

When Trust Fails: The Relation Between Children's Trust
Beliefs in Peers and their Peer Interactions in a Natural Setting

Running Head: TRUST AND PEER INTERACTION

Abstract

One hundred and forty-nine 8-11 year-old children (86 males; $M = 9$ years - 4 months and $SD = 7$ months) from the UK were administered the Trust Beliefs in Peers scale and were observed in the playground over one school year. Quadratic relations were found between trust beliefs in peers and peer interaction, which varied by gender. Compared to girls with the middle range of trust beliefs, girls with very low beliefs and those with very high trust beliefs: (a) were less accepted/more rejected by the peer group (i.e., lower group interaction, and greater negatively received bids), (b) showed greater indirect aggression (engaged in and received), (c) showed greater non-engagement (i.e., being alone), and (d) showed greater concomitant distress. Compared to children with the middle range of trust beliefs, children with those extreme trust beliefs in peers demonstrated greater direct aggression (engaged in and received) and showed passive behavior (for boys only). The findings supported the conclusion that children, primarily girls, who trust peers too little and those who trust too much are at risk for psychosocial maladjustment.

Key Words: Children; Trust Beliefs; Social Behavior; Peers; Playground; Gender.

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"You may be deceived if you trust too much, but you will live in torment if you do not trust enough."

Frank Crane (1935, p. 172)

Trust is crucial to psychosocial adjustment during childhood (Bernath & Feshbach, 1995; Harris, 2007; Rotenberg, 2010; Simpson, 2007) that has been found to be related to their quality of attachment to caregivers (Armsden & Greenberg, 1987; Cohn, 1990). Consistent with Crane's proposition (as quoted above), research has shown that children who trust *too little* are at risk for social failure in the form of psychosocial maladjustment. For example, it has been found that children with low trust beliefs in peers (e.g., the children expect peers not to keep promises) demonstrated elevated aggression (Malti et al., 2013), and loneliness (Rotenberg et al., 2010; Qualter et al., 2013) than do other children. According to Crane, though, individuals who trust *too much* are equally at risk for social failure and, thus, poor psychosocial adjustment. This proposition has received scarce attention during childhood (or any other period in development). The few studies that have examined that proposition have yielded support for it. For example, Rotenberg and his colleagues (e.g., Rotenberg et al., 2005) found quadratic relations in which children who held very low *and* those who held very high trust beliefs in peers demonstrated low psychosocial functioning (e.g., being rejected rather accepted by peers).

Studies on children's trust beliefs have been growing in number, but there are major limitations with that line of investigation. There is a dearth of research examining the relation between children's trust beliefs and their *normative social behavior* with peers in *natural settings*. Previous research has not adequately determined whether or not children's *actual* social behavior varies as a function of their trust beliefs in others. The current study was designed to fill that gap in our knowledge by examining whether or not there are linear and curvilinear relations between children's trust beliefs in peers and their interactions with peers as observed in the playground.

Relations Between Trust Beliefs and Psychosocial Adjustment

The role of children's trust beliefs in their psychological adjustment has been the focus of investigation. Researchers have found that children's trust beliefs in others are negatively correlated with internalized maladjustment, notably anxiety (Starr & Davila, 2008) depression (Lester & Gatto,

1990; Meltzer, Vostanis, Goodman, & Ford, 2007) and rumination (Ruijten, Roelofs, & Rood, 2011). Furthermore, it has been found that children's trust beliefs in others are negatively and longitudinally predictive of the internalized maladjustment of loneliness (Rotenberg et al., 2010; Qualter et al., 2013) and externalized maladjustment of aggression (Malti et al., 2013), indicating that trust beliefs play a potential causal role in those forms of psychological maladjustment. Also, researchers have found that children's trust beliefs are positively correlated with other social behaviors with peers, such as helping (Rotenberg, Fox, et al., 2005) and co-operation (Rotenberg et al., 2004).

Researchers also have found curvilinear relations between children's trust beliefs in others and psychosocial adjustment. Rotenberg, Boulton, et al. (2005) found a significant quadratic longitudinal relation between 9 to 11-year-old children's reliability trust beliefs in peers (expectations that peers keep promises) and their internalized maladjustment (i.e., loneliness, depressive symptoms, and anxiety). Children with very low trust beliefs and those with very high trust beliefs in peers (referred to as *extreme trust beliefs* throughout this paper) showed greater increases across time in internalized maladjustment than that expected by a linear relation. Also, quadratic cross-sectional relations were found between children's trust beliefs in peers and their psychosocial adjustment. Compared to children with the middle range of trust beliefs, children with the extreme trust beliefs in peers were (a) lower in self-perceived social acceptance, (b) more excluded by peers as reported by peer nominations, and (c) more rejected, as opposed to accepted, by peers as assessed by peer nominations.

As an interpretation of their findings, Rotenberg, Boulton, et al. (2005) proposed that children with extreme trust beliefs in peers were rejected and victimized by peers because they violated peer norms of trust (e.g., they were unusually cynical or naive). That pattern also was attributed to the notion that children with very high trust beliefs were likely rejected/victimized because they were vulnerable to betrayal by peers. It was believed that children with very high trust beliefs in peers were betrayed because they depended on peers to engage in greater trustworthy behavior (i.e., fulfilling promises, keeping secrets, and being honest) than they were inclined to show. For example, children with very high trust would frequently disclose secrets to peers who would fail to maintain confidentiality of them – which would have negative social consequences. Also, the pattern was attributed to the notion that children with very low trust beliefs were unlikely to establish satisfactory

peer group relationships because they were not inclined to depend on peers to be trustworthy (e.g., not disclosing) and, thus, are at risk for internalized maladjustment. Rotenberg, Boulton, et al. (2005) also hypothesized that children with extreme trust beliefs in peers would demonstrate elevated levels of retaliation to peer provocation as a social reaction to their rejection/victimization by peers.

