harsh parental discipline may play an important role in these processes.

Harsh Parenting

The ability to form positive relationships with peers is a key step in the development of social skills. Studies have shown that the parent-child relationship plays an important role in helping young children master this developmental task (Kochenderfer & Ladd, 1997; Reavis, Keane, & Calkins, 2010). Therefore, conflict in the parent-child relationship can affect a child's ability to form friendships and establish a peer group. Harsh parenting, of which corporal punishment is one important component, has been linked to difficulties in one's peer group (Schwartz, Dodge, Pettit, & Bates, 2000). Corporal punishment, in legal terms, has been defined as "the use of physical force with the intention of causing a child to experience pain but not injury for the purposes of correction or control of the child's behavior." Parents' frequent use of corporal punishment has been related to impaired child self-regulation and high levels of aggression (Gershoff, 2002).

Many studies have demonstrated a link between parenting behavior and aggression in school-age children (Criss, Shaw, & Ingoldsby, 2003; Heidgerken, Hughes, Cavell, & Wilson, 2004; Scarmella & Leve, 2004). More specifically, frequent and harsh parental discipline has

been related to early externalizing problems. Gershoff (2002) conducted a meta-analysis on the effects of parental corporal punishment on children. The study concluded that parental corporal punishment was associated with a range of negative behaviors, ranging from short to long term, and individual and relationship-level constructs. In addition, corporal punishment was associated with 10 undesirable child constructs, including immediate levels of increased aggression. Adding to this idea, a recent study found that preschool-age measures of parental corporal punishment made a significant contribution to concurrent levels of peer aggression (Olson et al., 2011).

Although a direct link between harsh parenting and aggression has been found, a small number of studies have looked at the connection between harsh parenting and subsequent peer rejection (Binney, Bowers, & Smith, 1994; Kochenderfer & Ladd, 1996; Ladd & Ladd, 1998). According to these authors, peer rejection can be seen as an outcome of a complex pathway of influences, starting in the family. The negative experiences in the family have fostered problems in the peer group and therefore have led to peer rejection (Mohr, 2006). Finnigan, Hodges, and Perry (1998) found that a wide array of parenting behaviors, from harsh to cold parenting, was linked to peer victimization in childhood. Thus, negative parenting hindered social development, which in return increased the child's risk for negative peer experiences. However, it should be noted that aggressive child behavior often elicits negative parenting (Patterson, 2002). Therefore, it is difficult to clearly draw conclusions on the directionality of the link between harsh parenting and aggression.

Supporting the association between parenting and peer acceptance, Schwartz et al. (1997) found that preschool exposure to harsh, punitive, or violent home environments was predictive of peer victimization in third- and fourth-grade boys. Furthermore, Mohr (2006) studied children from 5th-10th grade and found that family violence and abuse served as pathways to victimization

by peers. Thus, harsh and unsupportive early caregiving relationships may partly explain why some children become persistent and chronic targets of peer rejection.

In summary, early signs of aggression and harsh parenting have been directly associated with impaired peer relationships. Typically, harsh parenting has been linked to the early development of aggressive behavior which in-turn heightens children's risk of peer rejection. Therefore, there are major gaps in how these two risk factors directly and independently relate to later peer rejection. More importantly, little is known longitudinal pathways from preschool risk factors to later peer rejection.

Gender Differences

In examining associations between parenting, child aggression, and peer rejection, gender differences should be taken into consideration. Prior research on sex differences in peer rejection has yielded inconsistent findings. Some studies have shown no gender effects (Ladd, 1999), whereas other studies have revealed differences in rates of victimization between boys and girls, with boys often rating higher than girls (Ladd & Kochenderfer-Ladd, 2002). Furthermore, limited attention has been given to distinguishing early antecedents of peer rejection for boys versus girls. Investigators have begun to examine the precursors of peer rejection, and how they manifest differently for boys and girls. First, child sex has been theorized as a moderator of the development of child externalizing problems, especially aggression (Keenan & Shaw, 1997; Moffit, Caspi, Rutter, & Silva, 2001). However, empirical findings have been mixed. One study showed that highly aggressive girls were more highly victimized than highly aggressive boys in kindergarten (Snyder et al., 2003). On the other hand, Wood, Cowan and Baker (2002) found that externalizing behavior was linked with peer rejection for preschool boys but not girls. Similarly, Finnigan et al. (1998) observed gender differences in parenting

behaviors that were precursors of later peer rejection. For girls, victimization was associated with perceived maternal rejection and with girls' self-reports of aggressive coping during mother-child conflict. On the other hand, for boys, victimization was associated with perceived maternal overprotectiveness, especially when boys reported reacting with fear during mother-child conflict. Results supported the authors' theory that parenting that hinders children's development of gender-salient competencies (autonomy for boys and communion for girls) places children at risk for peer victimization. In contrast, in a longitudinal study that spanned ages 3 through 6 years, Baker et al (2008) failed to find specific effects in the patterns of prediction between aggression and victimization between genders.

In sum, there has been inconsistent evidence regarding the effects of child gender on peer rejection and its' precursors. Thus, further empirical studies of this important issue are needed.

