

Examining the components of children's peer liking as antecedents of school adjustment

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**Abstract**

Children's social interactions with their peers influence their psychosocial adjustment; consequently, the relationship between class-wide peer liking, same-gender peer liking, and school adjustment was explored in two age groups. Peer liking was analysed using the social relations model (SRM). In Study 1, 205 children (103 female and 102 male,  $M_{\text{age}} = 7.15$ ,  $SD = 7$  months) completed measures of peer liking and school adjustment, and teachers completed the Short-Form TRSSA. In Study 2, 197 children (98 female and 90 male,  $M_{\text{age}} = 9.87$ ,  $SD = 5.9$  months) completed measures of peer liking and school adjustment. Both studies yielded evidence of reciprocal liking and individual differences in the ratings of liking awarded to, and elicited from, both peer groups. Multigroup path analysis, with groups created according to gender, revealed that elements of liking predicted different aspects of school adjustment with some variation according to age and gender. Together, these findings suggest that the SRM can be used to examine peer liking and underscore the importance of children's peers for school adjustment.

*Key words:* peer relationships, school adjustment, peer liking, social relations model

## Examining the components of children's peer liking as antecedents of school adjustment

How children interact with, and the extent to which children like, their peers is crucial for their short- and long-term psychosocial adjustment (Hay, Payne, & Chadwick, 2004; Parker & Asher, 1987). Consequently, the importance of children's peer relationships are widely acknowledged by both researchers and practitioners (Bukowski & Adams, 2005; Gifford-Smith & Brownell, 2003; Hay et al., 2004). Children's interactions with their peers tend to be influenced by their individual characteristics and also their social environments with differences emerging when children interact in groups rather than dyads (Bukowski & Adams, 2005). Moreover, social environments vary with age (Hay et al., 2004). Specifically, as children age their peers become more influential and the amount of perceived support provided by peers increases relative to other interpersonal relationships (Furman & Buhrmester, 1992).

In the context of school, classrooms represent an institutionalised peer group that is often created by the school administration or teachers (Howes, 2010). Classroom composition can ultimately bear on children's school adjustment (Ladd & Coleman, 1997; Ladd, Kochenderfer, & Coleman, 1996). Consequently, it is important to consider children's experiences with all of the peers that comprise their class (Maassen, van Boxtel, & Goossens, 2005). An additional social context within classrooms is provided by gender groups, with same-gender peer groups often emerging because the underlying normative behavioural patterns vary according to gender (Chang, 2004). Therefore, the influence of same-gender peer groups may differ from class-wide peer groups and, as such, should not be overlooked in research (Bukowski, Gauze, Hoza, & Newcomb, 1993; Duncan & Cohen, 1995; Underwood, Schockner, & Hurley, 2001). However, it is important to acknowledge that these same-gender peer relationships are contextualised within the class-wide environment. The current research aimed to explore the components of younger children's (6- to 8-year-olds, Study 1) and older children's (9- to 11-year-olds, Study 2) peer liking in same-gender and class-wide

peer groups using the social relations model (SRM, Kenny & La Voie, 1984). The research also aimed to explore the relationship between children's peer liking and their school adjustment and the role of gender as a potential moderator in this relationship.

The extent to which children are liked by their peers has been used as an indicator of: peer acceptance (see Hymel, Vaillancourt, McDougall, & Renshaw, 2002), companionship (Buhrmester & Furman, 1987), and the peer groups' collective perception of an individual child (Ladd, Birch, & Buhs, 1999; Parker & Asher, 1993). Children's peer acceptance is associated with their psychosocial adjustment. For example, the extent to which children are liked by their peers is associated with lower levels of internalising and externalising symptoms, and higher global self-worth (Klima & Repetti, 2008). Children who are liked by their peers also have higher social expectations than their peers (Cillessen & Mayeux, 2007). Further, children's ability to successfully integrate in to the social environment, and be liked by peers, is crucial for school adjustment (Wentzel, 1999).