Other research has yielded support for these formulations advanced by Rotenberg, Boulton, et al. (2005). Consistent with the hypothesis regarding externalizing maladjustment, Rotenberg, Betts, and Moore (2013) investigated the trust of 12 to 13 year-old children and found that those with extreme trust beliefs in peers reported greater retaliatory aggression in response to hypothetical peer provocation than did children with the middle range of trust beliefs. As evidence for the relation between trust beliefs and internalizing maladjustment in young children, Betts, Rotenberg and Trueman (2009) found that 5 to 6-year-old children with extreme generalized trust beliefs in others experienced greater loneliness and had fewer friendships than did same-aged children with the middle range of generalized trust beliefs.

There are two important limitations with research examining relations between children's trust beliefs and peer interaction/social adjustment. *First*, the research has examined a very *narrow* range of social behavior with peers: limited to social exclusion (Rotenberg et al., 2005), aggression (Malti et al., 2013; Rotenberg, Betts, & Moore, 2013), and co-operation (Rotenberg et al., 2004). The current study was designed to remedy the narrowness of research by examining the relation between children's trust beliefs in peers and the *broad range of normative behaviors* such group interaction, indirect aggression, social distress, and non-engagement.

Second, the ecological validity of the measures of children's peer interaction used in the previous research is suspect. In particular, previous studies have used teacher and peer report of peer behavior. Those measures rely on retrospective reporting of behavior (see Ostrov & Keating, 2004), which are confounded with social biases (e.g., self and others' social schema) of the individuals providing the reports (see Child & Nind, 2012; Merrell, 2008; Serwik et al., 2010). Also, previous studies have used hypothetical dilemmas and simulated peer game interactions both of which only approximate real-life interaction. In order to establish ecological validity, researchers have stressed the importance of carrying-out observations of children's social behavior with peers in natural settings such as in the

playground (e.g., Gibson, Hussain, Holsgrove, Adams, & Green, 2011; Ostrov & Keating, 2004). The current study, therefore, examined the relation between children's trust beliefs in peers and their actual social behavior with peers as observed in the playground. These relationships were examined prospectively in order to determine whether trust beliefs in peers predicted subsequent social behavior. We tested children who were the same age (i.e., 8 to 11 years of age) as those examined by Rotenberg et al. (2005) and for the same target of trust beliefs – peers - so that the sample and target of beliefs would be compatible with their hypotheses and observed patterns.

Based on the research findings by Rotenberg and his colleagues (Betts et al., 2009; Rotenberg et al., 2004; Rotenberg, Boulton et al., 2005; Rotenberg et al., 2013), we hypothesized that there would be a quadratic relation between children's trust beliefs in peers and the subsequent quality of their peer interactions as observed in the playground. It was expected that children with extreme trust beliefs in peers would demonstrate a lower quality of peer interactions than would children with the middle range of trust beliefs in peers.

The Gender-Moderated Hypothesis

We expected that the hypothesized quadratic relation would be moderated by gender, however. There were three reasons for this. *First*, it has been found that children engage primarily in same-gender affiliation (e.g., Blatchford, Baines, & Pellegrini, 2003; Maccoby, 1990; Martin, Fabes, Hanish, Leonard, & Dinella, 2011) and hold predominately same-gender trust beliefs in peers as shown by stronger trust beliefs in same than opposite gender peers (Rotenberg, 1984, 1986). Consequently, we examined the hypothesized quadratic relations between children's trust beliefs in peers and the quality of peer interactions as a function of gender and same-gender relations.

Second, a substantial body of research has shown that there are gender differences in children's aggressive behavior. In those investigations (see Card, Stucky, Sawalani, & Little, 2008), researchers distinguished between direct aggression (i.e., actions that directly inflict physical and verbal injury) and indirect aggression (i.e., injury to a person's social relationships, self-esteem or social status). Meta-analyses have shown an average medium effect in which boys show greater direct aggression than do girls (Archer, 2004; Card et al., 2008). The meta-analysis by Card et al. (2008) also showed weak, but statistically significant, tendencies for girls to demonstrate greater indirect aggression than

do boys and that varied by measurement. Of particular relevance is the meta-analysis by Archer (2004) which showed that girls demonstrate greater indirect aggression than do boys when assessed by observational methods and teacher reports, but not when assessed by peer reports and self-reports.

Consistent with Archer (2004), studies of peer interaction using observational methods have yielded evidence for gender differences in aggression during early and middle childhood. These studies show that boys engage in greater direct aggression with peers than do girls (Blatchford et al., 2003; Burr et al., 2005; Crick et al., 2006; Ostrov, & Keating, 2004) and girls show greater indirect aggression with peers than do boys (Burr et al., 2005; Crick et al., 2006; Ostrov, & Keating, 2004). Given the prevailing gender patterns of aggression, we expected that the hypothesized quadratic relation between children's trust beliefs in peers and aggression in peer interactions would be observed in accordance with those gender-related patterns. Also, peer interactions are guided by a principle of reciprocity (DeLawyer & Foster, 1986) in which aggressive behavior is reciprocated: children's aggression towards peers is linked to peers' aggression towards the children (Coie, et al. 1999). Accordingly we hypothesized that the gender moderated quadratic relation between children's trust beliefs in peers and aggression in peer interactions would be found both in the children's aggression towards peers and the aggression the children receive from their peers (which would be associated).

Third, Rotenberg et al. (2004) proposed that, compared to boys, girls engage in a closer, more intimate, network of peer interactions (i.e., entailing keeping secrets as well as keeping promises). As a consequence, girls' lack of trust beliefs in peers would place them distinctly at risk for psychosocial problems. As evidence for this hypothesis, Rotenberg et al. (2004) found that the relations between loneliness and both (low) trust beliefs in peers and (low) trusting behavior towards peers were stronger for girls than for boys. Also it has been found that, compared to boys, girls demonstrate greater (a) motivation towards achieving intimacy and closeness in same-gender peers (Rose & Rudolph, 2006) and (b) positive expectations about the effects of their personal disclosure to peers as evidence of trusting (Rose et al., 2012). These lines of research support the conclusion that trust in peers plays a greater role in peer relationships for girls than it does for boys.