Purpose of the Current Study

In the current study, I linked individual differences in aggression and harsh parenting at the preschool level to individual differences in children peer rejection during the late school age years (age 10). Preschool was an ideal time to evaluate emerging levels of peer adjustment. The majority of prior studies have focused on risk factors during the early school-years, when social skills and peer development have already emerged and therefore peer problems have already begun. The beginning of preschool marks a rapidly changing developmental period, when many children are exposed to peer settings outside the home (Olson et al., 2009). Children are encouraged to interact and form new peer relationships, at the same time that their social, emotional, and cognitive development is rapidly progressing. By examining children during this challenging time, I hope to identify early risk factors and the processes that antecede heightened peer rejection in the later school years.

The main goal of this study was to examine preschool-age predictors of individual differences in children's later peer rejection. My primary research question was: how does harsh parenting and aggressive behavior in preschool relate to a child's ability to form adequate peer relationships? More specifically, to what extent these two constructs predict peer rejection in the later school-age years (age 10)? I hypothesized that measures of early child aggression and harsh parenting practices would predict individual differences in peer rejection during the later school years, either alone or in combination.

Additionally, I examined possible explanatory mechanisms underlying associations between early behavioral risk and later peer rejection. I predicted that harsh parenting will mediate associations between early aggressive behavior and individual differences in children's peer rejection at age 10.

A third aim of the study was to examine potential sex differences in patterns of early parenting and aggressive behavior and more importantly later peer rejection. Little attention has been given to evaluating sex differences in early predictors of later peer rejection. However, child sex has been shown to be a powerful moderator of the development of aggressive behavior (Cote, Zoccolillo, Tremblay, Nagan, & Vitaro, 2001). In the current study I examined whether child gender has a moderating effect on pathways to peer rejection. I predicted that child sex will moderate the development of aggressive behavior which will in turn effect peer rejection at age 10. Furthermore, I predict that the moderating effect will be stronger for boys than girls, indicating that aggressive boys are more likely to be rejected by their peers. Lastly, I hypothesized that boys who rate high on preschool levels of externalizing behavior will also display high levels of total peer aggression at age 10.

Method

Participants

Participants were 245 children (118 girls) and their parents who took part in an ongoing longitudinal study of young children at risk for school-age conduct problems (Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Children were approximately 3 years old at Time 1 (T1) and 10 ½ years old at Time 3 (T3). Families were recruited from local and regional preschool centers, newspaper ads, and pediatrician referrals. Children were recruited at age three to represent the full range of externalizing symptom severity on the Child Behavior Checklist/2–3 (Achenbach, 1992), with an oversampling of young children in the upper range of the Externalizing Problems scale. Children with high familial risk factors (e.g., in initial stages of divorce, facing severe economic hardship), serious chronic health problems, or cognitive impairments (I.Q. < 70) were excluded. Families were representative of the local population. The majority of children were of European American heritage (86%), and most others were identified as African American (5%) or biracial (8%). Most mothers were married (89%), 3% were living with a partner, 5% were single (never married), and 3% were divorced. The median annual family income was \$52,000, ranging from \$20,000 to over \$100,000.

Of the 240 families assessed initially, we have retained 210 (88%) who participated in all aspects of data collection and 96% who have provided partial data. Twenty families moved out of state but continue to provide questionnaire data. Of the 10 families no longer in the study only 2 have refused participation (too busy). The other 8 withdrew because of family or child illness. Attrition was not selective based on our comparisons of major sociodemographic or study characteristics.

Procedure

Age 3, mothers and fathers were interviewed in their homes by a female social worker and then asked to complete a packet of questionnaires. Family demographic information was obtained; in addition ratings of parenting style were obtained. The majority of children in our study (86%) during wave 1 were enrolled in preschool or daycare programs outside home. Preschool teachers were asked to contribute readings of children's externalizing behavior. At age 10, school teachers provided ratings of peer rejection.

Measures

Child externalizing behavior. At T1, mothers ($n = 235$) and fathers ($n = 157$) completed the Child Behavior Checklist for ages 2–3 (CBCL/2–3; Achenbach, 1992). At T3, mothers ($n = 215$) and fathers ($n = 155$) completed the CBCL for ages 6–18 (CBCL/6–18; Achenbach & Rescorla, 2001). The CBCL is a commonly used, 99 item, 3-point scale (from “2”=very true or often true of the child to “0”=not true of the child) rating inventory that measures a child's behavioral and emotional problems based on parents' observations over the previous two months. The CBCL consists of two empirically derived dimensions of child problem behavior: Externalizing (with subscales in Aggressive Behavior and Destructive Behavior) and Internalizing (with subscales in Anxious/Depressed Behavior and Withdrawn Behavior). The Externalizing scale was used to measure child externalizing behavior.

The Teacher Report Form for ages 6–18 (The TRF/6–18; Achenbach & Rescorla, 2001) was completed at T1 by kindergarten teachers ($n = 190$). The TRF and parent CBCL are structurally identical, except that the Externalizing factor subscale consists of Attention Problems (instead of Destructive Behaviors) and Aggressive Behavior.

Measures of parental harsh discipline. During a home interview (T1), mothers reported how frequently they and their husbands had physically disciplined their child (e.g. spank, grab, shake) during the last 3 months (Dodge, Pettit, & Bates, 1994). Possible answers included never (0), once/month (1), once/week (2), daily (3), and several times daily (4). We adapted this measure by creating a summary scale based on the frequency with which the mother reported that her child received physical punishment from either parent (Kerr, Lopez, Olson & Sameroff, 2004). The lowest score was assigned to children who received no physical punishment from either their mother or father. Children assigned the next lowest score received no physical punishment from one parent, but were physically punished once per month by the other parent, and so on. Children who experienced physical punishment several times daily from both parents received the highest score. These procedures yielded a total score, corporal punishment. Approximately 73% of parents endorsed occasional use of physical punishment, 39% stated that they used corporal punishment at least once per month, and at the most extreme end of the continuum, 8% physically punished their child one or more times each day.

