

Running head: SOCIAL RELATIONS ANALYSIS OF CHILDREN'S TRUST

A Social Relations Analysis of Children's Trust in their Peers
Across the Early Years of School

Lucy R. Betts & Ken J. Rotenberg
Nottingham Trent University, UK Keele University, UK

Lucy R. Betts Division of Psychology, Nottingham Trent University, UK and Ken J. Rotenberg, School of Psychology, Keele University, UK.

This research was supported, in part, by a grant from the Russell Sage Foundation. The researchers would like to thank Sarah Rennison for her assistance in data collection, Thomas E. Malloy and James Hartley for their helpful comments on an earlier draft of this paper, and David A. Kenny for the specialised software needed to analyse the data. Also, thanks are extended to the school staff and children at the schools that participated in the research, including Elworth Hall Primary School, Wheelock Primary School, Wistaston Westfield Infant School, and Wybunbury Deleves C. E. (Aided) Primary School. Portions of this research served in fulfilment of the first author's Ph.D. studies at Keele University.

Corresponding author: Lucy R. Betts, Division of Psychology, Nottingham Trent University, Burton Street Nottingham, NG1 4BU. Email lucy.betts@ntu.ac.uk

Abstract

Two hundred and five (103 female and 102 male) children enrolled in school years 1 and 2 in the United Kingdom (mean age 6 years 1 month at Time 1) were tested twice over a 1-year period. The children reported the promise keeping and secret keeping behaviours of classmates (all peers and same-gender peers) and provided friendship nominations (Time 2 only). Round robin social relations analyses for all peers and same-gender peers revealed: (a) perceiver variance, demonstrating consistent individual differences in trust beliefs in peers; (b) target variance, demonstrating consistent individual differences in eliciting trust from peers; and, (c) dyadic reciprocity, demonstrating reciprocal trust between individuals. Replicability across measures, stability, and cross-measure stability of these effects were found for all peers only. As hypothesised, the perceiver and target effects of trust were associated with the number of friendships. The findings support the conclusion that young children demonstrate multiple components of trust in dyadic relationships, which are associated with their social relationships.

Keywords: Peer relationships, Early childhood, Trust, Social Relations Model,

A Social Relations Analysis of Children's Trust in their Peers Across
the Early Years of School

Interpersonal trust is regarded as a critical facet of adults' and children's social relationships across the course of development (Rotenberg, 1991; Rotter, 1980). According to these authors, the formation, maintenance, and survival of interpersonal relationships depends on children's or adults' propensity to trust others. Researchers have examined three components of trust in adults' and children's relationships: (a) the extent to which individuals trust others (Couch & Jones, 1997; Rotenberg, 1984, 1986; Rotter, 1967), (b) the extent to which individuals are trusted by others – termed trustworthiness (Rotenberg, McDougall et al., 2004; Rotter, 1967; Wright & Sharp, 1979), and (c) the extent to which individuals reciprocate expressions of trust with others (Buzzelli, 1988; Homles & Rempel, 1989). Although children as young as three can conceptualise trust (Harris, 2007), previous research has almost exclusively examined these components of trust in the social relationships of older children and adults. Therefore, it remains uncertain whether the three components of trust are evident in young children's (5-8 year olds) social relationships. Consequently, the current research was designed to address these issues.

Trust is a multifaceted phenomenon, and there have been numerous definitions and conceptualisations of trust (Hoy & Tschannen-Moran, 1999; Tschannen-Moran & Hoy, 2000), but the most commonly investigated facets of children's trust are reliability and emotional trust (Rotenberg et al., 2005). Reliability pertains to the extent to which individuals fulfil their word, are predictable and engage in behaviours that are consistent across situations (Hoy & Tschannen-Moran, 1999; Imber, 1973; Powell & Heriot, 2000; Rotenberg, 1994). Conversely, emotional trust pertains to the extent to which an individual refrains from causing emotional harm to others through maintaining confidentiality and avoiding acts that elicit embarrassment (James, 2002; Rotenberg, 1994). The reliability and emotional aspects

of trust have been examined in children primarily by keeping promises and keeping secrets, respectively (e.g., Bussey & Fitzpatrick, 2005; Rotenberg, 1984, 1986; Rotenberg et al., 2005, Rotenberg, MacDonald & King, 2004; Rotenberg, McDougall et al., 2004; Wentzel, 1991) because these indicators of trust can be identified by children (see Rotenberg et al., 2005).

From a developmental prospective young children's trust is important because, from an early age, children must rely on the testimonies of others to develop knowledge of the social world (Harris, 2007; Koenig, Clément & Harris, 2004). Moreover, young children's trust may also be crucial for the development of their social relationships. In support of this argument, children prefer peers as friends when they keep rather than break promises and keep rather than reveal secrets (Furman & Bierman, 1984; Buhrmester & Furman, 1987), avoid trust violating behaviour (Rotenberg & Morgan, 1995), and engage in trusting behaviour (Shannon & Kafer, 1984). Although there are theoretical reasons to believe that trust is a critical facet of young children's social development and that the three components of trust are identifiable there has been little research in this area. The present study was designed to investigate these issues through examining young children's trust using the Social Relations Model (SRM; Kenny & La Voie, 1984).

The Social Relations Model

The SRM was developed by Kenny and his colleagues as a method of investigating dyadic social relationships (Kenny, 1994; Kenny & La Voie, 1984; Malloy & Kenny, 1986; Warner, Kenny & Stoto, 1979). The model is guided by the principle that an individual can be both the stimuli, and the provider of ratings, for a given behaviour in a dyadic interaction (Kenny, 1998; Malloy & Kenny, 1986). Through partitioning the total variance as perceiver, target, relationship and error variance, the SRM examines the relative proportion of the variance that is due to: (a) the characteristics of the individual dyad members, and (b) the unique

relationship between dyad members (Kenny, Kashy & Cook, 2006). The SRM also investigates whether individuals match or complement their behaviours in dyadic interactions through examining reciprocity between dyad members (Kenny, 1994). Therefore, it is appropriate to apply the SRM to the examination of the components of young children's trust because trust occurs in dyadic interactions.

