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The Importance of Mutual Positive Expressivity in Social Adjustment: Understanding the Role of Peers and Gender

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Abstract

The relations between young children's mutual (reciprocated) and overall positive emotion (PE) with same- and other-gender peers and their social adjustment were explored. Children's PE and peers' PE were observed across the preschool year during peer interactions (N = 166; 46% girls; M age = 52 months). Results revealed that girls and boys had similar frequencies of overall PE and mutual PE when interacting with same-gender peers, but girls were marginally higher compared to boys in overall and mutual PE when interacting with other-gender peers. Girls and boys did not have greater rates of either type of PE after controlling for gender segregation during same- or other-gender interactions. Using structural equation modeling, children's mutual PE, regardless of their gender, positively predicted indicators of positive adjustment (e.g., prosocial behavior, cooperation) and negatively predicted indicators of negative adjustment (e.g., hyperactivity, disruption, exclusion by peers). Children's overall PE did not predict either type of adjustment. Findings support the importance of mutual PE for children's development.

Keywords

positive emotion; mutuality; peer relationships; gender; social adjustment

Positive emotion (PE) is often viewed as a social phenomenon (e.g., Parkinson, 1996). Most emotions have the capability of being experienced in a social context; however, what makes PE unique is the type of action tendency that it often elicits. For example, frequent displays of PE are thought to facilitate social interactions because PE typically elicits an approach tendency (Frijda, Kuipers, & ter Schure, 1989). Moreover, children (and adults) often prefer being with others who express relatively high levels of PE (Halberstadt, Denham, & Dunsmore, 2001; Lyubomirsky, King, & Diener, 2005; Sroufe, Schork, Motti, Lawroski, & LaFrenière, 1984). Thus, it is not surprising that displays of PE are hypothesized to elicit positive responses in other people (see Fredrickson, 1998, 2001). Investigations of children's PE, however, typically have focused only on the target child's emotional display. This focus excludes the relational context of PE (i.e., peers' emotional reactions).

The recipient of a child's emotional response is important to examine because the recipient has the potential to shape current social interactions and influence future responses of the

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child. Specifically, if the recipient expresses PE in response to the child's initial PE (i.e., mutual PE), the social interaction is likely to be a positive experience and thus promote social affiliation (see Fredrickson, 1998, 2001) and continued engagement. This social connectedness is hypothesized to foster the development of meaningful relationships and the promotion of individuals' positive adjustment (Papa & Bonanno, 2008). Mutual PE should facilitate future positive experiences and thereby positively impact children's social adjustment more than when children's initial displays of PE are not reciprocated (i.e., non-mutual PE). To highlight the importance of the relational context of PE, the present study examined the relation of young children's observed mutual PE with their peers to their positive and negative social adjustment. We also examined the relation between a child's observed overall PE (i.e., target child PE regardless of peer context) and social adjustment. Children's overall PE included all peer interactions where the child expressed PE. Assessing children's overall PE was important in order to compare these findings to those that included only specific situations of mutual PE. Similar to other researchers (Lengua, 2002; McDowell & Parke, 2005), we define positive social adjustment as consisting of a variety of social skills and socially appropriate behaviors (e.g., cooperation, prosocial behavior) and negative social adjustment as consisting of a variety of externalizing and internalizing social behavior problems (e.g., anxiety, hyperactivity, disruption).

A related issue of interest is whether mutuality in PE matters more for some child pairings than for others. The most fundamental basis upon which children select peer interaction partners is gender. Specifically, girls tend to interact more often with other girls than with boys, and boys tend to interact more often with other boys than with girls (Maccoby, 1998; Martin & Fabes, 2001). Moreover, researchers have found a positive relation between children's observed PE and same-gender play (Martin & Fabes, 2001). Other researchers have found that children's observed PE during gender-segregated play is higher than PE during gender-integrated play (Galligan, Fabes, Hanish, Martin, & Goble, 2011). It is likely that mutual PE varies depending on the gender pairings of social interactions. What is less understood is the implication of these possible differences on children's social adjustment. The present study is unique in its investigation of variation in mutual PE as a function of the children's gender and that of their play partners.

Importance of PE in Social Adjustment

Fredrickson (1998, 2001) proposed that, over time, PE can build resources and skills for a person to use in various situations. In general, PE elicits unique response patterns (e.g., approaching and exploring situations) compared to negative emotions (Frijda et al., 1989; Klinnert, 1984). Furthermore, exploration that is promoted by PE allows children the opportunity to increase their thought and action repertoires because it results in learning about new situations and contexts. For young children, PE is particularly useful as they began to interact in new social contexts (e.g., the preschool environment) and learn how to positively engage their peers to promote and maintain healthy, positive relationships. Researchers have found that preschoolers who are relatively low in observed positive expressivity tend to have more displays of negative social adjustment (e.g., playing alone or being reticent to enter a play group) when playing with peers (Spinrad et al., 2004). Thus, one would expect PE to be positively related to positive adjustment and negatively related to negative adjustment. Indeed, some researchers have found positive relations between observed PE and adjustment (Denham, McKinley, Couchoud, & Holt, 1990; Dougherty, 2006; Jones, Eisenberg, Fabes, & MacKinnon, 2002; LaFrenière & Sroufe, 1985). For example, in one study, preschoolers' observed PE during classroom activities was positively related to their peer-rated likeability (Denham et al., 1990). In another study with preschoolers, LaFrenière and Sroufe (1985) found a positive relation between children's observed PE during peer interactions and teacher-rated social competence. With elementary

school-aged children, Jones et al. (2002) found that observed PE during recess was positively related to teacher-rated social competence.