Peer rejection. At age 10 years, elementary teachers completed the Inventory of Peer Relations (Dodge & Coie, 1987). This 20-item scale provides measures of reactive (“when teased, strikes back”) and proactive (“bullies others”) peer aggression and peer acceptance vs. rejection. The scale has high internal consistency and moderate construct validity (Dodge & Coie, 1987). For the purpose of the present study, a total peer aggression score was derived, drawing from the same teacher checklist that the peer rejection scale was drawn from. Total peer aggression was a composite of teacher rated reactive aggression and teacher rated proactive aggression at T3 ($\alpha=.70$).

Analysis Plan

In preliminary analyses, descriptive properties of measures, mean-level gender differences, and bivariate associations between study variables were examined. Following preliminary analyses, additional research questions were addressed using structural equation models (SEM; Kline 2005). To begin, path analysis was used in SEM. Path analysis is a simple form of SEM which models explanatory relationships between observed variables (Raykov, & Marcoulides, 2000). After the path analysis model, the remaining analysis used more sophisticated models in SEM. Structural equation models was chosen over a more traditional evaluation of mediation through linear regression for multiple reasons. A major advantage of using SEM as opposed to multiple regression was the ability to apply the model to multiple groups (in this case gender) simultaneously and observe how the model fit and path parameters changed when they were constrained to be equal or allowed to be free. This method also allowed us to examine both direct and indirect pathways between preschool precursors to later school-age peer rejection and social aggression (Bollen, 1987). Furthermore, SEM programs allow one to use estimation techniques that take missing data into account, such as full-information maximum likelihood estimation (FIML; Arbuckle 1996; Enders & Bandalos, 2001). For all models in this analysis, Mplus 5.2 with FIML estimation was used (Muthén & Muthén, 2007).

One of my theoretical predictions was that boys and girls would demonstrate different pathways to peer rejection. Multiple group analysis was performed through sequentially constraining and freeing pathways between genders and examining differences in coefficients using a series of chi-square difference (Kline, 2005). If the chi-square difference value was significant, it indicated that restraining the parameter of the nested model to be equal across groups significantly worsened the fit. For all models, multiple fit indices were used to see how

well the specified models approximated the observed covariance structure, through comparison with a model in which all constructs are assumed to be unrelated (Bollen, 1989). Good-fitting models are traditionally indicated by non-significant chi-squares; however, with larger samples, it is possible to get significant chi-squares even for models that fit the data well.

Results

Preliminary analyses

Descriptive statistics and sex differences. Means, standard deviations, and mean-level sex differences for all study variables are shown in Table 1. Boys received higher teacher ratings of preschool-age externalizing behavior than girls. It also was revealed that preschool-age boys received higher levels of parental corporal punishment than girls. Additionally, at age 10, teachers rated boys as having higher levels of peer aggression than girls.

Bivariate correlations between study variables. Pearson correlations between all study variables are shown in Table 2. At age 3 years, nearly all study variables were significantly intercorrelated. The teacher rating of child externalizing behavior was positively related to the frequency of harsh parental punishment reported by mothers. In addition, frequent parental harsh punishment was significantly related to maternal ratings of child externalizing behavior. However, maternal and teacher ratings of child externalizing behavior were independent at this age.

At age 10, teacher ratings of peer liking were significantly correlated with ratings of peer aggression. As expected there was a negative association between the variables, indicating that children who were more aggressive with peers were less well liked than others.

Path Analysis Model. To test whether age 3 measures of child aggression and parental harsh punishment predicted later peer adjustment, a path analysis model in SEM was conducted

(see Figure 1). Maternal reports of child externalizing behavior were not found to be predictive of peer acceptance at age 10. However, early child externalizing in the home setting was a significant predictor of total peer aggression at age 10. Likewise, teacher ratings of child externalizing behavior in preschool were negatively predictive of age 10 peer liking and positively predictive of age 10 total peer aggression. This was true for early harsh parenting as well.

Harsh Parenting as a Mediator. SEM was used to determine whether harsh parenting mediated the effects of early externalizing behavior on later school age peer adjustment outcomes. First, a model was run with age 3 frequent punishment mediating the effect of age 3 teacher rating of child externalizing to age 10 outcomes (see Figure 2). Comparing Figure 1 and Figure 2, there was a minor reduction in variation between teacher rating of externalizing and age 10 outcomes, however the mediation effect did not explain all of the variation. Next, a model was run with age 3 frequent punishment mediating the effect of age 3 mother rating of child externalizing to age 10 outcomes (see Figure 3). By comparing Figure 1 to Figure 3 there was no reduction in variation between mother rating of externalizing behavior and age 10 outcomes. Therefore, frequent punishment was not a mediator of this pathway. In conclusion, frequent punishment can be seen as a partial mediator of age 3 externalizing to age 10 outcomes. Partial mediation in this case was when the paths from ratings of externalizing behavior to age 10 outcomes were reduced in absolute size but was still different from zero when the mediator (frequent punishment) was introduced.