The significance of trust in peers for girls should have distinct consequences for their peer interaction. Girls with very low trust beliefs in peers should be *highly* unlikely to establish close

reciprocal relationships with peers (e.g., exchange secrets) and thus would be at risk for a poor quality peer interaction and poor psychosocial functioning. Also, girls with very high trust beliefs in peers should be *overly* inclined to depend on peers to be trustworthy (i.e., keep promises, keep secrets, and be honest) and, thus, be vulnerable to betrayal. As a consequence, girls with very high trust beliefs should likely be targets of indirect aggression, such as being the recipient of jokes, lies and insincere friendships (see Crick, Bigbee, & Howes, 1996) and engage in indirect aggression towards peers as reciprocity.

Hypotheses Guiding the Study

The current study was guided by the following hypotheses:

1. There would be a negative correlation between children's trust beliefs in peers and (direct) aggression consistent with Malti et al.'s (2013) longitudinal findings.
2. A quadratic relation would be found in which children, primarily girls, with extreme trust beliefs in peers would show a poorer quality of peer interactions than those with the middle range of trust beliefs. It was anticipated that, in comparison to girls with the middle range of beliefs, girls with extreme trust beliefs in peers would (a) be less accepted/more rejected by the peer group (i.e., lower group interaction, and greater negatively received bids), (b) show greater non-engagement (i.e., being alone) and (c) show greater concomitant distress.
3. Quadratic relations would be found between children's trust beliefs in peers and (a) direct aggression for boys and (b) indirect aggression for girls. It was anticipated that the children with extreme trust beliefs would more frequently engage in direct aggression (for boys) and indirect aggression (for girls) than children with the middle range of trust beliefs, both when engaging in, and receiving, aggression (which would be associated).

Based on the meta-analyses (see Card et al. 2008), it was also expected that there would be positive correlations between (a) indirect aggression and prosocial behavior, and (b) direct and indirect aggression (see Card et al. 2008). Finally, it was expected that there would be a negative correlation between direct aggression and prosocial behavior as reported by Persson (2005).

Guided by meta-analyses (Archer, 2004; Card et al., 2008), it was expected that boys would engage in, and receive, direct aggression more frequently than girls whereas girls would engage in,

and receive, indirect aggression more frequently than boys. Hypotheses were not advanced regarding gender differences in prosocial behavior because of mixed findings. Some studies show that girls engage in greater prosocial behavior than boys (Eisenberg-Berg, & Lennon, 1980; Ostrov et al., 2005; Persson, 2005; Zahn-Waxler, Radke-Yarrow et al., 1992) whereas other studies have yielded no gender difference (e.g., Farver & Bransetter, 1994; Zahn-Waxler, Robinson, et al., 1992).

The children's peer interactions in the current study were observed over the school year. Therefore, analyses were carried out to assess whether there were differences in the children's peer interactions at the onset and whether there were changes in those over time. The analyses were carried out to determine whether it was viable to test if trust beliefs statistically predicted *changes* in the quality of peer interaction.

Method

Participants. The participants were a sample of children from an ongoing longitudinal study. The current sample includes 149 children (86 males, 66 females) who were 8 to 11 years of age ($M = 9$ years - 3 months and $SD = 7$ months). The participants were enrolled in years 4-6 in the UK primary education system and came from eight schools located in the North West of England. The schools were representative of schools across the UK as determined by the government Index of Multiple Deprivation. Participation in the study was secured by written informed consent by parents/guardians and by verbal assent of the children on the day ~~of data collection~~ when children were asked to complete the trust measure. The study was conducted in accordance with national and local ethics guidelines and received university ethics approval. Because of practical considerations in the videotaping of peer interactions, the parents/guardians were informed that all children in the playground could be captured on film during the videoing. The parents/guardians were informed that if they did not consent for their children to participate in the study, then their children's behavior would *not* be coded. Twenty-six parents did not give consent and thus 85% of the potential sample of children participated in the study.

Measures

Trust beliefs in peers. This was assessed by the Trust Beliefs in Peer subscale from the Children's Generalized Trust Belief Scale (CGTB; Rotenberg, Fox, et al., 2005). The Trust Beliefs in Peer subscale comprises 6-items that assess three bases of trust beliefs (reliability, emotional, and

honesty). Participants imagine being the protagonist of each story (denoted in bold letters) and then judge, on 5-point Likert scale, the extent to which a peer playmate in the story would engage in (a) keeping promises (reliability basis), (b) maintaining confidentiality of secrets and/or avoiding social embarrassment (emotional basis), and (c) telling the truth (honesty basis). The following are items from Trust beliefs in Peers subscale for girls (with basis of trust beliefs identified in brackets): (1) “Rita said she will meet **Lauren** after school to help Lauren with her homework. How likely is it that Rita will meet **Lauren** after school to help her with her homework? (reliability basis), (2) “**Sophie** buys her teacher a present as a surprise. **Sophie** asks her friend not to tell the teacher about the surprise. How likely is it that the friend will not tell the teacher about the surprise? (emotional basis) and (3) “**Karen** asks Nicola to go to the cinema. Nicola says she cannot go because she feels tired. How likely is it that Nicola is tired?” (honesty basis). The CGTB, including the Trust Beliefs in Peers subscale, has been found to show construct validity by factor analyses and correlations with other comparable measures of trust beliefs (Rotenberg, Atsushi, Betts, & Maeshiro, 2011; Rotenberg, Fox, et al., 2005). The Trust Beliefs in Peers subscale in the current study demonstrated acceptable internal consistency with $\alpha = .79$.