The findings for the relation between PE and negative social adjustment are mixed. In one study, Kim, Walden, Harris, Karrass, and Catron (2007) found that children's self-rated experiences of PE were negatively related to parents' and teachers' reports of negative social adjustment (i.e., aggression, delinquency, hyperactivity). However, in several studies where researchers investigated the relations of both positive and negative social adjustment with PE, positive adjustment was significantly related in the expected direction with PE whereas negative social adjustment was unrelated with PE (Lengua, 2002, 2003; McDowell & Parke, 2005). For example, in one study of fourth graders, McDowell and Parke (2005) found that children's display of PE was positively significantly related to teachers' and peers' ratings of positive social adjustment but was not significantly related to teachers' or peers' ratings of negative social adjustment. In another study with elementary school-aged children (using composites from mothers' and children's reports), children's reported PE was positively related to concurrent and longitudinal (one year later) social competence but was unrelated to concurrent or longitudinal negative social adjustment (i.e., internalizing and externalizing problems) (Lengua, 2003; see also Lengua, 2002). Thus, there appears to be a fairly robust relation between PE and positive social adjustment but not so for PE and negative social adjustment.

One possible explanation for inconsistencies in the relation between PE and adjustment may be found in the way that PE is experienced. Some researchers suggest that PE is a social phenomenon (Parkinson, 1996); however, most often, children's PE is individually assessed as opposed to being relationally assessed (i.e., considering peers' reactions). Therefore, relatively little is known about the role of peers' emotional reactions in the relation between children's own emotionality and adjustment. Given the social nature of PE and the fact that peers play a significant role in children's development, focusing on the relational aspect of PE, specifically peers' PE in response to children's PE, may be particularly important for understanding the relation between PE and adjustment. Thus, examining the reciprocation of PE (i.e., children's mutual PE with their peers) or lack thereof may be more predictive of children's social adjustment than examining individual children's PE alone.

Peers who are the recipients of children's PE have the potential to significantly impact the maintenance of positive social relationships and the development of socially adjusted behaviors. Children who repeatedly share in positive experiences are likely to develop a meaningful relationship with one another through the facilitation of social connectedness (see Papa & Bonanno, 2008). Positive peer experiences, including relationships, may be particularly important for children's development, especially their emotional and social development (Harris, 1995; Rubin, Bukowski, & Parker, 2006; Saarni, 1999). Meaningful relationships are thought to foster social adjustment through the practice and implementation of social skills (e.g., prosocial behavior, positive communication skills). Additionally, these experiences may be determined by a number of factors, but PE, because of its saliency and immediate impact on ongoing peer interactions, may be one of the most important. This may be even more important early in childhood when peer interactions are defined by shared experiences more than by abstract concepts of trust, support, and loyalty (Rubin et al., 2006). In one study, preschoolers in positive playgroups (a composite of children's affective balance and positive attention to each other's emotion—including positive matching) were rated higher by their teachers in social competence compared to preschoolers in negative playgroups (Denham, Mason, Caverly, Schmidt, Hackney, Caswell, & DeMulder, 2001). Thus, during the preschool years, mutuality in children's PE may be particularly significant in the development of social adjustment.

Gender Variations in Mutual PE

A body of research suggests that girls may be socialized more than boys to express PE as a way to be social (see LaFrance, Hecht, & Paluck, 2003), which could result in gender differences in PE. Researchers also have found that mothers report expressing more PE with their girls compared to their boys (Garner, Robertson, & Smith, 1997). However, the findings regarding gender differences in children's PE are mixed. In a meta-analysis, Else-Quest, Hyde, Goldsmith, and Van Hulle (2006) found that boys (13 months to 13 years) were viewed by adults as higher than girls in high-intensity pleasure (e.g., exuberance) whereas girls were higher than boys in low-intensity pleasure (e.g., positive mood). Other researchers have not found gender differences in children's PE (Grolnick, Cosgrove, & Bridges, 1996; Volbrecht, Lemery-Chalfant, Aksan, Zahn-Waxler, & Goldsmith, 2007; Sallquist, Eisenberg, Spinrad, Gaertner, Eggum, & Zhou, 2010).

One explanation for these discrepant findings could be a lack of consideration of the gender of children's play partners when children's PE has been observed. Children's displays of PE during interactions with their peers as well as peers' emotional responses to these displays may vary based on the individual characteristics of the children. One characteristic that may be particularly important is children's gender (their own and that of their peers). Children and peers may vary their emotional expressions based on the gender composition of social interactions. These variations in emotional displays may affect social interaction patterns, which, in turn, may affect children's social adjustment. Evidence suggests that the relation of emotionality to social adjustment differs for boys and girls. For example, Eisenberg, Fabes, Bernzweig, Karbon, Poulin, and Hanish (1993) found that boys' teacher-rated emotional intensity was negatively related to peer likeability whereas girls' emotional intensity and peer likeability were unrelated. Other researchers, however, have not found gender differences when comparing the correlations between children's PE and social behaviors (Kim et al., 2007). However, previous studies have focused solely on children's individual PE without consideration of children's play partners. Therefore, to better understand the function of children's PE in their social adjustment, it is necessary to investigate the moderating role of children's gender (their own and that of their peers) in the relation of mutual PE to adjustment.