School adjustment is regarded as a broad set of behaviours and competencies that reflect the extent to which a child is comfortable, interested, engaged, and successful within the school environment (Ladd, 1996; Perry & Weinstein, 1998). Understanding the antecedents of school liking and classroom engagement is important because children who report liking school are more likely to engage with school activities, and consequently succeed, whereas those who dislike school are more likely to gradually withdraw from the school environment and the associated opportunities (Ladd & Dinella, 2009; Linnakyla & Malin, 2008). Similarly, those who become less engaged with school are more likely to drop out (Parker & Asher, 1987; Van de Gaer, Pustjens, Van Damme, & De Munter, 2009). Researchers have identified children's peer relationships as an antecedent of some facets of school adjustment, particularly those that pertain to involvement and engagement with classroom activities and relationships (e.g., Ladd & Coleman, 1997; Ladd et al., 1996). For example, young children who are liked by their peers experience lower levels of loneliness,

and are more involved in classroom activities. Similarly, older children who are liked by their peers report experiencing lower levels of loneliness (Asher & Paquette, 2003; Mouratidis & Sideridis, 2009; Parker & Asher, 1993) and are more engaged with school (Li, Lerner, & Lerner, 2010). Together, these findings provide evidence that the extent to which children are liked by their peers is related to their school adjustment.

Although there is evidence of the importance of children's peer relationships for school adjustment, the previous research has tended to focus on the extent to which children are liked by their peers. Therefore, it remains unclear whether children's reports of peer liking are influenced by qualities of the rater, target, or the unique relationship between the individuals. In the present research the SRM will be used to analyse children's reports of liking. The SRM is guided by the principle that, in dyadic interactions, an individual can be both the stimuli and the provider of ratings (Malloy & Kenny, 1986). Specifically, the model permits conclusions to be drawn regarding how much of the variance in dyadic interactions is due to the characteristics of the individuals in the dyad and the unique relationship between dyad members (Kenny, Kashy, & Cook, 2006). Therefore, when applied to peer liking, reports can be considered in terms of whether A likes B because (a) A likes everyone regardless of their interaction partner (termed *rater effects*); (b) B elicits ratings of liking regardless of their interaction partner (termed *target effects*); and (c) the unique relationship between A and B (termed *relationship effects*). Further, the rater, target, and relationship effects can be regarded as equating to dispositional, situational, and interaction components outlined in personality research, respectively (Malloy & Kenny, 1986).

Rater effects and rater variance<sup>1</sup> provide a measure of assimilation to reflect the extent to which an individual consistently rates their interaction partners on a particular trait (Kenny, 1994; Kenny & La Voie, 1984). When applied to liking, rater effects and variance reflect the consistency in children's ratings of the extent to which they like their peers. Previous research has reported consistent ratings of first- to sixth-grade children's desirability to play

with and work with classmates (Simpkins & Parke, 2002; Whitley, Schofield, & Snyder, 1984), toddlers' aggression (Ross & Lollis, 1989), third-grade children's proactive aggression and hostile attributions (Coie et al., 1999; Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001), and 5- to 8-year-olds trust (Betts & Rotenberg, 2008).

Target effects and target variance provide a measure of consensus reflecting the extent to which an individual consistently elicits ratings for a trait when interacting with others (Albright, Kenny, & Malloy, 1988; Kenny, 1994). When applied to liking, target effects and target variance reflect the consistency with which children are liked by their peers. Previous research has reported variation in eliciting ratings in first- to sixth-grade children's desirability as a work partner or playmate (Simpkins & Parke, 2002; Whitley et al., 1984), toddlers' conflict in relationships (Ross & Lollis, 1989), third-grade children's proactive aggression (Hubbard et al., 2001), first- to sixth-grade children's social status (Malloy, Yaras, Montvilo, & Sargarman, 1996), and 5- to 8- year-olds trust (Betts & Rotenberg, 2008).

Relationship effects and relationship variance reflect the unique nature of a dyadic relationship from the perspective of the individual and, as such, this may be different for both dyad members (Kenny & La Voie, 1984). In the context of liking, relationship effects pertain to A's rating of uniquely liking B, when A's tendency to like others (rater effects), B's tendency to be liked by others (target effects), and B's rating of uniquely liking A are statistically controlled for. However, relationship effects and variance may be confounded by error variance which represents measurement error, "random noise", and unstable variance in the variable in question (Malloy & Kenny, 1986). In some instances it is appropriate to use a construct where multiple measures that are highly correlated can be developed to assess the same domain or when using repeated measures (Kenny et al., 2006). However, given the specific nature of peer liking and the desire to assess children's explicit reports of peer liking, in the present research, it was not possible to create a construct.