Coding of peer interactions. The participants were videotaped without sound during recess. The video camera was placed unobtrusively at a vantage point from which the playground was visible (i.e., an adjacent classroom, lunch-hall). Camera operators utilized a table of random numbers that represented participant IDs, which were picked at random from all participants in that school. The participants identified by the numbers were videoed on that day and video operators were told to follow that participant for as long as possible at that time; videoing would stop for that participant when he/she was no longer visible and videoing of the next participant on the table of random numbers would start. Each target participant was observed in 39 recesses, which equated to once per week for the full school year; each period of observation lasting approximately 18 minutes. If a given participant was away one week, two observations were collected for that participant the following week. All observations of a target participant were coded in Observer XT 9 (Noldus, Netherlands) by coders who were blind to the participant’s trust scores. The sixteen undergraduate and post-graduate observers and the four faculty members were required to reach an acceptable level of inter-rater

reliability with practice videotapes (ICCs $>.80$) before they were able to code data; assessments of reliability were conducted throughout coding to avoid observer drift problems (Pellegrini, 1996).

Within Observer XT, the data were coded across time using continuous event sampling (Altmann, 1974) yielding frequencies of the behaviors per participant. Reliability between observers was assessed using Intra-Class Correlations (ICC) across 5% of the observations. Reliability was acceptable and exact details are noted for each behavioral code. Ninety-five percent of the interactions were same-gender as has been found in previous research (e.g., Blatchford et al., 2003). The following are the categories of observed behavior:

Peer acceptance/rejection. This construct was assessed by two measures: group interaction and negatively received bids. Group interactions comprised the frequency with which the target participant interacted with peers in groups that ranged from 2 to 7 in size. A group was defined as two or more children interacting in joint conversational or play activities (ICC = .78). Greater frequencies of this behavior corresponded to higher peer acceptance.

Negatively received bids comprised the situation in which the target participant was alone, but initiated interaction which was rejected by the other peer as shown by (a) ignoring the target participant, or (b) turning his/her back on the target participant, or (c) walking away from the target participant (ICC = .95). Greater frequencies of this behavior denoted higher peer rejection. The distribution of this behavior was skewed and non-normal (Skewness = 2.88 and Kurtosis = 9.73). Consequently, this behavior was subjected to a lngamma transformation that was successful in normalizing the distribution (Skewness = .78 and Kurtosis = .86). The transformed data were used in the analyses. The raw mean for this behavior is shown in Table 1 in order to provide information regarding its prevalence in the peer interactions.

Prosocial behavior. This categorization assessed the frequency with which the participant engaged in behavior that promoted the development and maintenance of peer relationships. This behavior was categorized when the target participant was engaged in conversation or play that included joint attention on a given task, accompanied by smiling and/or laughter. Rough and tumble play was included as prosocial behavior because it can promote peer relationships, especially for boys (see Fry, 2005). Rough and tumble play behavior was categorized when the target participant was

“play” fighting with a peer(s) in which they engaged in apparently aggressive behavior (i.e., hitting), but they remained together (usually smiling) with no avoidance or splitting up. (ICC = .86).

Negative peer interaction. This was categorized when the target participant engaged in interactions that were verbally or physically hostile and was accompanied by distress of peers who participated in the interaction as shown by facial features or body language. There were six categories of negative interaction: direct aggression, peer direct aggression, indirect aggression, peer indirect aggression, and distress. Direct aggression was categorized as the target participant engaging in either verbal or physical aggressive acts towards a peer (ICC = .81). Peer direct aggression were the same acts but were those that the target participant *received* from peers (ICC = .85). Indirect aggression was categorized as the target participant deliberately engaged in ignoring another person(s) (ICC = .76). Peer indirect aggression were same acts but were those that the target participant *received* from peers (ICC = .64). Distress was categorized as the target participant crying or showing emotional upset (ICC = .79). The substantial background noise in recesses precluded adequate recording of verbal exchanges between the participant and peer(s) and, thus, the detection of some forms of indirect aggression (e.g., statements of social exclusion).

Non-engagement. There were two measures of non-engagement: passive behavior and being alone. Passive behavior comprised the frequency with which the target participant was part of a larger group, but was not interacting with them (ICC = .62). Being alone comprised the frequency with which the target participant was not engaged in interaction with peers or groups. The target participant could be watching peers interacting with one another, but he/she was not part of the group. Furthermore, the target participant could be wandering alone on the playground, or he/she could be engaged in his/her own private play (ICC = .91).

It was possible that some associations between different behaviors would be found because each behavior was associated with the amount of time the participant was observed (i.e., as a confound). In order to examine that possibility, we examined the correlations between the total observation time per participant and each type of behavior. We found that the total observation time per participant was correlated with: prosocial behavior, $r(147) = .69, p < .001$, passive behavior, $r(147) = .65, p < .001$, and being alone, $r(147) = .26, p < .01$. In order to remove the potential confound of total observation

time per participant in the correlational analyses, we divided the frequency of each of those behaviors by total observation time per participant for use as measures of these behaviors (see Altmann, 1974).

Procedure

The participants completed the Trust Beliefs in Peer subscale from the Children's Generalized Trust Belief Scale at the beginning of the school year in September. Participants were then videotaped during recess 39 times over the course of that school year; they were observed during morning, afternoon, and lunchtime recess by the unobtrusively located video-camera.

Results

Examination of Behavior Changes in Peer Interactions Over the School Year

For each observed behavior, we used latent growth curve modeling (LGCM) in Mplus (Muthén & Muthén, 1998–2007) to estimate both the initial level of that behavior at baseline (intercept) and the rate of change in that behavior from baseline across time (Duncan, Duncan, & Strycker, 2006). Analyses were calculated separately for girls and boys. Because participants were observed for different amounts of time at each observation, we averaged the behavior across the observed sessions for each of the 6 half terms of the school year and used these data in the LGCM. The models for each behavior showed medium to high goodness of fit (girls: CFI \geq .943, TLI \geq .946, SRMR \geq .050; boys: CFI \geq .948, TLI \geq .951, SRMR \geq .078). The intercepts for each behaviour were significant, (girls: $\beta_0 \geq$.314, $p < .001$; boys: $\beta_0 \geq$.343, $p < .001$), but the slopes were not (girls: $\beta_1 \leq$.027 $p \geq$.183; boys: $\beta_1 \leq$.018 $p \geq$.436). For each behavior, the pattern is the same: there are specific starting points for each behavior and little change in social behaviour over the course of the school year. Variance associated with the intercept was also significant (girls: $\beta \geq$.252, $p \leq$.003; boys: $\beta \geq$.105, $p \leq$.001), but this was not the case for the slope (girls: $\beta \leq$.246, $p > .102$; boys: $\beta \leq$.164, $p > .150$)¹. This suggests that, although the behaviors were stable over time, there were individual differences in the starting point. These analyses justified the use of observed frequencies of behavior accumulated across the school year as the measures of individual differences in the quality of peer interaction and demonstrated that it was not useful to examine whether or not trust beliefs in peers predicted changes in behavior.