For example, beginning in early childhood, children show a clear preference for playing with same-gender peers (LaFrenière, Strayer, & Gauthier, 1984). Although little research has addressed this issue, peer interactions involving same- versus other-gender peers may differ in their level of PE. For instance, it is likely that peer interactions involving same-gender peers would be higher in mutual PE compared to peer interactions involving other-gender peers. Research supports this hypothesis; play with same-gender peers is related positively to positive emotionality and negatively to negative emotionality in preschoolers (Martin & Fabes, 2001). We fill the gap in the existing literature by exploring the relation of PE to social adjustment when children are involved in same- and other-gender peer interactions.

The Present Study

The primary purpose of the present study was to examine the relation of children's observed mutual PE with their peers during naturally-occurring social interactions to their positive and negative social adjustment as reported by their preschool teachers. As a comparison (and to build on previous studies), the relation between children's overall PE (as expressed in all peer interactions regardless of peer recipient's response) and their adjustment also was investigated. Given the importance of PE in facilitating and maintaining positive social experiences (e.g., Fredrickson, 1998), we hypothesized that the relations between children's

mutual PE and their adjustment would be stronger than the relations between children's overall PE and their adjustment. Overall, we expected PE to positively relate to positive adjustment and to negatively relate to negative adjustment.

A secondary aim of the present study was to investigate the role of children's gender in mean level displays of overall and mutual PE as well as in the relation between PE and adjustment. We hypothesized that girls may display more PE with their peers than boys because girls may be socialized to be concerned about social relationships and to use PE to sustain social relationships compared to boys. Based on previous research regarding same-gender peer interactions (e.g., Martin & Fabes, 2001), we hypothesized that children's overall PE and their mutual PE would be higher when interacting with same-gender peers compared to other-gender peers. Regarding the relation between PE and adjustment, because girls compared to boys may use PE more for social purposes, we expected the relations to be stronger for girls than boys.

Method

Participants

Participants were drawn from a multi-cohort longitudinal study of peer relationships and early school readiness. Data from the first two cohorts (i.e., the first 2 years of the study) were included in the present study; data from the third and final cohort were excluded because the type of contingent observational data needed for the analyses were not collected. Parental consent was sought for $N = 207$ children from 11 participating Head Start preschool classrooms in a large southwestern city, with a 100% permission rate. However, eight children repeated preschool, participating in both Years 1 and 2 of the study. These eight children were counted as target children during Year 1 only; in Year 2 they were eligible to serve as peers, but not as target children.

Of these 199 children, slightly more were boys (55%) than girls. On average, children were 52 months of age at the beginning of the school year ($SD = 5.10$; range = 37–60 months; 90% were between 45 and 60 months). The majority of children were Mexican American (65%); the remaining children were European American (9%), African American (5%), Asian American (3%), Native American (2%), other (2%), or unknown (14%). The majority of the children came from two-adult homes (70%) and where Spanish was the primary language (56%). Head Start programs serve children and families who have incomes at or below the federal poverty line; thus, 82% of the participating families reported an annual income of $30,000 or less.

All 199 children were eligible to serve as peers in social interactions. However, when identifying the sample of target children, this sample size was reduced. Thirty-three children were excluded as target children because their total number of observations and/or their total number of peer interactions were 1 *SD* below the mean. In all but 5 of these cases, these children had withdrawn from a participating school early in the academic year; for the remainder, children were either chronically absent or were extremely socially isolated. Thus, the final sample included 166 target children.

Sample characteristics for the target sample ($n = 166$) were similar to the full sample ($n = 199$). Over half (54%) were boys. Children's average age was 52 months ($SD = 4.92$; range = 37–60 months; 90% were between 46 and 60 months). The majority of children were Mexican American (74%), with 11% European American, 5% African American, 3% Asian American, 1% Native American, 2% other and 4% unknown. Fifty-eight percent came from families whose home language was Spanish, and 61% came from two-adult homes.

Additionally, 82% had family incomes at or below $30,000. Excluded participants did not significantly differ from the target sample on any of the demographic factors.

Observational Procedures and Measures

Across the 2 years of data collections, children's and their peers' PE were observed by 40 independent observers (average of 10 observers per semester; 82% female coders) using an adaptation of Fagot and colleagues' interactive coding system (Fagot, Hagan, Leinbach, & Kronsberg, 1985). Specifically, observers conducted focal coding of children during the academic year by following a randomly ordered list of children in the classroom. Observations were conducted inside and outside during free-play and semi-structured play periods to ensure that children would have choice in both activities and potential interaction partners; observers refrained from coding during teacher-defined and teacher-structured group activities (e.g., group time, lunchtime, naptime).

The target child's initial behavior (e.g., prosocial, neutral, aggressive) and emotion were coded in successive 10-second observations on handheld computers. Specifically, the target child's behavior and emotion were first coded and then, if the recipient was a peer, the recipient's behavior and emotion were coded. After each child was observed for a session (i.e., approximately 45–60 consecutive codes), the observer began a new session of observations on the next child on the list (once the observer finished the list, the observer started again with the child at the top). On average, children were observed for 8.25 sessions throughout the year (*SD* = 4.8). Moreover, within each observation session, children were observed, on average, for 55 successive 10-second sessions (*SD* = 14). Variations in the total number of observation sessions were largely due to classroom-level factors (e.g., children attending smaller sized classes received more observation sessions than children attending larger sized classes), but there also were variations due to children's availability (e.g., some children entered the classroom late in the school year, resulting in fewer observation sessions). Variations in the number of successive 10-second observations also were due to classroom-level differences in the amount of time devoted to free and semi-structured play versus teacher-structured activities and to individual differences in children's availability (e.g., individual differences in absences, pick-up and drop-off times). Using these procedures we obtained a total of 76,738 usable observations (i.e., children were present in the classroom and available for coding), with an average of 462.3 observations per child (*SD* = 272.3; range = 154–1303).