Multiple Group Analysis. Multiple Group Analysis was performed to determine whether pathways between preschool antecedents and later peer rejection differed by gender. As the first step, a model with all parameters constrained to be equal for both groups was estimated.

I then identified which paths were significantly different for boys and girls by comparing the fully unconstrained model to a more constrained, nested model, focusing on one parameter at a time. The path from harsh parenting to total peer aggression was first constrained as it appeared most similar across the groups. The Chi square difference test between the resulting model and the baseline model showed that equating this path did not significantly worsen the model fit. Finally, I constrained another path and performed the Chi square difference test between the more restrictive model and the less restrictive model.

As shown in Figure 4, the pattern of relationships among the latent variables differed by child sex. The association between mother ratings of externalizing behavior and harsh parenting was significant for boys but not girls. Boys and girls did not differ in the magnitude of association between mother externalizing ratings and teacher externalizing ratings or between harsh parenting and teacher externalizing ratings. Paths from teacher externalizing to total peer aggression and teacher externalizing to peer liking were significant for both groups. Neither gender had a significant relationship between harsh parenting and total peer aggression. Furthermore, the path from harsh parenting to peer acceptance was only significant for girls. In addition, mother ratings of externalizing behavior predicted peer liking for boys but not girls. Finally paths between mother ratings of early externalizing to total peer aggression were significant for boys but not girls.

Discussion

My primary goal was to examine processes through which externalizing behavior and harsh parenting in preschool were associated with children's peer rejection and aggression in the later school years. Previous literature has shown that early aggressive behavior places children on elevated pathways to later peer rejection (Barker et al., 2008). My findings were consistent

with past research revealing that the higher levels of aggressive behavior in preschool the increased the likelihood of peer rejection at age 10. Furthermore, I found that preschool-age externalizing behavior was an enduring trait that expanded across time to encompass peer aggression in the later school years.

As expected, early harsh parenting was associated with age 10 outcomes, albeit to a modest degree. Preschool age children who received high levels of harsh parenting tended to receive lower ratings of peer acceptance than others. The findings affirmed previous research showing that troubled parent-child relationships provide one important foundation for the child's ability to form peer relationships later in life (Schwartz et al., 2000). Similarly, there was a significant relationship between early harsh parenting and peer aggression at age 10. Several studies have demonstrated a link between harsh parenting and concurrent externalizing behavior (Criss et al., 2003; Heidgerken et al., 2004; Scarmella & Leve, 2004), but this study was unique in revealing a prospective relationship between early parenting and later peer aggression. Further analysis is needed to gain a better understanding of how harsh parenting in preschool predicts aggression in the later school age years.

Even though both preschool precursors were found to be predictive of age 10 outcomes, my results showed that early externalizing behavior was a stronger predictor of later peer rejection. My findings are consistent with past research that emphasizes individual traits as indicators of peer liking (Boivin, Hymel, & Bukowski, 1995; Olweus, 1993; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). This finding brings to question whether individual characteristics within the child may influence or override environmental factors such as parenting.

A second major aim of the study was to illuminate mechanisms underlying pathways between preschool risk factors and later peer aggression. I hypothesized that harsh parenting would mediate associations between early aggressive behavior and individual differences in children's peer rejection at age 10. Using structural equation modeling I examined two mediation models that addressed these issues. In the first model, I determined whether harsh parenting at age 3 mediated the effects of teacher ratings of externalizing behavior on age 10 outcomes. Harsh parenting was found to be a significant mediator of the effects of early externalizing behavior on later peer adjustment. However, findings supported partial, but not full, mediation of this relationship. Similar results were obtained for the second model, which revealed that harsh discipline partially mediated associations between mother ratings of externalizing behavior and age 10 outcomes. Thus, these findings partially supported my hypothesis that harsh discipline plays a significant explanatory role in the "translation" of early temperament risk into later peer adjustment problems. However, the fact that there was partial mediation also suggests that many other risk and protective factors come into play across the period between early and late childhood.

Finally, my study highlighted sex differences in pathways to peer rejection. Given that little is known about sex differences in early predictors of later peer rejection, a final aim of the study was to determine whether child sex moderated pathways between early childhood risk and children's later peer adjustment outcomes. I found that early harsh parenting was a significant predictor of girls' levels of later peer acceptance, but this did not hold true for boys. For girls, the higher levels of early harsh discipline predicted lower levels of later peer acceptance. This is similar to a study by Finnigan et al. (1998) which found that girls who viewed their mothers as rejecting, hostile, and discouraging of verbal expression were more likely to be victimized by

their peers. For boys, the only predictor of peer victimization was mother overprotectiveness. The majority of previous studies have used only maternal ratings when assessing harsh parenting (Casas et al., 2006; Park et al., 2005). However, my study accounted for both mothers and fathers and therefore added to the strength of the argument that negative parenting is a strong predictor of girls' peer acceptance. There are various paths by which harsh parenting might lead to peer rejection for girls. One such route is the idea that parental threat leads girls to feel depressed, worthless, or anxious. Girls, more so than boys, may be more sensitive to harsh parenting and react to it in a more personal manner. In addition, harsh parenting may interfere with girls' acquisition of social skills that are valued in the female peer group. Social skills valued by female peers include empathy, prosocial behavior, intimate communication, and affect regulation, which are different than the valued skills for boys (Arslan, Durmuşoğlu-Saltali, & Yilmaz, 2011; Finnigan, 1998). Therefore, girls who lack these skills may invite ridicule and abuse as well as experience feelings of inadequacy that further contribute to their rejection and possible victimization.