Correlations Between the Measures

Correlations between the frequencies of each type of behavior (across the school year) and trust beliefs in peers are shown in Table 1 (with means, *SDs*, and minimum/maximum frequencies). (Table 1 presents the frequencies per participant *per recess* for prosocial behavior, passive behavior, and being alone because of the substantive prevalence of those behaviors in peer interaction). The findings yielded the following four correlations as evidence that the behaviors are assessing the same constructs: (1) Group interaction was negatively correlated with negatively received bids supporting the conclusion that they are both indices of peer group acceptance/rejection, (2) Passive behavior was positively correlated with being alone, supporting the conclusion that they are both indices of non-engagement, (3) Direct aggression was positively correlated with both indirect aggression and peer indirect aggression and those two variables were positively correlated with distress supporting the conclusion that those measures are indices of negative peer interaction, (4) Group interaction was correlated with prosocial behavior as evidence that group interactions involve promoting social relationships. Also, group interaction was negatively correlated with the passive behavior and being alone, which is consistent with the notion that these comprise opposing forms of behavior. As expected, prosocial behavior was negatively correlated with direct aggression, as well as passive behavior. Being alone was correlated with distress and both indirect aggression and peer indirect aggression. Finally, as expected, there were substantive correlations between (1) direct aggression and peer direct aggression and (2) indirect aggression and peer indirect aggression.

The findings did not yield support for the hypotheses that (a) trust beliefs in peers were negatively correlated with direct aggression, and (b) prosocial behavior was positively correlated with indirect aggression.

Gender Differences

The measures were subjected to a MANOVA with gender as the between variable. The MANOVA yielded a main effect of gender, $F(11,133) = 5.56, p < .001$ (Pillai's Trace), $\eta^2 = .31$. Separate follow-up ANOVAs revealed gender differences in Direct Aggression, $F(1, 143) = 13.45, p < .001, \eta^2 = .09$, Peer Direct Aggression, $F(1, 143) = 13.64, p < .001, \eta^2 = .09$, Indirect Aggression, $F(1, 143) = 13.04, p < .001, \eta^2 = .09$, Peer Indirect Aggression, $F(1, 143) = 6.15, p = .01, \eta^2 = .04$, and

Distress $F(1, 143) = 9.79, p = .002, \eta^2 = .064$. Boys more frequently engaged in direct aggression ($M = 4.83, SD = 5.30$) than did girls ($M = 2.18, SD = 2.56$). Also, boys were more frequently the recipients of direct aggression ($M = 4.28, SD = 5.09$) than were girls ($M = 1.74, SD = 2.40$). Girls more frequent engaged in indirect aggression ($M = 3.33, SD = 4.47$) than did boys ($M = 1.23, SD = 2.46$). Also, girls were more frequently the recipients of indirect aggression ($M = 2.81, SD = 4.19$) than were boys ($M = 1.42, SD = 2.52$). Finally, girls more frequently showed distress ($M = 2.28, SD = 5.44$) than did boys ($M = .39, SD = .36$).

Linear and Curvilinear Relations Between Trust Beliefs in Peers and Peer Interaction

Hierarchical Regression Analyses (HRAs) were carried out with the predictors in following steps: (1) trust beliefs in peers and gender, (2) trust beliefs in peers squared (Sq), (3) trust beliefs in peers * gender, and (4) trust beliefs in peers squared (Sq) * gender. The squared (Sq) in the HRAs is the trust beliefs in peers * trust beliefs in peers term and serves as a test for a quadratic relation (see Cohen, Cohen, Aiken & West, 2003). The predictors were centered by subtracting the grand mean and gender was dummy coded (-1 and +1) as recommended by Cohen et al. (2003). The HRAs were carried out separately on each behavior as the dependent variable (shown in Table 2). When two-way interactions between trust beliefs in peers squared (Sq) * gender were found on given dependent measures they were further examined by testing for the linear and quadratic (curvilinear) relations on the measure for each gender separately. The separate HRAs by gender tested for a linear relation first and then for a quadratic relation from residuals. The error terms in the latter analyses were approximately equal across gender and the error terms for testing the linear and quadratic relations were conservative when compared to tests with pooled error terms across gender.

The HRA on group interaction, negatively received bids, indirect aggression, peer indirect aggression, distress, passive behavior, and being alone yielded a two-way trust beliefs in peers squared * gender interaction that qualified the observed main effects or other interactions. This interaction confirmed that there was a quadratic relation between trust beliefs in peers and each of those measures that differed by gender. The separate HRAs by gender showed that there was a significant quadratic relation for girls between trust beliefs in peers and (a) group interaction (see Figure 1), (b) negatively received bids, (c) indirect aggression, (c) peer indirect aggression, (d) distress, and (e) being alone.²

As predicted, compared to the girls with the middle range of trust beliefs in peers, girls with very low and those with very high trust beliefs in peers (a) engaged in group interaction less frequently, (b) elicited negatively received bids more frequently, (c) engaged in indirect aggression more frequently, (d) were the recipients of indirect aggression from peers more frequently, (e) experienced distress more frequently, and (f) were alone more frequently. The shape of the curve suggests that girls with very high trust beliefs were *particularly* inclined to show those social behaviors.