Approximately 25% of the total observations (*N* = 18,930) involved interactions with a peer (*M* = 115.9, *SD* = 92.9, range = 16–462) and these data serve as the basis for the present study. If the target child was involved in an interaction with a peer (i.e., engaged in an action towards a peer), the peer's behaviors and emotions were then coded. Thus, peer interactions occurred whenever the target child directed a behavior toward a peer within a 10-second observation. All behaviors (e.g., prosocial, neutral, aggressive) were reliably coded (see Hanish, Sallquist, DiDonato, Fabes, & Martin, 2011). If the target child exhibited multiple behaviors toward a peer in a 10-second observation, the first behavior was coded. Children's and their peers' affect was coded on a 5-point scale (1 = *high negative*, 2 = *low negative*, 3 = *neutral*, 4 = *low positive*, 5 = *high positive*). Because of the focus on PE, only observations in which children received a score of "4" or "5" were included in the present study (*M* = 48.9 per child, *SD* = 43.3, range = 3–250). The ID number of the primary peer to whom the target child directed the interaction was then coded, as was the peers' response.

Reliability estimates were obtained throughout the academic year by having two observers independently code the same child (obtained on approximately 10% of the observations). These procedures have been used in previous studies and have demonstrated high reliability and validity with a similar percentage of reliability conducted (Fabes, Martin, & Hanish,

2003; Hanish, Ryan, Martin, & Fabes, 2005; Martin & Fabes, 2001; Pellegrini, Bohn-Gettler, Dupuis, Hickey, Roseth, & Solberg, 2011). The reliability estimates (intra-class correlations) of the affect of the target child and peer were .78 and .76, respectively. Percent agreement for the identity of the peer was 97%.

Teacher-Reported Measures

At the end of the school year, lead teachers completed several measures of positive and negative adjustment for each child (teachers were paid for completing the assessments). Five target children left their classrooms early, so teachers did not complete questionnaires on these children.

Positive adjustment—Children's prosocial behavior was assessed with the prosocial subscale of the Child Behavior Scale (CBS; Ladd & Profilet, 1996). Each of the seven items was rated on a 3-point scale (1 = *doesn't apply* to 3 = *certainly applies*; e.g., "Helps other children", "Seems concerned when other children are distressed."). A prosocial behavior score was obtained by averaging the scores for all of the items (α = .87). A high score indicated a high level of prosocial behavior.

The characteristics of children's play behaviors were measured with the play interaction subscale of the Penn Interactive Peer Play Scale (PIPPS; Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning, & Debnam, 1995). Each of the 10 items was rated on a 4-point scale (1 = *never* to 4 = *always*; e.g., "Shares toys with other children", "Encourages others to join play."). A mean play interaction score was calculated, whereby higher scores indicated greater collaborative and supportive play (α = .82)

Measurement of children's ability to appropriately initiate and maintain peer interactions was assessed with the social development subscale of the Developmental Profile (Fabes, Martin, Hanish, Anders, & Madden-Derdich, 2003). Each of the six items was rated on a 4-point scale (1 = *not yet* to 4 = *proficient*). Example items included "Responds appropriately to other's expressed emotions and intentions" and "Effectively uses adults as sources of support, comfort, and assistance." A social development score was obtained by averaging the item scores (α = .94). Higher scores indicated more positive social adjustment.

Children's readiness to cooperate and follow teacher's instructions was measured with the cooperation subscale of the Teacher Rating Scale of School Adjustment (Birch & Ladd, 1998; Ladd, Kochenderfer, & Coleman, 1996). Each of the seven items was rated on a 3-point scale (1 = *doesn't apply* to 3 = *certainly applies*; e.g., "Follows teacher's directions", "Uses classroom materials responsibly."). A cooperation score was calculated by averaging item scores (α = .93). Higher scores indicated greater cooperation.

Negative adjustment—Children's hyperactivity and concentration were assessed with the hyperactive-distractible subscale of the CBS (Ladd & Profilet, 1996). Each of the four items was rated on a 3-point scale (1 = *doesn't apply* to 3 = *certainly applies*), and items were averaged to create a total score (α = .88). Example items included "Is restless; runs about or up and down; doesn't keep still" and "Has poor concentration or short attention span." Higher scores indicated greater hyperactivity and distractibility.

The degree to which children were excluded by peers was assessed with the exclusion subscale of the CBS (Ladd & Profilet, 1996). Each of the seven items was rated on a 3-point scale (1 = *doesn't apply* to 3 = *certainly applies*), and a mean score was computed across items (α = .90). Example items included "Is not chosen as a playmate by peers" and "Is not much liked by other children." Higher scores indicated greater exclusion.

Children's internalizing and externalizing play behaviors were captured with the disconnection and disruption subscales of the PIPPS (Fantuzzo et al., 1995). Each contained 11 items rated on a 4-point scale (1 = *never* to 4 = *always*). Example items included "Withdraws" and "Wanders aimlessly" (disconnection) and "Starts fights and arguments" and "Demands to be in charge" (disruption). Items from each scale were averaged to create total scores (both αs = .91). High scores indicated greater levels of disconnection and disruption.