The SRM allows investigation in to dyadic reciprocity which assesses the extent to which individual A is rated by B as uniquely displaying a trait, and the extent to which individual B is rated by A as uniquely displaying the same trait (Kenny, 1994). Therefore, it is possible to examine reciprocal patterns of behaviour whilst statistically controlling for the other components within dyadic relationships. In the context of liking, reciprocity reflects the extent to which individual A uniquely likes individual B and the extent to which B reciprocates this liking whilst statistically controlling for both individuals' rater and target effects. Dyadic reciprocity has been reported in children's ratings of desirability as a playmate (Whitley et al., 1984) and 5- to 8-year-olds trust (Betts & Rotenberg, 2008).

Although previous research has applied the SRM to the analysis of liking in adults at zero-acquaintance (Chapdelaine, Kenny, & La Fontana, 1994), and to some aspects of peer relationships in children (Malloy et al., 1996), it remains somewhat unclear as to the applicability of the model to children's peer liking for class-wide versus same-gender peer groups. Recent research reports that adolescents display strong evidence of dyadic reciprocity of peer liking and that the components of the SRM can be identified in same-gender peer groups (Zimmer-Gembeck, Waters, & Kindermann, 2010). In subsequent analysis, Zimmer-Gembeck et al. found evidence of rater and target effects for boys and girls of comparable size. To examine whether differences in the components of liking emerge according to social group, the present research aims to further explore the applicability of the SRM using groups comprising both class-wide and same-gender peers.

Additionally, it remains unclear the extent to which peer liking predicts school adjustment using unconfounded measure of the extent to which children like their peers and the extent to which children are liked by their peers when a rating scale approach to assessing peer liking is adopted. Although some studies have adopted such an approach to assessing peer liking (e.g., Kingery & Erdley, 2007) such studies did not apply the social relations analysis and, as such, were unable to yield unconfounded measures of children's peer liking.

Similarly, other studies have assessed peer liking through asking children to provide limited nominations of the peers they like most and like least (e.g., Brendgen, Vitaro, Bukowski, Doyle, & Markiewicz, 2001) which has raised ethical concerns (Bell-Dolan & Wessler, 1994; Mayeux, Underwood, & Risser, 2007) and may not provide an accurate or a full account of the social dynamics within a classroom (Maassen, et al., 2005; Poulin & Dishion, 2008). Therefore, the present research aimed to address this issue through applying the SRM as an analytical strategy to extract rater and target effects for children's class-wide and same-gender peer liking assessed using rating scales.

Exploratory analysis will also be performed to examine the role of gender as a potential moderator in the relationship between children's peer liking and school adjustment.

Although no direct predictions will be made with regard to potential gender differences in the relationship between children's peer liking and school adjustment, previous research has reported gender differences in how children construct relationships with their peers (Bukowski et al., 1993) and in the quality of children's peer relationships (Way & Greene, 2006). Specifically, girls tend to report having a smaller number of close relationships whereas boys tend to report having a broader social network of less intimate relationships (Erwin, 1995). Also, there is evidence of gender differences in school adjustment with girls tending to have higher school liking and school engagement than boys (Linnakyla & Malin, 2008; Simons-Martin & Crump, 2003). Further, in boys the decline of school liking is more rapid during secondary school compared to girls (Van de Gaer et al., 2009).

The research also aimed to examine possible age differences in children's class-wide and same-gender peer liking through conducting the research with a sample of 6- to 8-year-olds (Study 1) and with a sample of 9- to 11-year-olds (Study 2) because of reported differences in the importance of children's peer relationships across childhood (Furman, & Buhrmester, 1992; Gifford-Smith & Brownell, 2003). Specifically, as children age peers become increasingly important in the social arena (Gifford-Smith & Brownell, 2003) and, as

such, there may be differences in the patterns of results obtained with different ages. Further, as children approach adolescence, the propensity for same-gender relationships increases possibly because the other-gender is regarded as the outgroup resulting in fewer social interactions (Bukowski et al., 1993). Also, as children age their competence and confidence in their social arena is fundamental to their progress through school because such social skills promote academic success (Webster-Stratton & Reid, 2004). The age of the children in Study 1 reflects a time when children are beginning on their school careers and a time when their peer relationships are developing. The age of the children in Study 2 reflects the age when children begin to enter adolescence and, as such, may place more value on same-gender peer relationships (Bukowski et al., 1993). Therefore, it is possible that the relationship between children's same-gender peer liking and school adjustment may be stronger in Study 2 than in Study 1 because of the increasing importance of same-gender peers.