I found mixed results related to early child externalizing behavior as a precursor of later peer acceptance, depending on the nature of the informant. Teachers' ratings of externalizing behavior were not predictive of children's peer acceptance at age 10. However, mothers' ratings of externalizing behavior were found to be predictive of boys' later peer acceptance, but not girls. Prior studies have demonstrated the gender differences in the rate of aggressive behavior (Coie & Dodge, 2006). Furthermore, a few studies have found that the most robust predictor of subsequent peer victimization is physical aggression (Ladd & Tropp-Gordon, 2003; Snyder et al., 2003). However, few studies have shown gender differences in associations between aggression and rates of peer rejection. One explanation of this can be seen in how peers and

teachers react to aggressive behavior. Fagot, Hagan, Leinbach, and Kronseberg (1985) found that in a preschool sample of children, girls' aggressive acts were largely ignored by peers while boys, on average, received a response from peers. In the same study teachers responded to only 10% of girls' assertive acts and to 41% of boys' assertive acts. Therefore, starting in preschool boys are taught to be more assertive and aggressive in order to gain attention from peers and teachers. In the same study, Fagot et al. (1985) assessed the same reactions in the early school-age years. Again they found that boys' assertive acts received negative reactions from peers more often than girls' and that girls still received less responses to their assertive acts than did boys. These findings may partially explain why aggressive preschool boys are at risk for later peer rejection. Not only are preschool boys taught by teachers to be more assertive to get attention but we also see that other peers respond more negatively to aggressive boys than girls.

Another explanation is that boys are consistently more aggressive and dominance oriented than girls, and most peer interaction during childhood occurs in same-gender groups (Maccoby, 1998). Therefore, due to social learning theory boys may tend to become more aggressive in order to try to relate to other people, including peers. Furthermore, Patterson, Littman, and Bricker (1967) found that in the short term, frequent displays of aggressive and antisocial behavior at school suppressed subsequent victimization by peers. However, this short-term benefit came at a long-term cost in that individual trajectories for recurring victimization and aggressive behavior were increasingly aligned and reciprocally causal. This suggests that frequent aggressive behavior and persisting victimization can become linked in a repeating feedback loop for boys.

My findings also revealed a significant gender difference in pathways from mother's ratings of externalizing behavior to total peer aggression. Mothers' ratings of externalizing

behavior were a significant predictor of boys' later levels of peer aggression, but this did not hold true for girls. This difference in pathways may in part reflect how peer aggression was measured in my study. Peer aggression was defined as teachers' ratings of children's reactive and proactive aggression. However, it is known from past literature that there are gender differences in how aggression is displayed; with boys typically displaying more overt forms and girls on average using more relational means (Crick et al., 1999). The term *relational aggression* refers to behaviors that harm others through damaging their relationships, feelings of acceptance, inclusion in social groups, and friendship (Crick et al., 1999). This form of aggression has been found to serve multiple functions, such as gaining objects or status while harming others emotionally and psychologically (Underwood, Galen, & Paquette, 2001). Crick and Grotpeter (1995) stated that when children are attempting to harm a peer, they use a method that will cause the most harm to the values that are important to their particular peer group. In the female world, social status and relationships are of most value for fitting into a peer group (Crick & Grotpeter, 1995). This importance of relationships in the female world can help to explain why the most common form of cruelty among girls is relational aggression. In conclusion, the current study may have underestimated girls' levels of aggression in the later school-age years due to the fact that relational aggression was not taken into account when measuring total peer aggression.

Overall, there were discrepancies in the findings of pathways from externalizing behavior to age 10 outcomes. Only maternal ratings of early externalizing behavior predicted later peer adjustment outcomes. Teacher ratings of early externalizing behavior did not predict age 10 outcomes. It has previously been advocated to obtain ratings from multiple informants in order to accurately understand a particular child's internalizing or externalizing behavior (van der Ende, Verhulst, & Tiemeier, 2011). However, a common finding in child psychiatry is that there is only

moderate agreement among different informants' ratings of children's mental health problems (De Los Reyes & Kazdin, 2005). Furthermore, in meta-analyses examining agreement between different informants' ratings of children's psychopathology, if adult informants observed children in different settings (e.g., parent and teacher) the average correlations between ratings was only .28 (Achenbach, McConaughy, & Howell, 1987; Duhig, Renk, Epstein, & Phares, 2000). In my particular study, mothers rated their children at home, while teachers rated the children in a school environment. School and home can elicit different responses and behaviors from children. At home, children are exposed to both their parents and siblings while at school they are forced to interact with peers. Past research has found that children often act differently around peers than they do with their families (Kraemer et al., 2003). Additionally, parents are the authority figure of the home while teachers are the leaders of the classroom (Tisak, Crane-Ross, & Tisak, 2000). Overtime a child's behavior will adapt to settings and be shaped due to that particular environment. The differing effects of a setting on children's behavior may partially explain why there are inconsistent findings between settings and the discrepancy between mother and teacher ratings of externalizing behavior predicting age 10 outcomes.

Strengths and Limitations

This study had a number of significant strengths. It is one of the few studies that have used prospective longitudinal assessments of children's peer adjustment across important developmental transition periods. Assessing precursors of children's later peer adjustment during the early preschool period revealed the significance of early social skills and parenting practices.