Results

Descriptive statistics are presented first for all major study variables followed by a set of analyses examining mean-level gender differences in children's PE. Analyses relevant to our primary aim of examining the relation between mutual PE and adjustment then are presented.

To create the mutual PE score, children received a score of "1" for observations when their PE was reciprocated with their peers' PE. If children's PE was not reciprocated with peers' PE, a score of "0" was given. A sum score then was created to form children's mutual PE. Therefore, a higher number indicated a greater amount of mutual PE situations and a fewer amount of non-mutual PE situations; conversely, a lower number indicated a greater amount of non-mutual PE situations and a fewer amount of mutual PE situations. Recall that affect was coded on a 5-point scale with PE being recorded as either a "4" or "5". Initial analyses were computed for the "4"s and "5"s separately and revealed no differences; thus, these two scores were combined before forming the final mutual PE scores.

The primary aim was to examine the relation of both overall and mutual PE with children's adjustment. For these analyses, two PE proportion scores were generated for each child to control for variation in the number of observations (i.e., control for differences in frequencies of same- versus other-gender interactions). The first was a measure of the target child's own PE during peer interactions, whereby a PE score was calculated as the proportion of all peer interactions in which the target child exhibited PE divided by all peer interactions (M = .43, SD = .14). The second score considered not only the target child's PE, but whether or not the emotion was matched by his or her peer. A mutual PE score was calculated as the proportion of all peer interactions in which both the target child displayed PE and the peer matched the child's PE divided by all peer interactions where the target child displayed PE (M = .63, SD = .12).

Means and standard deviations of the major study variables are presented in Table 1. All teacher-reported variables were normally distributed. The number of observations of children's PE was slightly skewed (*skew* = 2.15) as well as the number of observations of children's mutual PE (*skew* = 2.20). When proportion scores were used, both of these variables were normally distributed. The relations among the study variables were similar with and without demographic variables (i.e., children's age, children's race, language spoken at home, family income, and parents' marital status) as covariates; therefore, demographic variables were not covaried in further analyses.

Mean-Level Differences in PE

Initial analyses examining gender differences in PE, regardless of the gender of their peers, revealed no significant differences between boys' and girls' overall PE (i.e., children's own PE without consideration of their peers' emotion) or mutual PE. Based on paired *t*-tests, same-gender interactions were higher in both types of PE compared to other-gender interactions, ts(165) = 8.28 and 8.06, ps < .001 and .001, Cohen's d = .75 and .75, with overall and mutual PE, respectively. We then examined mean-level gender differences in

children's PE with same-versus other-gender peers. These analyses were conducted separately for overall PE and mutual PE (see Table 1 for means).

Overall PE—A repeated measures multivariate analysis of variance (MANOVAR) with overall PE during same-gender interactions and overall PE during other-gender interactions as the dependent measures and child's gender as the factor was conducted. Based on the MANOVAR, there was a marginal gender difference, $F(2, 163) = 2.46$, $p = .09$, $\eta^2 = .03$. Follow-up univariate analyses revealed that girls and boys were similar in overall PE during same-gender interactions but girls compared to boys were marginally higher in overall PE during other-gender interactions, Fs(1, 164) = 0.03 and 3.64, ps = *ns* and .06, η^2s = .00 and .02, with same- and other-gender interactions, respectively.

This analysis, however, does not take into account the differences in the number of peer interactions between same- and other-gender peers. When controlling for the total number of observations with either same-gender or other-gender peers in separate repeated measures analysis of covariance (ANCOVAR), girls and boys displayed similar levels of overall PE, Fs(1, 163) = 0.01 and 0.98, *ns*, η^2s = .00 and .01, with same- and other-gender interactions, respectively. In other words, girls and boys were similar in their rates of PE during same- and other-gender interactions.

Mutual PE—A MANOVAR with mutual PE during same-gender interactions and mutual PE during other-gender interactions as the dependent measures and child's gender as the factor was conducted. Based on the MANOVAR, there was not a significant gender difference, $F(2, 163) = 1.58$, *ns*, $\eta^2 = .02$. Follow-up univariate analyses revealed that girls and boys were similar in mutual PE during same-gender interactions but girls compared to boys were marginally higher in mutual PE during other-gender interactions, Fs(1, 164) = 0.04 and 2.78, ps = *ns* and .10, η^2s = .00 and .02, with same- and other-gender interactions, respectively.

We again controlled for gender segregation by including the number of positive interactions with either same- or other-gender peers as a covariate. In the ANCOVARs, boys and girls did not differ in their mutual PE when interacting with same- or other-gender peers, Fs(1, 163) = 0.82 and 0.42, *ns*, η^2s = .01 and .00, with same- and other-gender interactions, respectively. Thus, when controlling for gender segregation, children had similar rates of mutual PE regardless of their play partners' gender.

The Relation Between PE and Adjustment

Based on initial zero-order correlational analyses, children's mutual PE was significantly related to several aspects of their adjustment, whereas their overall PE was not (see Table 2). Mutual PE related positively to positive adjustment and negatively to negative adjustment. Peers' PE was added as a covariate in order to examine the relation between children's PE and their adjustment above and beyond that of the PE received by their peers. Based on these partial correlations, the pattern of relations was similar; thus, peers' PE was not included as a covariate in further analyses. Correlations are presented for the overall sample because there were no significant differences, based on Fisher's r-to-z test, in the correlations between boys and girls.