Perceiver variance. Perceiver variance¹ is a measure of the tendency for an individual to consistently rate their interaction partners on a trait (Kenny, 1994). With regard to trust, perceiver variance is the consistent individual differences in children's beliefs that their peers keep promises and keep secrets. Children with a positive perceiver effect would regard their peers as frequently keeping promises and secrets whereas children with a negative perceiver effect would regard their peers as infrequently keeping promises and secrets. It is expected that modest perceiver variance and perceiver effects will emerge for young children's trust because: (a) conventional psychometric research has yielded evidence for individual differences for trust beliefs in 9-11 year old children (Rotenberg, 1986; Rotenberg, MacDonald, et al., 2004), and (b) children are able to make trait judgements of others but with age their individual differences in these ratings decrease (see Malloy, Sugarman, Montvilo & Ben-Zeev, 1995).

Researchers have examined the potential consequences of perceived variance in trust beliefs for psychosocial functioning. Rotenberg, MacDonald et al. (2004) proposed that children with high trust beliefs in peers were more likely than those with low trust beliefs in peers to depend on others to engage in trustworthy behaviour and therefore form close peer relationships. Therefore, children with high trust beliefs should be less lonely than children with low trust beliefs. In support of this, Rotenberg, MacDonald et al. (2004) found that 9-11 year old girls' trust beliefs in peers were negatively correlated with their loneliness. Consistent with Rotenberg, MacDonald et al.'s (2004) hypothesis, it was expected that

perceiver variance would be identifiable in young children and that perceiver effects (as an index of trust beliefs) would be positively associated with friendship. In particular, it was expected that young children with positive rather than negative perceiver effects for trust would form a greater number of friendships.

Target variance. Target variance is a measure of consensus and pertains to the extent to which individuals consistently elicit characteristic ratings or behaviour from their interaction partners (Albright, Kenny & Malloy, 1988; Kenny, 1994). In the context of trust, target variance represents individual differences in the extent to which young children are ascribed trustworthy attributes by their peers. Children with a positive target effect would be regarded as trustworthy whereas children with a negative target effect would be regarded as untrustworthy by their peers. Target variance and target effects are likely for young children's trust because of the numerous peer interactions, within the classroom, that children engage in (see Malloy et al., 1995). Specifically, consensus may emerge because multiple children may witness an individual's promise keeping and secret keeping activities. Moreover, Rotenberg and colleagues (Rotenberg, Michalik, Eisenberg & Betts, in press) have reported agreement between raters when assessing an individual's trustworthiness providing evidence of consensus.

Researchers have examined some of the potential consequences of engaging in trustworthy behaviour. Rotenberg, McDougall et al. (2004) examined peers' reports of promise keeping and secret keeping in 9-14 year olds and found that such peer-reported trustworthiness was concurrently associated with, and longitudinally predicted changes in, the number of friendships. The more the children engaged in trustworthy behaviours (according to peer reports), then the greater number of friendships they established and/or maintained over time. These findings highlight the importance of trustworthy behaviour for friendship formation and maintenance. Given these findings it was expected that significant target variance would

emerge for children's trust and that target effects (as an index of trustworthiness) would be associated with the number of young children's friendships.

Relationship variance. Relationship variance pertains to the unique ratings or behaviour *between* individuals in dyadic relationships when the perceiver and target variance are statistically controlled for (Kenny, 1994). In the context of trust, relationship variance would pertain to the unique trusting relationship between two children. Research suggests that 11-13 year olds are able to identify differences in relationship quality according to their interaction partners (Furman & Buhrmester, 1985). Specifically, the children identified different relationship qualities as salient when they interacted with their parents compared to their peers. Although it remains unclear whether such a pattern would emerge in young children, it was expected that there would be evidence of relationship variance and the size of this variance would differ according to interaction partner because of differences in relationship quality.

Dyadic reciprocity. Dyadic reciprocity pertains to the unique correspondence between individual A's ascription of attributes to, or behaviour towards, individual B and his or her ascription of attributes to, or behaviour towards, individual A when the individual's perceiver and target effects are controlled for (Kenny, 1994). Consequently, with regard to trust, dyadic reciprocity corresponds to the extent to which child A's trust in child B *matches* child B's trust in child A. There is correlational evidence of reciprocity of trust between peers in 10-11 year olds: in each pair the children matched their trust (Rotenberg & Pilipenko, 1983). Therefore, it is expected that young children will display reciprocity of trust in their dyadic relationships.

Central to an individual's trust in others is the interaction partner: an individual's trust varies according to who they interact with (Rotenberg, 1994; Rotter, 1971, 1980). Further, there is empirical evidence that children's relationship qualities vary dependent on interaction

partner (Furman & Buhrmester, 1985). For example, girls have greater intimacy, companionship, and prosocial support with same-gender peers than do boys in late childhood and adolescence (Berndt, 1982; Hussong, 2000; Kuttler, La Greca & Prinstein, 1999; Sharabany, Gershoni & Hofman, 1981) and as such girls' relationships may be more reliant on reciprocal trust than boys'. To explore these propositions two separate social relations analyses will be performed examining the components of trust in young children's relationships comprising the entire peer group and same-sex peers. Examining peer relationships within the context of the whole class is appropriate because young children have frequent social interactions with all of their peers (Denham, Blair, DeMulder, Levitas & Sawyer, 2003; Parker & Asher, 1993). However, in some cultures, children tend to predominately affiliate, and interact, with same-gender peers (Hay, Payne & Chadwick, 2004; Maccoby, 1988, 1990; Yee & Brown, 1994) and researchers have proposed that different cognitive schemas govern these interactions (Martin, Fabes, Evans & Wyman, 1999). Therefore, in some cultures children may be more likely to engage in reciprocal behaviour and have different relationship qualities with their same-gender peers, and this pattern may vary according to gender. Consequently, the study was designed to examine whether the three components of trust varied according to interaction partner.