A second strength was the careful and stringent handling of the data and the use of sophisticated analytic techniques. Statistical assumptions such as multivariate normality, absence of multicollinearity, lack of outliers, and ample sample size are often taken for granted, even

though they are rarely met by real data (MacKinnon, Lockwood, & Williams 2002). Assumption violations in this study were screened for and dealt with appropriately based on guidelines set by prior research. Structural equation modeling allowed for estimation of relations with latent variables, thereby minimizing the effects of measurement error. Tests for alternative models were included in order to verify the legitimacy of hypothesized mediating relationships over spurious associations.

Additional noteworthy strengths were assessments of early developmental risk that spanned multiple constructs, two different settings, and multiple informants; use of both observational and rating measures; and the participation of relatively equal numbers of boys and girls.

Four limitations of this study should be noted. First, children in the study were drawn from a community sample of mostly Caucasian, intact, two-parent middle-class families. Therefore results may not generalize to low-income families or those with greater ethnic diversity.

A second limitation was that the measurement of corporal punishment was somewhat restricted. Parent's ratings of corporal punishment focused on frequency and did not take severity into account. This may have resulted in underestimation of parent's actual discipline practices. Additionally, my measure did not directly address the broader construct of punitive discipline that also includes harsh emotional behaviors such as screaming, yelling, and/or derogating the child. Given the importance of frequent corporal punishment, in future studies it would be worthwhile to include broader constructs of punitive discipline that encompass a full range of harsh practices.

A further limitation was that I did not account for relational aggression in my measure of age 10 peer aggression. In the 1990's, Crick coined the term relational aggression as aggressive behaviors that harm others through damaging their friendships, feelings of acceptance, inclusion in groups, and relationships (Crick et al., 1999). There has been increasing attention given to the idea that as girls get older their cruelty to peers most often takes the form of relational aggression. Since I did not account for individual differences in relational aggression, I may have underestimated girls' levels of peer aggression at age 10. This may have explained why I did not find a significant pathway from preschool aggression to later peer aggression for girls.

Lastly, children in this constrained community sample represented the full range of the externalizing problems spectrum with a disproportionate number in the medium-high to high range. However, relatively few had externalizing scores in the extreme range, limiting generalizability to clinically referred populations of young children.

Conclusion

My study extended prior research by testing mechanisms through which aggressive behavior and harsh parenting at the preschool level predicted later peer adjustment. This study was one of the first of its kind to relate preschool measures of aggressive disruptive behavior and harsh parenting to later peer acceptance. Preschool is an important period in the development of social skills for children and marks a milestone for childhood peer development. By examining children at this challenging time, I was able to identify early risk factors that influence the pathways to peer rejection in the later school years. The data showed that adverse parenting behaviors, particularly harsh parenting, were important contributors to the in young children. Furthermore, high levels of externalizing behavior in preschool have been linked with future social difficulties including peer rejection and the use of peer aggression in the later school age

years. Thus, this study highlights the need for family and individual behavior intervention during preschool.

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Table 1*Mean Comparison by Gender of Non-Imputed Study Variables*

	Mean		SD		t-test
	Boys	Girls	Boys	Girls	
T1 Age 3 Risk Factors					
CTRF Externalizing (teacher)	12.01	7.88	13.80	10.41	B>G, p< .05
CBCL Externalizing (mother)	11.84	11.17	7.37	7.27	
Freq of Physical Punishment (mother)	7.30	5.23	7.58	5.82	B>G, p< .05
T3 Age 10 Outcomes					
CTRF Peer Liking	25.52	25.22	4.10	4.38	
CTRF Reactive Aggression	5.31	4.46	3.17	2.41	
CTRF Proactive Aggression	3.70	3.24	1.44	0.76	
CTRF Total Peer Aggression	9.01	7.71	4.40	2.83	B>G, p< .05

Note. T1=Data Collection at Time 1 (3 years old); T3=Data Collection at Time 3 (10 years old).

Table 2

Correlations among Child Externalizing Behavior, Harsh Parenting, Peer Liking, and Peer Aggression

	1	2	3	4	5
(1) T1 CTRF Externalizing (teacher)	—	.13	.17*	-.23**	.42**
(2) T1 CBCL Externalizing (mother)		—	.29**	-.15*	.34**
(3) T1 Frequency of Physical Punishment (mother)			—	-.18*	.27**
(4) T3 Peer Liking (teacher)				—	-.59**
(5) T3 Peer Aggression (teacher)					—

Note. Spearman correlations (2-tailed) of imputed data used for SEM are reported. $N = 245$ for all variables. T1=Data Collection at Time 1 (3 years old); T3=Data Collection at Time 3 (10 years old).