As shown in Table 2, there was a significant quadratic relation between trust beliefs in peers and passive behavior for boys. Boys with very low and with those with very high trust beliefs in peers demonstrated passive behavior more frequently than did boys with the middle range of trust beliefs. The HRA on prosocial behavior did not yield significant main effects or interactions with the exception of the gender differences previously described.

The HRA on direct aggression and peer direct aggression did not reveal any significant linear relation, but did reveal a significant quadratic relation (i.e., effects of trust beliefs in peers squared) with trust beliefs in peers. The effects for direct aggression are graphed in Figure 2 (with β s). Participants with low and those with very high trust beliefs in peers showed direct aggression and peer direct aggression more frequently than did participants with the middle range of trust beliefs in peers. Contrary to expectation, this quadratic relation was not moderated by gender.

The HRA on direct aggression and peer direct aggression yielded a two-way gender * trust beliefs in peers interaction (reported in Table 2). The slopes of the relation between trust beliefs in peers and direct aggression as functions of gender are shown in Figure 3 (with β s). For boys, direct aggression was negatively associated with trust beliefs in peers. For girls, direct aggression was positively associated with trust beliefs in peers but that did not achieve statistical significance. Johnson-Neyman technique analyses showed that there were gender differences when trust beliefs in peers were low (< 2.90 on the trust beliefs in peers scale): below that point on continuum boys engaged in direct aggression more frequently than did girls. There was an absence of any gender differences when trust beliefs in peers exceeded that point as evidenced by convergence of the two slopes.

The slopes of the relation between trust beliefs in peers and peer direct aggression (i.e., receiving direct aggression from peers) as a function of gender. For girls, there was a positive association

between peer direct aggression and trust beliefs in peers. For boys, there was a negative association between peer direct aggression and trust beliefs in peers which failed to attain statistical significance. Johnson-Neyman technique analyses showed that there were gender differences on peer direct aggression when trust beliefs in peers were low (< 2.40 on the trust beliefs in peers scale): below that point on the continuum boys received direct peer aggression more frequently than did girls. There was an absence of any gender differences when trust beliefs in peers exceeded that point as evidenced by convergence of the two slopes.

Discussion

Our study yielded evidence for the gender-moderated hypothesis regarding the relation between children's trust beliefs in peers and the quality of their peer interactions. Compared to girls with the middle range of trust beliefs, girls with very low beliefs and those with very high trust beliefs (a) were less accepted/more rejected by the peer group (i.e., lower group interaction, and greater negatively received bids), (b) showed greater indirect aggression (engaged in and received), (c) showed greater non-engagement (i.e., being alone), and (d) showed greater concomitant distress. These patterns were more pronounced in girls with very high trust beliefs in peers.

Those patterns were not shown by boys, but they did show a similar pattern for passive behavior. It was found that boys with extreme trust beliefs in peers demonstrated passive behavior more frequently than did boys with the middle range of trust beliefs in peers. Furthermore, a quadratic relation was found between trust beliefs in peers and direct aggression/peer direct aggression but, contrary to expectation, that was not moderated by gender. Children with extreme trust beliefs in peers engaged in direct aggression towards peers more frequently, and received direct aggression from peers more frequently, than did children with the middle range of trust beliefs in peers. As expected, engaging in aggression and receiving aggression were associated for both direct and indirect aggression.

The hypothesized gender differences in peer interaction were found in our study. As expected, boys engaged in direct aggression towards peers and received direct aggression from peers more frequently than did girls. Furthermore, girls engaged in indirect aggression towards peers and received indirect aggression from peers more frequently than did boys. The greater frequencies of direct

aggression by boys than girls (both engaged in and received) were moderated by trust beliefs in peers, however. The gender difference was found when trust beliefs in peers were low but not when they were high. There were modestly different slopes that contributed to the patterns for direct aggression from peers and direct peer aggression, but there was a similarity in the observed gender differences in the two types of direct aggression as a function of trust beliefs in peers. Finally, the study yielded the anticipated positive correlation between children's trust direct and indirect aggression. Contrary to expectation though, the study failed to yield the anticipated (a) negative correlation between trust beliefs and direct aggression and (b) positive correlation between indirect aggression and prosocial behavior.

Gender Differences in Peer Interaction

The gender differences found in the current study are consistent with meta-analyses (Archer, 2004; Card et al., 2008) and observational studies (e.g., Blatchford et al., 2003; Crick et al., 2006): we found direct aggression was more frequent in boys than girls, and indirect aggression was more frequent in girls than boys. The current study uniquely demonstrated that the gender differences in direct aggression were moderated by trust beliefs in peers. One account of those moderation effects is provided by Malti et al. (2013) who proposed that trust beliefs are a product of the quality of attachment with caregiver that promotes children's peer competence and decreases their tendency to act aggressively towards peers. Those social-cognitive processes may be manifested in boys and shown in direct aggression by them (as opposed to girls) because they show substantive frequencies of that behavior. In that context, the pattern shown by boys is consistent with Malti et al. (2013) who found that children's trust beliefs negatively and longitudinally predicted their aggression. Malti et al. (2013) did not report finding gender differences in the observed longitudinal relations.

The lack of a gender difference in prosocial behavior is consistent with other studies (e.g., Farver & Bransetter, 1994; Zahn-Waxler, Robinson, et al., 1992), but is contrary to those that have found that girls more frequently engage in prosocial behavior than boys (Eisenberg-Berg, & Lennon, 1980; Ostrov et al., 2005; Persson, 2005; Zahn-Waxler, Radke-Yarrow et al., 1992). We may have not found gender differences in prosocial behavior, in part, because it was broader in nature than acts of aiding or helping another person which comprised prosocial behavior in the latter studies.