The study was also designed to examine the stability and consistency of the perceiver and target effects. Modest stability of the perceiver effects was expected because children's cognitions may change with frequent peer interactions (see Malloy et al., 1995). It was expected that the target effects would be stable over time for two reasons: (a) modest stability of peer-reported trustworthiness has been reported in 10-11 year olds (Rotenberg, McDougall et al., 2004), and (b) children's general behaviour is likely to be consistent over time (Malloy et al., 1995). Consistency across the measures of promise keeping and secret keeping was expected because these measures were designed to assess related facets of trust.

Issues Addressed and Hypotheses Guiding the Current Study

The current study was designed to examine the following hypotheses regarding young children's trust:

- (1) Perceiver, target, and relationship variance will account for a significant proportion of the total variance in young children's trust.
- (2) Dyadic reciprocity will be evident in young children's trust.
- (3) The perceiver effects and target effects of trust will demonstrate replicability across measures, stability across time, and cross-measure stability.
- (4) The perceiver effects and target effects will be associated with friendships.

Method

Participants

At Time 1, 274 children (142 male and 132 female) from the 293 children approached to take part in the study participated, yielding a 93.51 % response rate. The sample was reduced because parental permission was withheld ($n = 14$) and because some children declined to participate ($n = 5$). The sample was drawn from 12 year one and year two classrooms across four schools. Three schools had catchment areas above the national average for professional employment and below the national average for unemployment, whilst one school's catchment area was below the national average for professional employment and above the national average for unemployment (Census, 2001). The mean age of the children was 6 years 1 month ($SD = 7$ months). The sample was predominately White (97%). At Time 2, approximately one year later, 211 (103 male and 108 female) children from the original sample participated in the study. The sample was reduced at Time 2 because one school withdrew from the study ($n = 46$), some of the children had left the schools they attended at Time 1 ($n = 13$), parental permission was withheld ($n = 1$), or the children were absent on the day of testing ($n = 3$).

There were constraints on the use of data imposed by the social relations analysis. The analysis does not permit tests of partial data across time or by group (i.e., class).

Therefore, data were excluded from the analysis for participants who changed classes between Time 1 and Time 2 ($n = 5$) or had two or more missing data points ($n = 1$). The resulting data used in the analyses were from the remaining 205 (103 male and 102 female) children². Where there were less than two missing data points within a case, the median was entered because the median has comparatively less of an influence on the variance partitioning than replacing missing values with the mean (see Kenny, 1998).

Measures

Peer trust. This was assessed by the measure developed by Rotenberg and his colleagues (Rotenberg, MacDonald, et al., 2004). Participants were read a list of their classmates³ by the researcher and asked to rate each one on a 5-point scale as to “how often each classmate keeps promises he/she has made” and “how often each classmate keeps secrets he/she has been told”. The researcher told participants that keeping a promise is “when someone said he or she would do something and did it” and that keeping a secret is “when a person was told something that he or she should not tell others and didn't tell anyone.” All participants were able to provide corresponding definitions of keeping a promise and keeping a secret when subsequently asked. The participants' completed their ratings on a 5-point scale that ranged from 1 -- *Never Ever* to 5 -- *Always* ($M_{\text{promise keeping Time 1}} = 3.76$, $SD_{\text{promise keeping Time 1}} = .66$, $M_{\text{secret keeping Time 1}} = 3.73$, $SD_{\text{secret keeping Time 1}} = .71$, $M_{\text{promise keeping Time 2}} = 3.53$, $SD_{\text{promise keeping Time 2}} = .60$, $M_{\text{secret keeping Time 2}} = 3.59$, $SD_{\text{secret keeping Time 2}} = .68$). Evidence of the convergent validity of the peer trust measures was established at Time 2 through significant associations between teacher-reported trustworthiness and the target effects for promise keeping and secret keeping in all peers from the social relations analyses, $r(203) = .52$, $p < .001$ and $r(203) = .49$, $p < .001$ respectively.

Number of friendships. The method employed by Parker and Asher (1993) and Rotenberg, McDougall et al. (2004) was used to assess the number of friendships at Time 2. The participants were read a list of classmates and asked to report which of the classmates were their friends (unrestricted). The number of friendships was calculated from reciprocal nominations, specifically when child A identified child B as a friend and child B reciprocated that nomination. The number of friendships was summed per participant and then divided by the number of classmates in order to adjust for class size ($M = .52$, $SD = .17$). Consequently, a score close to 1 indicated that a child had reciprocal friendships with nearly all of their classmates and a score close to 0 indicated that a child had very few reciprocal friendships.

Procedure

The participants completed the peer trust measures at Time 1 and Time 2. Also, the participants completed the friendship nominations at Time 2. The participants carried out these tasks individually with a researcher and in an area away from the classroom. Standardised instructions encouraged participants to give honest answers by highlighting that answers were confidential and that there were no right or wrong answers. Also, the participants were instructed not to share their answers with others after completing the measures.

Results

The *round robin* SRM design was implemented. The round robin SRM design allows all possible dyadic combinations within a group to be explored. Specifically, in the round robin design all participants rate, and are rated by, each other. Therefore, the round robin design yields potentially 'richer' results compared to the other SRM designs (Kenny et al., 2006). Additionally, because all possible dyadic combinations within a group are examined, the round robin design may more closely reflect the nature of children's interaction patterns with their classmates compared to the other SRM designs.