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

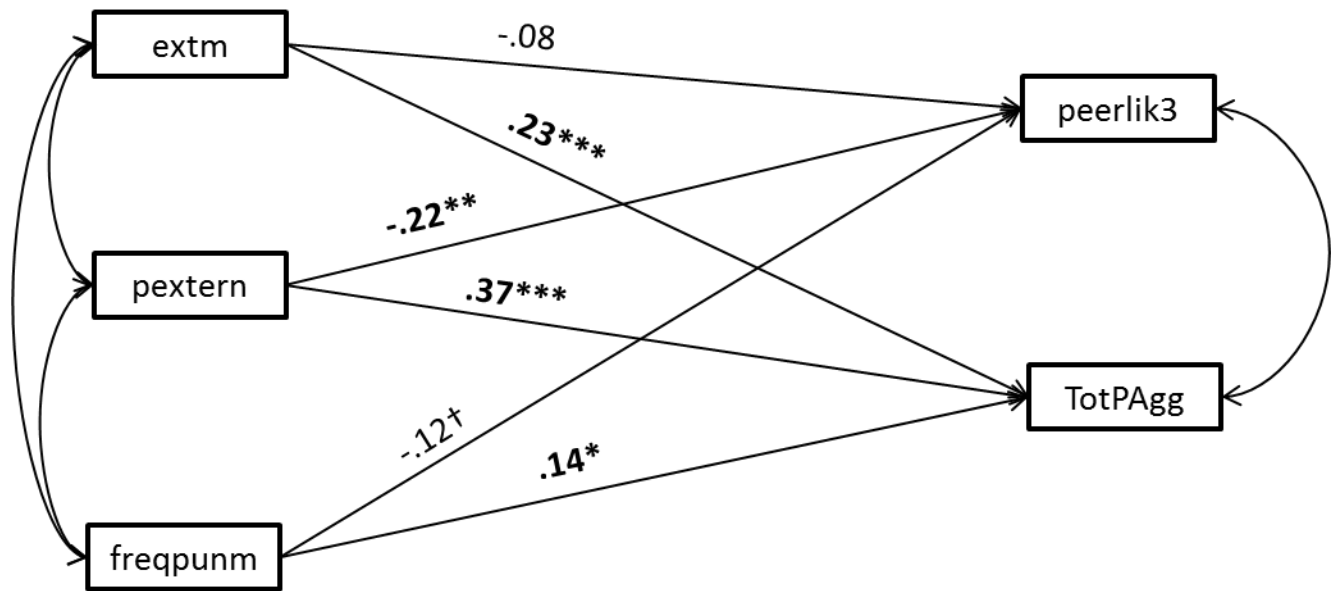


Figure 1. Path analysis model predicting changes in peer liking and total peer aggression at age 10.

Note. Standardized path coefficients are shown.

† < .1. *p < .05. **p < .01. ***p < .001.

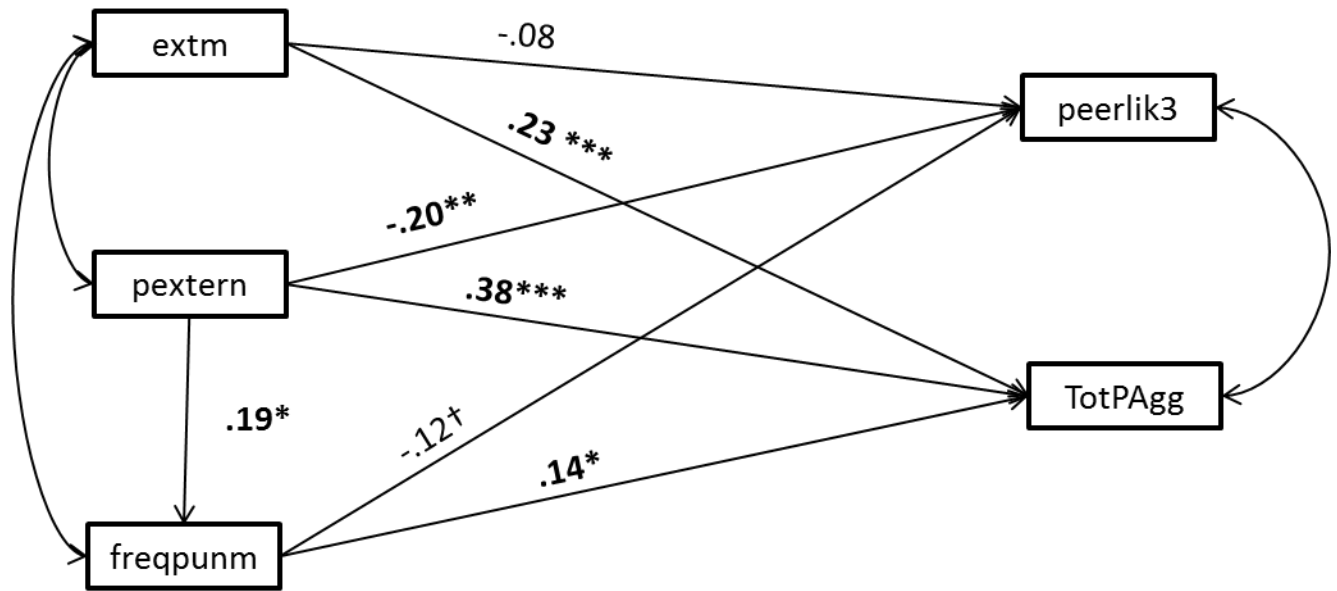


Figure 2. Mediation model with age 3 frequent punishment mediating the effects of age 3 teacher rating of child externalizing to age 10 outcomes.