Structural equation modeling was employed to examine how children's PE and the extent to which their PE was matched by their peers were related to their positive and negative adjustment. We used Mplus 5.1 (Muthén & Muthén, 2008) and model fit guidelines established by Hu and Bentler (1999). First, a confirmatory factor analysis was specified with two latent constructs: (a) positive social adjustment with four indicators (prosocial behavior, interaction, social development, and cooperation) and (b) negative social

adjustment with four indicators (hyperactivity, exclusion by peers, disruption, and disconnection). Correlated errors within teachers' ratings were added as indicated by modification indices (see Sörbom, 1979). The CFA fit the data well, χ^2 (14) = 11.63, p = .64; CFI = 1.00, RMSEA = 0.00 (90% CI = .00 – .06), SRMR = .02. Next, overall PE and mutual PE were added to the model as observed variables and structural paths were added from both overall PE and mutual PE to both positive and negative social adjustment. This model fit the data well, $\chi^2(26) = 31.08$, $p = .23$; CFI = 1.00; RMSEA = .03 (90% CI = .00 – .07); SRMR = .03 (see Figure 1). Consistent with our hypothesis, standardized path coefficients showed that children's mutual PE was positively related to positive adjustment and negatively related to negative adjustment. Children's overall PE was unrelated to adjustment. Multiple group analysis showed no differences in factor loadings, correlations, or path coefficients between boys and girls, $\chi^2_{diff}(17) = 27.33$, *ns*. Separate models also were specified for male and female peers as well as models in which multiple group analyses with girls and boys were specified; these models did not have significant predictive paths. Overall, children's gender or that of their peers did not moderate the relations between PE and adjustment.

Discussion

The primary aim of the present study was to investigate the relation of mutual PE to adjustment. In addition, we examined the relation between overall PE and adjustment as a comparison. A secondary aim was to examine the variation in mutual PE due to children's gender. Overall, the findings revealed insight into the importance of examining children's peer context, specifically, mutual PE.

The Importance of Mutual PE in the Prediction of Adjustment

Researchers have proposed the importance of PE in facilitating and maintaining positive social experiences (e.g., Fredrickson, 1998). Despite this proposal, the present study is the first, to our knowledge, to examine the association of preschoolers' overall and mutual PE during naturally-occurring peer interactions to their positive and negative social adjustment. Based on the SEM analysis, children's mutual PE positively predicted their positive adjustment and negatively predicted their negative adjustment whereas children's overall PE did not significantly predict either type of adjustment. In other words, in support of our hypothesis, children's mutual PE predicted children's adjustment better than overall PE. Additionally, these findings were similar for boys and girls. Indeed, our findings confirm the importance of mutuality in the peer context (i.e., peers' PE in response to children's PE) and suggest that the social nature of shared PE during peer interactions may be similar for girls and boys as it relates to their adjustment.

It is likely that children whose PE was reciprocated by their peers displayed PE in socially appropriate ways. Knowing when (or when not) to display certain emotions, specifically PE in this case, can be considered a social skill (Denham, 1998). Therefore, children whose PE was reciprocated by their peers may be more socially adjusted initially than those who received less mutual PE. In our study, children's PE was observed across the school year; however, adjustment was rated by teachers near the end of the school year. A baseline measure of children's adjustment is needed to draw firmer conclusions regarding the directionality of the relation between PE and adjustment.

Taking a closer look at the measurement of adjustment, several indicators were based in a social context (e.g., cooperation, prosocial behavior, exclusion by peers). Therefore, our measures of adjustment were inherently more peer- and socially-focused rather than individual-focused. Teachers likely recalled their observations of children's peer relationships while completing the measures of adjustment. Thus, children's mutual PE and

adjustment were both rooted in social context, which may have contributed to their associations. Based on our results, it appears that children's mutual PE matters for social outcomes, but it may be less important for individual outcomes. More research is needed to replicate our findings.

It was somewhat surprising that children's overall PE did not significantly relate to any measures of adjustment. Other researchers have reported positive relations between children's overall PE and aspects of positive social adjustment (e.g., Denham et al., 1990; McDowell & Parke, 2005). However, some researchers have not found consistent relations between children's overall PE and adjustment (e.g., Kim et al., 2007). That we did not find a significant relation between overall PE and adjustment further validates the significance of the findings with mutual PE. Because our findings were different for overall versus mutual PE, teachers did not simply rate happy children as more adjusted than less happy children.

Our findings suggest that there may be something unique about mutual PE and its associations with both positive and negative adjustment. Researchers have found that relations between PE and various outcomes can differ depending on the measurement of PE (Kochanska, Aksan, Penney, & Doobay, 2007; Sallquist et al., 2010). For example, Kochanska et al. (2007) found that PE during scripted laboratory tasks was negatively related to children's regulation whereas their PE during naturalistic interactions with their mothers was positively related to children's regulation. More research is needed to replicate our findings between observed overall and mutual PE and reported adjustment.