Two sets of analyses were conducted. In the first analysis, all the children in each class served as one round robin group (*all peers*). The sizes of the nine groups ranged from 13 to 28 ($M = 22.78$, $SD = 5.67$). The components of the SRM were analysed using the specialised WINSOREMO (Kenny & Xuan, 2002) and SOREBIG (D. A. Kenny, Personal Communication, June 10, 2004) software. These programs partition the variance within the dyads into perceiver, target and relationship and allow group sizes over 25 ($n = 5$) to be examined respectively. In the second set of analyses, the components of the SRM were examined separately according to gender to form same-gender groups within each class (*same-gender peers*). Specifically, these round robin analyses were completed with: (a) boys' same-gender peer groups ($n = 9$), and (b) girls' same-gender peer groups ($n = 7$). The group sizes ranged from 8 to 14 ($M = 11.33$, $SD = 1.80$) and from 10 to 19 ($M = 14.00$, $SD = 3.06$) respectively. The number of girls' same-gender peer groups was reduced because group sizes less than four occurred in two classes. Groups with less than four members cannot be examined using the round robin analysis when dyadic reciprocity is assumed. For all of the round robin analyses promise keeping and secret keeping reports were entered as separate variables that assess the broader construct of trust. The reason for this was to enable the relationship variance to be separated from the error variance through the creation of a construct (see Kenny, 1998). (The associations reported in this paper are positive unless reported otherwise.)

Simple Variance Partitioning

As an examination of hypothesis one, the simple variance partitioning of the perceiver, target and relationship variance at Time 1 and 2 for promise keeping and secret keeping by interaction partner were calculated (see Table 1). Table 1 also shows the simple variance partitioning when the two trust measures (promise keeping and secret keeping) were combined to create a higher order construct (trust). The higher order construct analysis

permits the calculation of error variance, as separate from the relationship variance, and thus the calculation of the extent to which each component of trust statistically contributes to the total variance. The analyses with the higher order construct do *not* conventionally permit, however, tests of the significance of each effect.

The social relations analyses yielded highly similar findings across peer groups. For each peer group, there were significant perceiver variance and target variance for promise keeping and secret keeping at both Time 1 and Time 2. The analyses, with the higher order construct of trust, show that the relationship variance accounted for approximately twice the amount of variance as the perceiver or target variance for each peer group indicating that trust is most strongly a dyadic phenomena.

 Insert Table 1 here

Multivariate Correlations

Perceiver effects. The multivariate correlations between the perceiver effects are shown in Table 2. These yield some evidence for replicability across measures at each time across interaction partners providing support for hypothesis three. For each time and peer group, there was a significant or approaching significant association between the perceiver effects for promise keeping and the perceiver effects for secret keeping at both Time 1 and Time 2. Also, for all peers, there was limited evidence of stability and cross-measure stability of the perceiver effects. Stability was shown by the associations between: (a) the perceiver effects for promise keeping across the two testings, and (b) the perceiver effects for secret keeping across the two testings. Cross-measure stability was shown by the associations between: (a) the perceiver effects for promise keeping at Time 1 and the perceiver effects for secret keeping at Time 2, and (b) the perceiver effects for secret keeping at Time 1 and perceiver

effects for promise keeping at Time 2. This former association was found for girls' same-gender peers but otherwise there was a lack of evidence for stability and any form of cross-measure stability for same-gender peers.

 Insert Table 2 here

Target effects. The multivariate correlations between the target effects were similar for all interaction partners providing support for hypothesis three (shown in Table 3)⁴. *Firstly*, for the three peer groups, replicability across measures was shown by the associations between target effects for promise keeping and secret keeping both at Time 1 and Time 2. *Secondly*, for all three peer groups, stability was shown by the associations between: (a) the target effects for promise keeping across the two testings, and (b) target effects for secret keeping across the two testings. *Thirdly*, for all three peer groups, cross-measure stability was shown by the associations between: (a) target effects for promise keeping at Time 1 and target effects for secret keeping at Time 2, and (b) target effects for secret keeping at Time 1 and target effects for promise keeping at Time 2. Social relations analyses do not yield calculations of the replicability across measures, stability, and cross-measure stability, of relationship effects.

 Insert Table 3 here

Dyadic reciprocity. The social relations analyses yield multivariate correlations assessing dyadic reciprocity. For all peers, dyadic reciprocity was found for secret keeping at Time 1, multivariate $r(8) = .11, p < .01$, and promise keeping at Time 2, multivariate $r(8) = .13, p <$

.01. For girls' same-gender peers, dyadic reciprocity was found for promise keeping at Time 2, multivariate $r(6) = .08, p < .01$, and secret keeping at Time 2, multivariate $r(6) = .16, p < .01$. There was no evidence of dyadic reciprocity of trust for boys' same-gender peers. The analyses show that, at a given time, if A uniquely reports that B keeps their secrets then B reciprocates that nomination, when the perceiver effects and target effects are statistically controlled for. Similarly, the analyses show that, if A reports that B uniquely keeps their promises at Time 2 then B reciprocates this nomination, when the perceiver effects and target effects are statistically controlled for, providing support for hypothesis two.

Perceiver Effects, Target Effects, and The Number of Friendships

In order to examine hypothesis four, that the number of friendships would be associated with perceiver effects and target effects, the number of friendships was entered as a personality variable into the social relations analyses. The analyses were carried out with Time 2 data because the number of friendships was assessed at that time. These analyses yielded a series of partial correlations between the number of friendships and the perceiver effects and target effects for promise keeping and secret keeping at Time 2 with group effects partialled out (see Kenny et al., 2006). (The table of partial correlations are shown in Table 4.) Consistent with hypothesis, for all peers and for boys' same-gender peers, the number of friendships was associated with perceiver effects for promise keeping at Time 2 and secret keeping at Time 2. Also, consistent with hypothesis, for each of the three peer groups, the number of friendships at Time 2 was associated with target effects for promise keeping at Time 2 and secret keeping at Time 2. The social relations analysis does not permit the examination, however, of the association between the number of friendships and either relationship effects or dyadic reciprocity.