Note. $^{\dagger} < .1$. $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

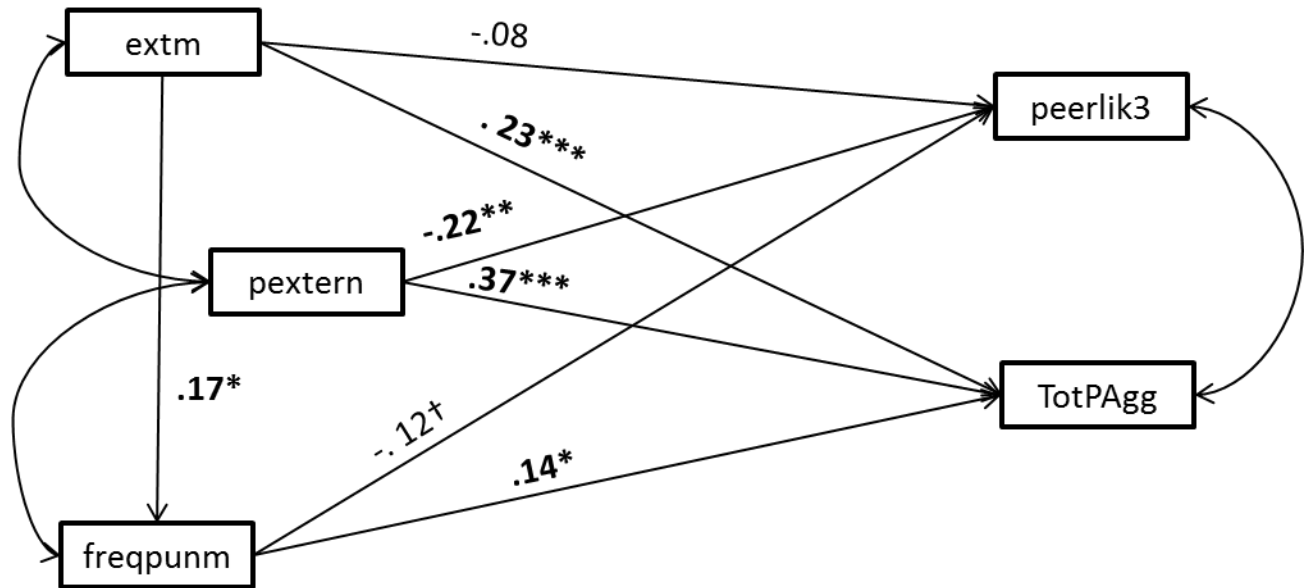


Figure 3. Mediation model with age 3 frequent punishment mediating the effects of age 3 mother rating of child externalizing to age 10 outcomes.

Note. † < .1. * $p < .05$. ** $p < .01$. *** $p < .001$.

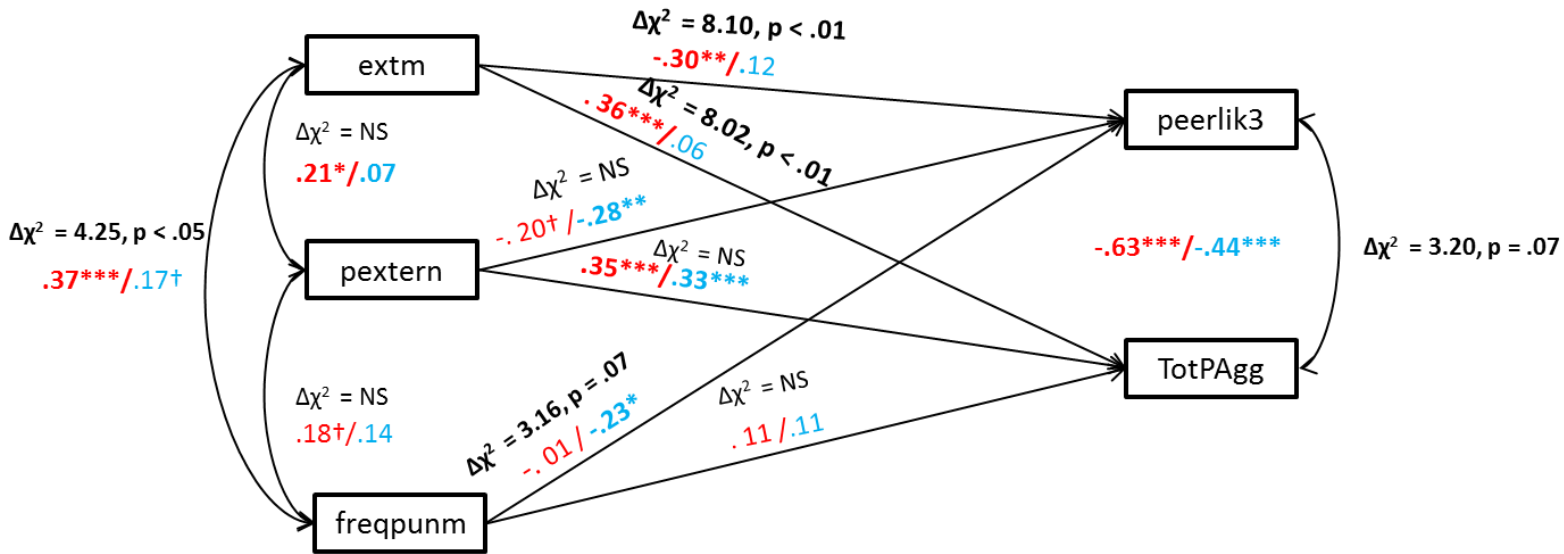


Figure 4. Multiple group analysis of direct and indirect effects of the mediation model by child sex.

Note. Pathways for boys are represented in front of the dashed line while pathways for girls are represented behind the dashed line.

Saturated model. Chi square= 0.000, p< .000.

† < .1. *p< .05. **p< .01. ***p< .001.