Child and Peer Gender Differences in PE

We hypothesized that girls would display overall more PE during peer interactions than boys. However, initial analyses revealed similarities between girls' and boys' mean level displays of overall PE and mutual PE. Other researchers also have found similarities between boys' and girls' PE (e.g., Volbrecht et al., 2007). Regarding peer interactions, we hypothesized that interactions involving same- versus other-gender peers may differ in their level of PE. Indeed, our initial findings confirmed this hypothesis. Overall, same-gender interactions were higher in overall PE and mutual PE compared to other-gender interactions. Specifically, during other-gender interactions, girls had a marginally higher frequency of overall PE and mutual PE compared to boys, whereas, during same-gender interactions there were no differences between girls and boys. After controlling for time spent with peers (i.e., gender segregation), boys and girls displayed similar rates of overall PE and mutual PE with same- and other-gender peers.

Other researchers have found that play with same-gender peers is related positively to positive emotionality in preschoolers (Martin & Fabes, 2001). However, when examining mean-level gender differences in children's overall PE (although not specifically in the peer context), the findings are mixed (see Else-Quest et al., 2006). Furthermore, Galligan et al. (2011) found similarities in boys' and girls' PE—for both boys and girls, their PE during gender-segregated play was higher than during gender-integrated play. The findings that children in our study did not have different *rates* of overall or mutual PE when playing with same- versus other-gender peers suggests that young children find playing with same- and other-gender peers equally pleasing. However, that boys and girls spend more time with same-gender peers elevates the total amount of PE in same-gender peer interactions. Our data suggest that given the same rates of PE in same- and other-gender interactions, positive relationships between boys and girls may be promoted by finding ways to bring them together as play partners. Even though more research is needed to replicate our findings, the lack of differentiation between boys and girls after controlling for the number of peer interactions may provide direction for interventions targeted at facilitating positive experiences between boys and girls.

We initially predicted that the relations between PE and adjustment would vary depending on children's gender and that of their peers. However, we found that boys and girls had similar relations between their PE and adjustment. Other researchers also have found similarities between boys' and girls' overall PE and adjustment (e.g., Kim et al., 2007). Our findings suggest that boys and girls may use PE similarly in social contexts when interacting with their peers. Given the gap in literature on gender differences in same-gender and other-gender interactions with mutual PE, more research is needed to replicate our findings that these associations are similar for boys and girls.

Conclusions

Overall, our study provides evidence for the significance of children's mutual PE with peers. Our findings revealed that children's mutual PE was significantly related to their adjustment whereas their overall PE did not. These findings extend the research of mutuality into the realm of children's emotional experiences during peer interactions. Strengths of this study include the examination of an understudied area (i.e., examination of overall and mutual PE), use of multiple sources of measurement (i.e., observed and reported), and naturalistic observations of children in their social context. However, this study is limited because children's initial levels of adjustment were not reported; thus, we cannot control for initial levels of adjustment or determine causality of the relation between PE and adjustment. Given the limited controls for initial adjustment and that reliability for the observations and the associations are modest in magnitude, our results should be replicated. Additionally, even though data came from multiple sources (i.e., observations and teachers' ratings), there was only one source for emotion and one for adjustment variables. In the future, it would be useful to obtain multiple ratings of these variables. Other researchers have found different results depending on the use of observed or reported measures, especially those of PE (see Sallquist et al., 2010).

Despite these limitations, this study has significance for the field regarding PE (particularly mutual PE) and its relation to social adjustment. This study suggests that young children's mutual PE is a better indicator of their adjustment than overall PE. Furthermore, the data highlight the importance of the social context of emotionality and are among the first to quantify this in the naturally occurring contexts of young children's interactions with peers. The data also support the need for further research on young children's PE and the individual and social processes through which PE contributes to positive social adjustment and protects against adverse outcomes and adjustment during early childhood and beyond.

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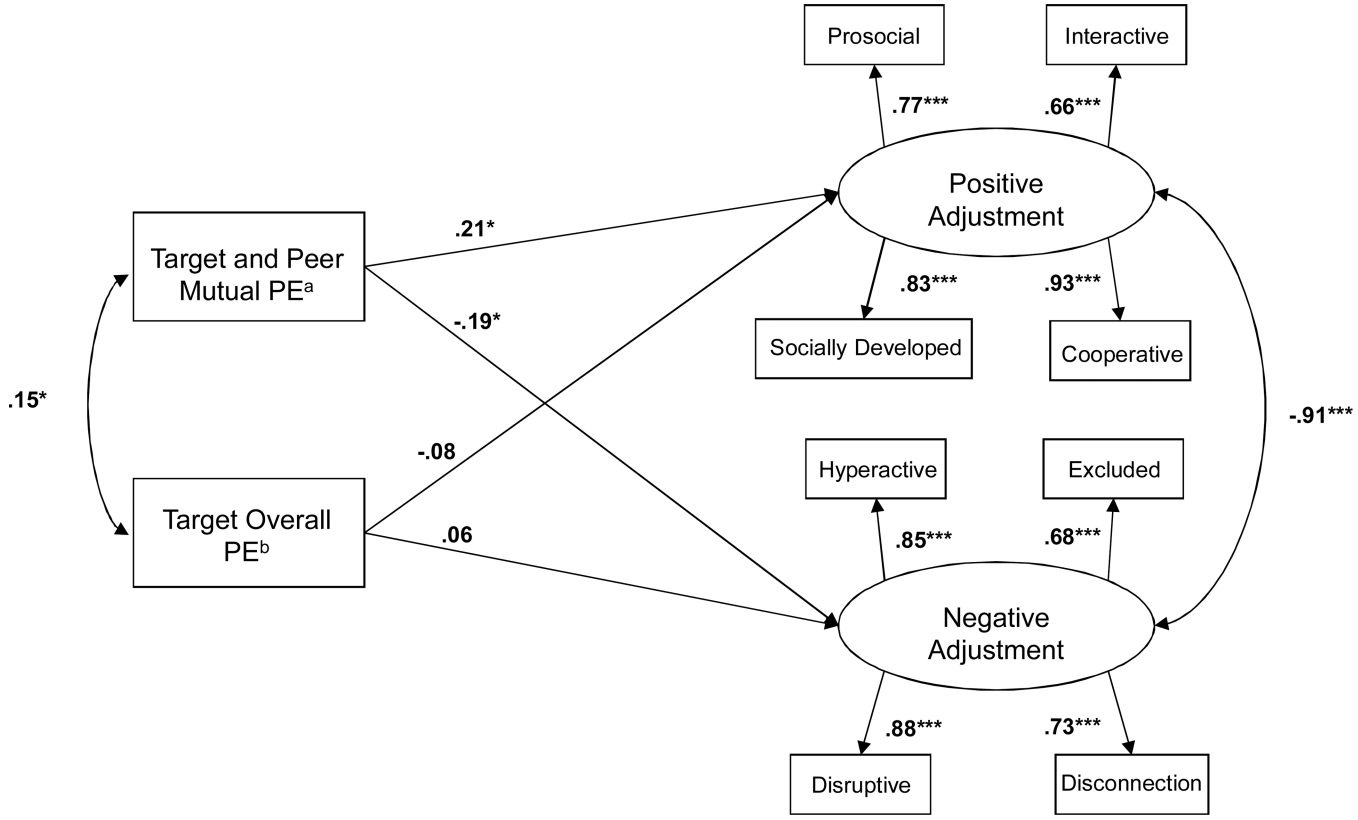