Insert Table 4 here

Summary of the Findings

The social relations analyses yielded evidence for significant perceiver variance and target variance in young children's trust in all peers and same-gender peers. Through the creation of a construct of trust, it was also found that the relationship variance contributed more to the total variance of trust than did either the perceiver or target variance. Additionally, there was evidence for dyadic reciprocity but that varied by interaction partner: notably girls rather than boys showed that facet of trust with same-gender peers. Replicability across measures, stability, and cross-measure stability, were found for perceiver effects and target effects for all peers almost exclusively. Finally, consistent with hypothesis, the perceiver effects and target effects for trust were found to be associated with the number of friendships.

Discussion

The findings yielded by the current study reveal that young children show: (a) consistent individual differences in trust beliefs in peers (perceiver variance); (b) consistent individual differences in the extent to which children elicited trust from peers (target variance); and (c) dyadic reciprocity, demonstrating reciprocal trust between peers. Moreover, the application of the SRM permitted investigation into the various components of trust in dyadic relationships whilst statistically controlling for the others.

The observed perceiver effects of trust provide evidence of individual differences in young children's trust beliefs. Additionally, the present study revealed some evidence of replicability across measures, stability, and cross-measure stability for the perceiver effects but these were almost exclusively for all peers rather than same-gender peers. Perceiver effects for all peers were modest and consequently show that consistent individual differences

in young children's trust beliefs are similar to patterns found in other research examining beliefs. For example, researchers report only modest consistency across time of individual differences in young children's beliefs regarding other social attributes, such as racial beliefs and academic attributes (Aboud & Doyle, 1996; Pomerantz & Saxon, 2001). Further, young children demonstrate limited ability to: (a) spontaneously infer dispositional attributes of others (see Alvarez, Ruble, & Bolger, 2001; Livesley & Bromely, 1973), (b) hold stable perceptions of these attributes (Rotenberg, 1982), and (c) cognitively organize these within a network of dispositional qualities (Barenboim, 1981; Heller & Berndt, 1981). Consequently, these children may show limitations in: (a) spontaneously inferring the trusting attributes of others, (b) maintaining stable perceptions of these attributes, and (c) organizing these within a network of dispositional attributes of trust (e.g., reliability and emotional trust attributes) when interacting with a range of peers.

The modest strength of the perceiver effects provides an account of why the children did not show perceiver effects of trust, replicability of perceiver effects across measures, stability of the perceiver effects across time, and cross-measure stability of the perceiver effects for same-gender peers. When trust is assessed within same-gender peer groups, the sample sizes and power are reduced, and therefore the modest effect is less likely to attain significance.

The significant target variance for trust complements research showing consistent individual differences in peer-reported trustworthiness in 10-11 year-old children and 12 year-old adolescents (Rotenberg, McDougall et al., 2004). However, the current findings extend the previous research because the social analysis permitted investigation of target variance whilst statistically controlling for the other components of dyadic interactions. Additionally, the stability and replicability of the findings across time and target provide empirical evidence for the hypothesis proposed by Rotenberg and colleagues (Rotenberg, McDougall et al., 2004) that trustworthiness is a relatively stable personality characteristic.

Through the higher order construct, when the error variance was separated from the relationship variance, it was found that the relationship component contributed more to the total variance of trust than did either the perceiver or target components. This finding suggests that young children's trust is most strongly a dyadic phenomenon regardless of interaction partner. Therefore, although young children have consistent individual differences in their trust beliefs and consistent individual differences in the ratings of trust that they elicit from their peers, the unique trusting relationship between individuals is more important. This finding suggests that trust may be influenced by situational factors and as such the role of the context of trust should be examined in subsequent research. The evidence that trust is most strongly a dyadic phenomena also has implications for academic settings. Specifically, research argues that trust is important for children's school adjustment (Imber, 1973; Wentzel, 1991). Consequently, any interventions designed to enhance children's trust with the overriding aim of improving their school adjustment should focus on the dyadic processes of trust.

Researchers have proposed that dyadic reciprocity of trust is essential for the formation of close relationships (Buzzelli, 1988; Moyer & Kunz, 1975). The current study showed that young children demonstrate dyadic reciprocity but that varied according to interaction partner, as well as by measure of trust and time of testing. For all peers, dyadic reciprocity of trust was found for secret keeping at Time 1 and promise keeping at Time 2. For girls' same-gender peers, dyadic reciprocity of trust was found for promise keeping at Time 2 and secret keeping at Time 2. There was no evidence of dyadic reciprocity of trust in boys' same-gender peers. Although the reciprocity findings need to be treated with caution, they are consistent with expectation based on the differences in the nature of children's same-gender peer relationships. Specifically, girls have greater intimacy, companionship and prosocial support with their same-gender peers than do boys in late childhood and adolescence (see Berndt,

1982; Hussong, 2000; Kuttler et al., 1999; Sharabany et al., 1981). These relationship qualities may promote the development of reciprocal trust beliefs in girls but not boys. Reciprocity was only evident at Time 2 in girls' same-gender peer relationships suggesting that this quality develops with age. One of the strengths of the social relations analyses is that it yields evidence for perceiver effects, target effects, and reciprocity in peer trust that are *not* confounded and independent.