### **Study 1**

The previous findings reported by Zimmer-Gembeck et al. (2010) suggest that the components of adolescents' same-gender peer liking could be identified according to the criteria of the SRM. In Study 1, we aimed to explore whether it is possible to identify similar components in young children's liking through the application of the SRM. Specifically, the study aimed to explore individual differences in the extent to which young children like their peers (rater effects), in the extent to which young children are liked by their peers (target effects), and dyadic reciprocity of liking. Further, we used groups comprising class-wide peers and same-gender peers to explore possible differences according to group composition.

Study 1 also examined the extent to which the rater effects and target effects yielded from the social relations analysis of liking, for the class-wide and same-gender peers, predicted young children's child-rated and teacher-rated school engagement. Multigroup path analysis was performed to explore gender as a potential moderator. A multi-informant

approach was adopted for the reports of school adjustment to reflect the young age of the sample (Spilt & Koomen, 2009).

## Method

### Participants

Two hundred and five children (103 female and 102 male,  $M_{\text{age}} = 7.15$ ,  $SD = 7$  months) were recruited from nine Year 1 and Year 2 classrooms across 4 primary schools in the UK<sup>2</sup>. The overall response rate for those children approached to take part in the study was 95.34% and within classrooms the response rate ranged from 85.71% to 100%. Three of the primary schools had catchment areas above the UK national average for professional employment and below the UK national average for unemployment (Office for National Statistics, 2001). One of the primary schools had a catchment area below the UK national average for professional employment and above average for unemployment. The sample was predominately white (97%).

### Measures

**Peer Liking.** Following the procedure outlined by Kingery and Erdley (2007), children were asked to report “how much they like to play with each person” in their class (children without parental consent were excluded from the list). Participants responded using a 5-point scale ranging from 1 (*Never*) to 5 (*Always*).

**School Liking.** Participants completed the School Liking and Avoidance Questionnaire (Ladd & Price, 1987) using a 3-point scale 1 (*No*), 2 (*Sometimes*), and 3 (*Yes*). The 9-item school liking subscale assesses children's propensity to like school ( $\alpha = .91$ , e.g., “Is school fun?”) and the 5-item school avoidance subscale assesses the extent to which children try to avoid school ( $\alpha = .83$ , e.g., “Do you wish you didn't have to go to school?”). As the aggregate school liking and school avoidance subscales (reversed) were strongly correlated,  $r(202) = .76$ ,  $p < .001$ , they were combined to form a composite measure of school liking with good internal consistency ( $\alpha = .93$ ).

**Loneliness.** Children completed a four-item measure to assess loneliness in the context of school derived from the Loneliness and Social Dissatisfaction Questionnaire (Asher, Rymel, & Henshaw, 1984; Asher & Wheeler, 1985). Participants reported the extent to which: "I am lonely at school"; "I feel alone at school"; "I feel left out of things at school"; and "I feel that I have no one to talk to at school" using a 5-point scale ranging from 1 (*Not true at all*) to 5 (*Always true*). The summed items had acceptable internal consistency given the number of items ( $\alpha = .68$ ).

**Teacher-rated school engagement.** Teachers completed the Short-Form Teacher Rating Scale of School Adjustment (Short-Form TRSSA, Betts & Rotenberg, 2007a) to assess the children's school engagement. Teachers completed the 6-item on-task classroom involvement subscale (e.g., "Follows teacher's directions"), the 5-item positive orientation subscale (e.g., "Approaches new activities with enthusiasm"), and the 5-item maturity subscale (e.g., "Is a mature child") using a 3-point scale 0 (*Never applies*) to 2 (*Certainly applies*). The items within the scales were summed and demonstrated acceptable internal consistency ( $\alpha = .89$ ,  $\alpha = .87$ , and  $\alpha = .74$ , respectively).