Figure 1.

Structural equation model showing associations of positive emotion with positive and negative adjustment. The ellipses represent latent constructs and the rectangles represent measured variables. Numbers adjacent to straight lines are standardized coefficients; numbers adjacent to curved lines are correlations.

[a]Proportion score calculated as the number of times the target child and peer matched divided by the number of total observations in which the target child exhibited PE (to control for the number of times the target child was observed displaying PE).

[b]Proportion score calculated as the number of times the target child displayed PE divided by the number of interactions with peers (to control for the number of times the child was observed interacting with a peer).

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

Table 1

Means and Standard Deviations of Major Study Variables

	M (SD)	M (SD) Girls	M (SD) Boys
Observed positive emotion			
Overall (number of observations)	48.83 (43.25)		
Same-gender peer interactions		33.97 (35.52)	34.91 (34.54)
Other-gender peer interactions		16.66 (16.46)	12.39 (12.32)
Overall/Total peer interactions[a]	.43 (.14)		
Same-gender peer interactions		.42 (.15)	.42 (.15)
Other-gender peer interactions		.43 (.18)	.42 (.18)
Mutual (number of observations)	31.10 (28.74)		
Same-gender peer interactions		22.62 (24.73)	21.89 (23.13)
Other-gender peer interactions		10.08 (9.33)	7.86 (7.84)
Mutual/Total positive interactions[b]	.63 (.12)		
Same-gender peer interactions		.64 (.17)	.62 (.15)
Other-gender peer interactions		.60 (.21)	.63 (.26)
Teachers' Ratings of Positive Adjustment			
Prosocial	2.23 (.45)		
Girls	2.38 (.39)		
Boys	2.10 (.45)		
Interaction	2.69 (.48)		
Girls	2.86 (.47)		
Boys	2.55 (.44)		
Social development	3.07 (.69)		
Girls	3.31 (.60)		
Boys	2.87 (.70)		
Cooperation	2.50 (.50)		
Girls	2.67 (.40)		
Boys	2.34 (.54)		
Teachers' Ratings of Negative Adjustment			
Hyperactive	1.51 (.56)		
Girls	1.28 (.39)		
Boys	1.70 (.61)		
Exclusion	1.28 (.38)		
Girls	1.22 (.33)		
Boys	1.33 (.41)		
Disruption	1.75 (.55)		
Girls	1.54 (.41)		
Boys	1.92 (.60)		
Disconnection	1.69 (.49)		
Girls	1.56 (.43)		

	M (SD)	M (SD) Girls	M (SD) Boys
Boys	1.79 (.51)		

[a] Proportion score calculated as the number of times the target child displayed PE divided by the number of interactions with peers (to control for the number of times the child was observed interacting with a peer).

[b] Proportion score calculated as the number of times the target child and peer matched PE divided by the number of total observations in which the target child exhibited PE (to control for the number of times the target child was observed displaying PE).

Table 2

The Relations between Children's Positive Expressivity and Adjustment

	Overall PE[a]	Mutual PE[b]
Positive Adjustment		
Prosocial	.03	.17*
Interaction	.02	.22**
Social development	−.07	.17*
Cooperation	−.06	.16*
Negative Adjustment		
Hyperactive	.00	−.21**
Exclusion	.07	−.18*
Disruption	.00	−.12
Disconnection	.13	−.05

Note: Degrees of freedom = 159; five children do not have teacher-reported adjustment.

[a] Proportion score calculated as the number of times the target child displayed PE divided by the number of interactions with peers (to control for the number of times the child was observed interacting with a peer).

[b] Proportion score calculated as the number of times the target child and peer matched PE divided by the number of total observations in which the target child exhibited PE (to control for the number of times the target child was observed displaying PE).

* $p < .05$.

** $p < .01$.