Behaviors in Peers Interactions

The observed patterns of, and relations among, the social behaviors are consistent with several lines of research. The observed association between engaging in direct/indirect aggression towards peers and receiving direct/indirect aggression is consistent with reciprocity and reciprocity of aggression during childhood (Coie, et al. 1999; DeLawyer & Foster, 1986). The positive correlation between direct and indirect aggression replicates those observed in several studies (see Card et al., 2008). The study did not replicate the association between indirect aggression and prosocial behavior, reported by Card et al. (2008), but those relations were found primarily in children younger than those tested in the current study. The basal frequencies of social behavior found in the current among children during playground interaction and the stability of those across the school year are similar to those observed by other researchers (e.g., Blatchford, Baines, & Pellegrini, 2003).

Trust Beliefs in Peers and Peer Interactions

The current findings advance the research on the relation between children's trust beliefs and their quality of peer interactions in two related ways. *First*, it extends the research by demonstrating the relation between children's trust beliefs and the normative range of their social behavior, such as levels of group interaction, indirect aggression, social distress, and non-engagement. Previous studies have examined only social exclusion (Rotenberg et al., 2005), aggression (Malti et al., 2013; Rotenberg, Betts, & Moore, 2013), and co-operative behavior (Rotenberg et al., 2004). *Second*, the current study extends research by examining the relation between children's trust beliefs in peers and their *actual* social behavior with peers in a natural setting -- the playground. The current findings, therefore, yield support for the ecological validity of the quadratic relations (see Gibson, Hussain, Holsgrove, Adams, & Green, 2011; Ostrov & Keating, 2004).

The findings yielded support for the majority of the predictions from the gender-moderated hypothesis. As predicted, girls with very low and those with very high trust beliefs in peers demonstrated a poor quality of peer interactions entailing greater peer rejection, lesser peer acceptance, greater indirect aggression (engaged in and received), non-engagement and distress. Nevertheless, one quadratic relation was found for boys only between trust beliefs in peers and their quality of peer interactions. Boys with very low and those with very high trust in peers demonstrated

passive behavior more frequently than did their middle range counterparts. When considered across behaviors, girls with extreme trust beliefs in peers demonstrated greater *social acrimony* -- as evidenced by rejection as opposed to acceptance, indirect aggression, and distress -- notably by girls with very high trust beliefs in peers. Boys with the extreme trust beliefs in peers did not show such patterns, but they appeared to be socially marginalized as evidenced by elevated passivity.

The aforementioned findings are consistent with the principle that trust in peers plays a greater role in peer relationships for girls than for boys as suggested by studies regarding trust (Rotenberg et al., 2004) and close intimate relationships (Rose & Rudolph, 2006). The current findings may be attributed to the notion that (1) girls with low trust beliefs are not inclined to establish the close intimate peer relationships that are required for satisfactory relationships, and (2) girls with very high trust beliefs are vulnerable to being betrayed by peers, as well to indirect aggression (e.g., being teased and insincere friendships), and (3) girls are at risk for peer rejection because they deviate from the norms of trust beliefs. The increased risk for betrayal may account for the tendency for girls with very high trust beliefs in peers to be particularly inclined to demonstrate the pattern of social acrimony with peers. It is worthwhile to note that finding children with the extreme trust beliefs were frequently the targets of peer direct aggression and indirect aggression (girls only) is consistent with Rotenberg, Boulton, et al.'s (2005) findings that those children are victims of peer aggression as reported by peers.

Contrary to gender-moderation hypothesis, the quadratic relation between trust beliefs in peers and direct aggression was found across gender, rather than in boys only. One account of this contrary finding resides in the observed association between direct and indirect aggression (also see Card et. al. 2008). The co-occurrence of direct aggression and indirect aggression in peer interactions could have obscured the gender-moderation relation for direct aggression as applied to indirect aggression.

Clinical Implications

Researchers have emphasized the need for clinical interventions to remediate low interpersonal trust in individuals who show paranoid schizophrenia (see Radden, 2007) and externalizing psychopathology (see Sharp, Carolyn, & Fonagy, 2011). The observed relation in the current study between trust beliefs and the quality of peer interactions may be taken to suggest that interventions should be implemented to remediate very *low* trust during childhood. Such interventions could entail engaging low trusting children in trust

promoting interactions with peers, perhaps by using a game interaction (see Sharp, Carolyn, & Fonagy, 2011). The current research findings also may be taken to suggest that interventions should be used to remediate very *high* trust during childhood. The interventions should be designed, however, to increase those children's sensitivity to the cues revealing which peers are untrustworthy to avoid being betrayed.

Limitations and Directions for Future Research

There are two very plausible directions for future research. *First*, the current study demonstrated that trust beliefs in peers at the beginning of the school year statistically predicted social behavior in peer interactions across the school year. The findings are *suggestive* of causal relation between trust beliefs in peers and social behavior. The growth curve analyses showed a fundamental stability of children's behavior in peer interaction so it was not possible to examine whether trust beliefs in peers predicted changes in social behavior. Other longitudinal investigations of the relation between trust beliefs and social behavior are needed in order to test the hypothesized causal relations between the two variables.

Second, the techniques employed for gathering observations of peer interactions were limited. These included the inability to observe verbal exchanges and the method of videotaping a random new child after the target child was not visible. Other observational procedures could be employed in future research in order to redress those limitations.

The current study filled a gap in our knowledge of the linear and curvilinear relations between children's trust beliefs in peers and the quality of peer relationships/psychosocial adjustment. Broadly, the findings lend support for Crane's (1935) observation as it pertains to children and supports the proposition that children who trust too little and those who trust too much are both at risk for psychosocial maladjustment.

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Footnotes

¹ Significant individual variation in slope was found for prosocial behavior for girls ($\beta = -.146$, $p < .001$) and boys ($\beta = -.169$, $p < .001$), and for passive behaviour for boys ($\beta \leq -.010$, $p < .001$) but these findings had no bearing on the relation between trust beliefs in peers and behavior in the study.

² The graphs for the relations regarding negatively received bids, indirect aggression, peer indirect aggression, distress, being alone, passive behavior, and peer direct aggression (as a function of gender) are depicted in Figures 4, 5, 6, 7, 8, 9 and 10, respectively, in the Supplemental File.