### **Procedure**

The children completed the school liking and loneliness measures in groups of approximately five same-gender peers. The questionnaires were read to the children who recorded their answers individually and independently. The children were informed that it was not a test, that there were no right or wrong answers, that they could stop answering the questions at any time, and that the information would be kept confidential. Participants completed the peer liking measure individually with a researcher in an area away from the classroom. The children were asked not to discuss their answers with others. Finally, class teachers completed the Short-Form TRSSA.

## Results

Liking for class-wide and same-gender peers was analysed using separate round robin social relations analyses. Such analysis allows all possible dyadic combinations within a group to be explored because individuals can rate, and be rated by, all group members. Therefore, the round robin technique provides a “richer” picture of the interactions compared with the other SRM techniques (Kenny et al., 2006), and more closely reflects the nature of classroom interactions (Betts & Rotenberg, 2008).

Two separate analyses were performed according to social group. For the class-wide analysis there were 9 groups that ranged in size from 13 to 28 ( $M = 23.44$ ,  $SD = 5.92$ ) and for the same-gender analysis there were 16 groups that ranged in size from 8 to 19 ( $M = 12.81$ ,  $SD = 2.71$ ) as 2 groups with less than 4 children were excluded from the analysis. The analysis was conducted using the specialised WinSoremo software (Kenny & Xuan, 2002) to divide the dyadic variance into rater, target, and relationship/error. Additionally, SOREBIG software (D. A. Kenny, Personal Communication, June 10, 2004) was also used as group sizes exceeded 25 which is the maximum permitted group size when using WinSoremo. Following the analysis, for each individual their class-wide and same-gender rater and target effects were exported into SPSS. Together, these represented the extent to which each child liked, and was liked by, their class-wide and same-gender peers.

### Simple variance partitioning

The analyses revealed evidence of significant rater variance for both class-wide,  $.12$ ,  $p < .05$ , and same-gender peers,  $.19$ ,  $p < .05$ , suggesting that young children differed in the extent to which they liked their peers and this effect was stronger for same-gender peers. There was also significant target variance for class-wide,  $.19$ ,  $p < .05$ , and same-gender peers,  $.11$ ,  $p < .05$ , indicating that the young children differed in the extent to which they were liked by their peers and this effect was stronger for class-wider peers. The remaining relationship/error variance suggests that 69% of the variance for class-wide peers and 70% of

the variance for same-gender peers in liking could be attributed to both the unique relationship between individuals and also error. Finally, there was evidence of dyadic reciprocity of liking for class-wide peers, multivariate  $r = .097, p < .05$ , and same-gender peers, multivariate  $r = .226, p < .05$ , suggesting that children matched their expression of liking with their interaction partner.

### **Associations among measures**

Correlations were used to examine the association between class-wide rater and target effects, same-gender rater and target effects, and school adjustment (Table 1). There were small to large significant associations between the measures of school adjustment providing evidence that these measures assess related but different facets of school adjustment. There was a significant medium positive association between same-gender rater effects and same-gender target effects: The more children liked their same-gender peers, the more they were liked by their same-gender peers. There was a significant small positive association between class-wide target effects and loneliness: The more children were liked by their class-wide peers, the more they experienced loneliness. Finally, there was a significant small negative association between same-gender target effects and loneliness, and a small to medium positive association between same-gender target effects and two aspects of school engagement, that is on-task classroom involvement and positive orientation: The more the children were liked by their same-gender peers the higher these aspects of teacher-rated school engagement and the lower their loneliness. There were no other significant associations.