Consistent with hypothesis, the current study showed that the perceiver effects of trust in peers were associated with the number of early school age children's friendships. These associations were found for the two measures of trust: reliability (promise keeping) and emotional (secret keeping). These findings support the hypothesis (see Rotenberg, MacDonald et al., 2004) that children with a more general trusting orientation may be more inclined to initiate contact with peers and form close relationships with them and thus establish a number of friendships whereas the children with a less trusting orientation may be less inclined to initiate contact. Also, consistent with hypothesis, the current study showed that the target effects of trust in peers (promise keeping and secret keeping) were associated with the number of early school age children's friendships. These findings complement Rotenberg, McDougall et al.'s (2004) observation that peer-reported trustworthiness is concurrently associated with, and longitudinally predicts changes across time in, the number of friendships in 10-11 year old children and adolescents (12 year olds). The findings are consistent with the observation that, even during the early years of school, children prefer peers as friends when they keep rather than break promises and keep rather than reveal secrets (Furman & Bierman, 1984).

Researchers interested in examining the dyadic processes of trust in conjunction with other psychosocial variables may wish to consider using the SRM as a method of obtaining indicators of specific trust beliefs and peer-reported trustworthiness prior to completing

further analyses. Adapting such a procedure would allow researchers to be more confident in their indicators of trust beliefs and trustworthiness because these could be examined without confound. Additionally, the application of the SRM suggests that findings from previous research examining trust beliefs and trustworthiness should be treated with caution because of the potential confounds of measurement.

There are some limitations of the present research, some of which pertain directly to the SRM. For example, the SRM does not take into account extradyadic effects that may influence the dyad members but rather the model assumes that individuals are not influenced by the actions of dyads that they are not part of (Kenny & La Voie, 1984). Specifically, participants may communicate with others regarding the nature of their dyad interactions and this is not accounted for in the model (Kenny & La Voie, 1984). However, it should be noted that in the present study children were explicitly asked not to discuss their ratings with anybody in an attempt to minimise the potential extradyadic effects. Also, because of the number of analyses family-wise error rates may have been elevated. Additionally the present research only examines two domains of trust with relatively familiar interaction partners: children's classmates. Consequently, future research could examine other related facets of trust and in a range of contexts and individuals. Moreover, the sample used in the present study represents a relatively homogenous group. Therefore, future research could try to replicate these findings using a more heterogeneous sample drawn from other cultures.

In summary, the current findings suggest that for trust the perceiver, target and relationship components of dyadic interactions can be identified during the early years of school. Additionally, the presence of these components in children during the early years of school permits identification of those children who are at risk of poor psychosocial development because of low trust and limited friendships (see Rotenberg, MacDonald et al.,

2004; Rotenberg, McDougall et al., 2004). Future research could develop intervention strategies to assist those children at risk of poor psychosocial adjustment.

References

- About, F. E., & Doyle, A. B. (1996). Parental and peer influences on children's racial attitudes. *International Journal of Intercultural Relations, 20*, 371-383.
- Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero acquaintance. *Journal of Personality and Social Psychology, 55*, 387-395.
- Alvarez, J. M., Ruble, D. N., & Bolger, N. (2001). Trait understanding or evaluative reasoning? An analysis of children's behavioural predictions. *Child Development, 72*, 1409-1425.
- Barenboim, C. (1981). The development of person perception in childhood and adolescence: From behavioral comparisons to psychological constructs to psychological comparisons. *Child Development, 52*, 129-144.
- Berndt, T. J. (1982). The features and effects of friendship in early adolescence. *Child Development, 53*, 1447-1460.
- Buhrmester, D., & Furman, W. (1987). The development of companionship and intimacy. *Child Development, 58*, 1101-1113.
- Bussey, K., & Fitzpatrick, S. (2005, April). The influence of promises on children's trustworthiness and honesty. In K. J. Rotenberg (Chair), *Trustworthiness in children: Conceptual framework, school adjustment, and testimony as a witness*. Symposium conducted at the Society of Research in Child Development Biennial meeting, Atlanta, Georgia.
- Buzzelli, C. A. (1988). The development of trust in children's relations with peers. *Child Study Journal, 18*, 33-46.
- Census (2001): Standard Area Statistics (England and Wales) assessed via <http://census.ac.uk/casweb/> retrieved 03/08/06

- Couch, L. L., & Jones, W. H. (1997). Measuring levels of trust. *Journal of Research in Personality, 40*, 75-80.
- Denham, S. A., Blair, K. A., DeMulder, E., Levitas, J., & Sawyer, K. (2003). Preschool emotional competence: Pathway to social competence? *Child Development, 74*, 238-256.
- Furman, W., & Bierman, K. L. (1984). Children's conceptions of friendship: A multidimethod study of developmental changes. *Developmental Psychology, 20*, 925-931.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*, 1016-1024.
- Harris, P. L. (2007). Trust. *Developmental Science, 10*, 135-138.
- Hay, D. F., Payne, A., & Chadwick, A. (2004). Peer relations in childhood. *Journal of Child Psychology and Psychiatry, 45*, 84-108.
- Heller, K. A., & Berndt, T. J. (1981). Developmental changes in the formation and organization of personal attributions. *Child Development, 52*, 683-691.
- Holmes, J. G., & Rempel, J. K. (1989). Trust in close relationships. In C. Hedrick (Ed.), *Review of personality and social psychology: Group processes and intergroup relations* (9th ed., pp. 187-220). Thousand Oaks: Sage publications.
- Hoy, W., & Tschannen-Moran, M. (1999). Five facets of trust: An empirical confirmation in urban elementary schools. *Journal of School Leadership, 9*, 184-208.
- Hussong, A M. (2000). Distinguishing mean and structural differences in adolescent friendship quality. *Journal of Social and Personal Relationships, 17*, 223-243.
- Imber, S. (1973). Relationship of trust to academic performance. *Journal of Personality and Social Psychology, 28*, 145-150.
- James, H. S. (2002). The trust paradox: A survey of economic inquiries into the nature of trust and trustworthiness. *Journal of Economic Behavior & Organization, 47*, 291-307.

- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York: The Guilford Press.
- Kenny, D. A. (1998). SOREMO version 2. Retrieved from <http://users.rcn.dakenny/soremo.doc>
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York: Guilford Press.
- Kenny, D. A., & La Voie, L. (1984). The social relations model. *Advances in Experimental Social Psychology*, 18, 141-182.
- Kenny, D. A., & Xuan, A. (2002). Winsoremo [computer software].
- Koenig, M. A., Clément, F., & Harris, P. L. (2004). Trust in testimony: children's use of true and false statements. *Psychological Science*, 15, 694-698.
- Kuttler, A. M., La Greca, A. M., & Prinstein, M. J. (1999). Friendship qualities and social-emotional functioning of adolescents with close, cross-sex friendships. *Journal of Research on Adolescence*, 9, 339-367.
- Livesley, W. J., & Bromley, D. B. (1973). *Person perception in childhood and adolescence*. London: John Wiley & Sons.
- Maccoby, E. E. (1988). Gender as a social category. *Developmental Psychology*, 24, 755-765.
- Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist*, 45, 513-520.
- Malloy, T. E., & Kenny, D. A. (1986). The social relations model: An integrative method for personality research. *Journal of Personality*, 54, 199-225.
- Malloy, T. E., Sugarman, D. B., Montvilo, R. K., & Ben-Zeev, T. (1995). Children's interpersonal perceptions: A social relations analysis of perceiver and target effects. *Journal of Personality and Social Psychology*, 68, 418-426.

- Martin, C. L., Fabes, R. A., Evansm S. M., & Wyman, H. (1999). Social cognition on the playground: children's beliefs about playing with girls versus boys and their relations to sex segregated play. *Journal of Social and Personal Relationships, 16*, 751-771.
- Moyer, J. E., & Kunz, J. T. (1975). Trust in everything. *Young Children, 30*, 107-112.
- Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Development Psychology, 29*, 611-621.
- Pomerantz, E. M., & Saxon, J. L. (2001). Conceptions of ability as stable and self-evaluative processes: A longitudinal examination. *Child Development, 72*, 152-173.
- Powell, C. M., & Heriot, K. C. (2000). The interaction of holistic and dyadic trust in social relationships: An investigative theoretical model. *Journal of Social Behaviour and Personality, 15*, 387-397.
- Rotenberg, K. J. (1982). Development of character consistency of self and other. *Child Development, 53*, 505-515.
- Rotenberg, K. J. (1984). Sex differences in children's trust in peers. *Sex Roles, 11*, 953-957.
- Rotenberg, K. J. (1986). Same-sex patterns and sex differences in the trust-values basis of children's friendships. *Sex Roles, 15*, 613-626.
- Rotenberg, K. J. (1991). *Children's interpersonal trust: sensitivity to lying, deception, and promise violations*. New York: Springer-Verlag.
- Rotenberg, K. J. (1994). Loneliness and interpersonal trust. *Journal of Social and Clinical Psychology, 13*, 152-173.
- Rotenberg, K. J., Fox, C. L., Green, S., Ruderman, L., Slater, K., Stevens, K. et al. (2005). Construction and validation of a children's interpersonal trust belief scale. *British Journal of Developmental Psychology, 23*, 271-292.

- Rotenberg, K. J., McDougall, P., Boulton, M. J., Vaillancourt, T., Fox, C., & Hymel, S. (2004). Cross-sectional and longitudinal relations among peer-reported trustworthiness, social relationships, and psychological adjustment in children and early adolescents from the United Kingdom and Canada. *Journal of Experimental Child Psychology, 88*, 46-67.
- Rotenberg, K. J., MacDonald, K. J., & King, E. V. (2004). The relation between loneliness and interpersonal trust during middle childhood. *Journal of Genetic Psychology, 165*, 233-249.
- Rotenberg, K. J., Michalik, N., Eisenberg, N., & Betts, L. R. (in press). The relations among young children's peer-reported trustworthiness, inhibitory control, and preschool adjustment. *Early Childhood Research Quarterly*.
- Rotenberg, K. J., & Morgan, C. J. (1995). Development of a scale to measure individual differences in children's trust-value basis of friendship. *Journal of Genetic Psychology, 156*, 489-503.
- Rotenberg, K. J., & Pilipenko, T. A. (1983). Mutuality, temporal consistency, and helpfulness in children's trust in peers. *Social Cognition, 2*, 235-255.
- Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality, 35*, 651-665.
- Rotter, J. B. (1971). Generalized expectancies for interpersonal trust. *American Psychologist, 26*, 443-452.
- Rotter, J. B. (1980). Interpersonal trust, trustworthiness and gullibility. *American Psychologist, 35*, 1-7.
- Shannon, K., & Kafer, N. E. (1984). Reciprocity, trust and vulnerability in neglected and rejected children. *The Journal of Psychology, 117*, 65-70.
- Sharabany, R., Gershoni, R., & Hofman, J. E. (1981). Girlfriend, boyfriend: Age and sex differences in intimate friendship. *Developmental Psychology, 17*, 800-808.

- Tschannen-Moran, M., & Hoy, W. K. (2000). A multidisciplinary analysis of the nature, meaning, and measurement of trust. *Review of Educational Research, 70*, 547-593.
- Warner, R. M., Kenny, D. A., & Stoto, M. (1979). A new round robin analysis of variance for social interaction data. *Journal of Personality and Social Psychology, 37*, 1742-1757.
- Wentzel, K. R. (1991). Relationships between social competence and academic achievement in early adolescence. *Child Development, 62*, 1066-1078.
- Wright, T. L., & Sharp, E. G. (1979). Content and grammatical sex bias on the interpersonal trust scale and differential trust toward women and men. *Journal of Consulting and Clinical Psychology, 47*, 72-85.
- Yee, M., & Brown, R. (1994). The development of gender differentiation in young children. *British Journal of Social Psychology, 33*, 183-196.