Table 1

Correlations Between the Measures (with Means and SDs)

Measure	M	SD	Min/Max	GI	NRB	PB	DA	PDA	IA	PIA	DIS	PAB	BAL
Trust Beliefs in Peers	18.54	4.69	6/30	-.01	.09	.02	-.16*	.07	-.09	.16	.03	.02	-.01
<i>Peer Status Measures</i>													
Group Interaction (GI)	18.21 ^a	8.15	2.05/36.82	-.21*	.25**	.04	.05	-.11	-.09	-.07	-.37***	-.17*	
Negatively Received Bids (NRB)	3.79	3.48	.00/11.76		.10	.05	.07	.10	.15	.08	.13	.55**	
Prosocial Behavior (PB)	20.51 ^a	10.63	.26/42.13				-.05	-.06	.03	-.03	.03	-.74**	-.17*
<i>Negative Peer Interactions</i>													
Direct Aggression (DA)	3.71	4.58	.00/31.35					.92***	.19*	.13	.04	-.13	.07
Peer Direct Aggression (PDA)	3.13	4.43	.00/28.99						.04	.11	.01	-.11	.03
Indirect Aggression (IA)	2.31	3.93	.00/18.85							.85***	.63***	-.09	.18*
Peer Indirect Aggression (PIA)	2.10	3.49	.00/20.63								.64***	-.03	.23**
Distress (DIS)	1.35	3.98	.00/29.40									-.08	.20*
<i>Non-Engagement with Peers</i>													
Passive Behavior (PAB)	5.01 ^a	2.99	.12/15.04										.21*
Being Alone (BAL)	1.20 ^a	.34	.00/29.40										

Note: * $p < .05$, ** $p < .01$ and *** $p < .001$, $df = 143$ to 149 . Also, ^adenotes a frequency per recess.

Table 2

Summary of the Hierarchical Regression Analyses

Step/Measure	Group Interaction ^a			Negative Received Bids ^b			Prosocial Behavior ^c			Direct Aggression ^d			Direct Aggression from peer ^e		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
1. Trust Beliefs in Peers	-.87	8.92	-.01	.02	.09	.02	.01	.02	.03	-.20	.08	-.21**	.03	.07	.03
Gender	6.79	41.99	.01	-1.27	.44	-.24**	.20	.08	.20*	-1.46	.36	-.32***	-1.26	.35	-.29***
2. Trust Beliefs in Peers Sq	-1.56	1.37	-.10	.01	.02	.03	.00	.00	.04	.03	.01	.22**	.04	.01	.27***
3. Gender * Trust Beliefs in Peers	16.47	9.18	.16	.00	.10	.00	-.03	.02	-.12	.17	.08	.17*	.14	.07	.15
4. Gender * Trust Beliefs in Peer Sq	-3.16	1.44	-.24*	.04	.02	.24*	.00	.00	-.11	.01	.01	.10	.01	.01	.04

Note: ^a N = 144, R² = .03 for Step 1, Δ R² = .01 for Step 2, Δ R² = .02 for Step 3, and Δ R² = .03 for Step 4. ^bNRB = ^a N = 144, R² = .06 for Step 1, Δ R² = .00 for Step 2, Δ R² = .00 for Step 3, and Δ R² = .03 for Step 4. ^c N = 144, R² = .03 for Step 1, Δ R² = .04 for Step 2, Δ R² = .01 for Step 3, and Δ R² = .00 for Step 4. ^dN = 142, R² = .13 for Step 1, Δ R² = .05 for Step 2, Δ R² = .03 for Step 3, and Δ R² = .01 for Step 4. ^eN = 142, R² = .09 for Step 1, Δ R² = .07 for Step 2, Δ R² = .02 for Step 3, and Δ R² = .00 for Step 4. Also, * $p < .05$, ** $p < .01$, and *** $p < .001$.

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Table 2

Summary of the Hierarchical Regression Analyses (Continued)

Step/Measure	Indirect Aggression ^f			Indirect Aggression from peer ^g			Distress ^h			Passive Behavior ⁱ			Being Alone ^j		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
1. Trust Beliefs in Peers	-.04	.06	-.05	.14	.06	-.19*	.07	.07	.01	.01	.02	.02	-.00	.00	-.02
Gender	1.03	.30	.28***	.79	.28	.23**	.99	.31	.26**	.00	.09	.00	-.00	.01	-.06
2. Trust Beliefs in Peers Sq	.04	.01	.38***	.05	.01	.41	.01	.27***	.01	.01	.00	.14	.00	.00	.08
3. Gender * Trust Beliefs in Peers	-.03	.06	-.04	.19	.05	.26**	.05	.07	.06	.00	.02	-.02	.00	.00	.13
4. Gender * Trust Beliefs in Peer Sq	.05	.01	.48***	.05	.01	.50***	.04	.01	.43***	-.01	.00	.22*	.01	.00	.38***

Note: ^fN = 142, R² = .09 for Step 1, ΔR^2 = .11 for Step 2, ΔR^2 = .00 for Step 3, and ΔR^2 = .13 for Step 4. ^gN = 142, R² = .08 for Step 1, ΔR^2 = .16 for Step 2, ΔR^2 = .06 for Step 3, and ΔR^2 = .14 for Step 4. ^hN = 142, R² = .07 for Step 1, ΔR^2 = .07 for Step 2, ΔR^2 = .00 for Step 3, and ΔR^2 = .10 for Step 4. ⁱN = 142, R² = .00 for Step 1, ΔR^2 = .02 for Step 2, ΔR^2 = .00 for Step 3, and ΔR^2 = .03 for Step 4. ^jN = 142, R² = .01 for Step 1, ΔR^2 = .01 for Step 2, ΔR^2 = .02 for Step 3, and ΔR^2 = .08 for Step 4.

Also, * $p < .05$, ** $p < .01$, and *** $p < .001$.