Footnotes

¹ The term variance is used when describing results across groups or studies and the term effect is used when discussing an individual's score (see Kenny et al., 2006).

² To investigate the effects of attrition two separate social relations analyses were completed: one including all 274 children tested at Time 1 and the other including the 205 children that comprised the final sample. The results were broadly consistent, the exception being the presence of significant dyadic reciprocity for promise keeping for the full sample, multivariate $r(11) = .08, p < .05$. In the reduced sample dyadic reciprocity was evident for promise keeping at a trend level, multivariate $r(8) = .09, p < .10$.

³ The names of the children who either declined, or whose parents withheld permission, to participate in the research were removed from the class lists.

⁴ Such large correlations are attributed to the reliability of the target effects which can be close to zero if there is only a small amount of partner variance (Kenny et al., 2006). Although the multivariate correlations are close to one, it is appropriate to examine them because of the significant target variance (see Kenny et al. 2006).

Table 1

Relative Variance Partitioning for Promise Keeping, Secret Keeping and Trust Construct at Time 1 and Time 2

Measure	Perceiver		Target		Relationship		Error	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
All peers ^a								
Promise Keeping	.13*	.12*	.15*	.14*	.72	.74	-	-
Secret Keeping	.16*	.17*	.09*	.07*	.74	.75	-	-
Trust	.12	.12	.11	.10	.26	.28	.47	.47
Boys' same-gender peers ^b								
Promise Keeping	.12*	.11*	.15*	.17*	.74	.72	-	-
Secret Keeping	.20*	.19*	.08*	.06*	.72	.75	-	-
Trust	.14	.12	.10	.11	.24	.22	.48	.44
Girls' same-gender peers ^c								
Promise Keeping	.18*	.19*	.15*	.15*	.67	.66	-	-
Secret Keeping	.16*	.22*	.15*	.11*	.69	.67	-	-
Trust	.15	.18	.14	.13	.22	.28	.49	.41
construct								

^agroup size = 22.78, ^bgroup size = 11.33, ^cgroup size = 14.00. * $p < .05$. (one-tailed).

Table 2

Multivariate Correlations Between the Perceiver Effects

Measure	Perceiver effects		
	SKT1	PKT2	SKT2
All peers ^a			
Promise Keeping Time 1 (PKT1)	.79 ^{***}	.19	.19 [*]
Secret Keeping Time 1 (SKT1)		.21 ^{**}	.21 [*]
Promise Keeping Time 2 (PKT2)			.83 ^{***}
Secret Keeping Time 2 (SKT2)			
Boys' same-gender peers ^a			
Promise Keeping Time 1 (PKT1)	.89 ^{**}	.18	.21
Secret Keeping Time 1 (SKT1)		.19	.25
Promise Keeping Time 2 (PKT2)			.85 ^{***}
Secret Keeping Time 2 (SKT2)			
Girls' same-gender peers ^b			
Promise Keeping Time 1 (PKT1)	.87 [†]	.12	.21 ^{**}
Secret Keeping Time 1 (SKT1)		.11	.11
Promise Keeping Time 2 (PKT2)			.89 [*]
Secret Keeping Time 2 (SKT2)			

Note. Significance of correlations (as covariances) were tested by two-tailed *t* tests and groups served as the units of analysis

^a*df* = 8, ^b*df* = 6.

† *p* < .10; * *p* < .05; ** *p* < .01; *** *p* < .001

Table 3

Multivariate Correlations Between the Target Effects

Measure	Target effects		
	SKT1	PKT2	SKT2
All peers ^a			
Promise Keeping Time 1 (PKT1)	.96**	.85**	.83***
Secret Keeping Time 1 (SKT1)		.82***	.90***
Promise Keeping Time 2 (PKT2)			.98***
Secret Keeping Time 2 (SKT2)			
Boys' same-gender peers ^a			
Promise Keeping Time 1 (PKT1)	.92*	.74**	.73*
Secret Keeping Time 1 (SKT1)		.76*	.99*
Promise Keeping Time 2 (PKT2)			1.00**
Secret Keeping Time 2 (SKT2)			
Girls' same-gender peers ^b			
Promise Keeping Time 1 (PKT1)	.97**	.97**	1.00**
Secret Keeping Time 1 (SKT1)		.97**	1.00**
Promise Keeping Time 2 (PKT2)			.98**
Secret Keeping Time 2 (SKT2)			

Note. Significance of correlations (as covariances) were tested by two-tailed *t* tests and groups served as the units of analysis. A correlation coefficient of 1.00 indicates that the true correlations coefficient is close to 1 (Kenny, 1998).

^a*df* = 8, ^b*df* = 6

* *p* < .05; ** *p* < .01; *** *p* < .001

Table 4

Correlations Between the Number of Friendships at Time 2 and the Perceiver Effects and Target Effects for Promise Keeping and Secret Keeping at Time 2

	Number of friendships at Time 2		
	All peers ^a	Boys' same-gender peers ^b	Girls' same-gender peers ^c
	Perceiver effects		
Promise keeping Time 2	.30**	.32*	.21
Secret Keeping Time 2	.29**	.42**	.19
	Target effects		
Promise keeping Time 2	.45**	.38**	.49***
Secret Keeping Time 2	.51**	.42**	.56***

Note. Significance of correlations were tested for by two-tailed *t* tests.

^a*df* = 195, ^b*df* = 92, ^c*df* = 90

* *p* < .05; ** *p* < .001