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Insert Table 1 here

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### **Multigroup path analysis**

Multigroup path analysis was used to examine the extent to which liking class-wide and same-gender peers (rater effects) and the extent to which being liked by class-wide and same-gender peers (target effects) predicted school adjustment using AMOS version 18. In the path analysis, the rater effects and the target effects for each individual, yielded from the social relations analyses for class-wide and same-gender peers, were entered as separate predictors of the school adjustment variables. The analysis comprised separate groups according to the participants' gender. The initial model was an adequate fit of the data comparative fit index (CFI) = .99, goodness of fit index (GFI) = .98, root mean square error of approximation (RMSEA) = .038,  $\chi^2(14) = 17.75, p > .05$ . The CFI and GFI exceeded the recommended value of .90 (Bryant & Yarnold, 1995; Byrne, 2001), the RMSEA was appropriate, and the chi-square was not significant (Byrne, 2001; Schumacker & Lomax, 1996). However, a number of paths were not significant in either group and these paths were removed in turn and the fit statistics recalculated until all paths were significant in at least one of the models. The final model was a good fit of the data (see Figure 1 with unstandardised regression coefficients for boys and Figure 2 with unstandardised coefficients weights for girls), CFI = 1.00, GFI = .96, RMSEA = .00,  $\chi^2(38) = 31.70, p > .05$ .

The procedure outlined by Byrne (2001) was implemented to examine potential gender differences. Specifically, the paths were constrained to be equal across the groups and then individually unconstrained to examine gender differences in path strength for that path using chi-square change. Constraining all paths indicated that there were gender differences across the models,  $\Delta\chi^2(12) = 124.84, p < .001$ .

For boys, liking same-gender peers predicted lower levels of teacher-rated on-task classroom involvement and maturity. The path between liking same-gender peers and maturity was stronger in boys than the comparable path for girls,  $\Delta\chi^2(1) = 38.85, p < .001$ . The extent to which boys were liked by their same-gender peers predicted lower levels of

loneliness and higher levels of on-task classroom involvement and these paths were stronger for boys than the comparable path for girls,  $\Delta\chi^2(1) = 21.49, p < .001$ , and ,  $\Delta\chi^2(1) = 11.77, p < .001$  respectively. Finally, the extent to which boys were liked by their same-gender peers marginally predicted higher levels of teacher-rated maturity.

For girls, being liked by same-gender peers predicted higher teacher-rated on-task classroom involvement, positive orientation, and maturity. The path between being liked by same-gender peers and teacher-rated maturity was stronger for girls than the comparable path for boys,  $\Delta\chi^2(1) = 14.90, p < .001$ . Similarly, the path between being liked by same-gender peers and teacher-rated positive orientation was stronger for girls than the comparable path for boys,  $\Delta\chi^2(1) = 18.18, p < .001$ . Also, being liked by class-wide peers predicted higher levels of loneliness for girls and there were gender differences in the nature of this path,  $\Delta\chi^2(1) = 28.42, p < .001$ : For girls the relationship was significant and positive whereas for boys the relationship was not significant and negative . Finally, for girls the extent to which they liked their same-gender peers predicted higher levels of school liking and this path was stronger than the comparable path for boys,  $\Delta\chi^2(1) = 4.13, p < .05$ .

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## Discussion

Study 1 provided evidence that the variance within young children's peer liking could be split into the extent to which children like their class-wide and same-gender peers (rater effects), and the extent to which children were liked by their class-wide and same-gender peers (target effects). This finding is consistent with recent research examining peer liking in adolescence using the social relations analysis (Zimmer-Gembeck et al., 2010). However, there were differences, according to social group, in the relative variance accounted for by the components of the SRM. For class-wide peers, the extent to which the children were liked by

their peers accounted for more of the variance than the extent to which the children liked their peers. However, for same-gender peers this pattern was reversed. These findings add further support to the claims that children's social relationships vary according to interaction partner and group composition (Maassen et al., 2005). Finally, across both social groups there was also evidence of dyadic reciprocity of liking with young children tending to match the expression of liking between dyad members although this was stronger for same-gender peers.

The results of Study 1 also give an indication of the relative importance of the components of peer liking for school adjustment. The results suggest that, for boys, awarding ratings of liking and eliciting ratings of liking from same-gender peers are predictive of some aspects of teacher-rated school engagement. Also, boys who elicited higher ratings of liking from same-gender peers reported experiencing lower levels of loneliness. Further, for boys the components of class-wide peer liking failed to predict school adjustment. The importance of same-gender peer relationships was also evident for girls, with eliciting higher levels of liking predicting teacher-rated school engagement. Also, girls who reported liking their same-gender peers reported liking school. However, those girls who elicited higher levels of liking from all classmates experienced higher levels of loneliness. Together, these findings underscore the importance of children eliciting ratings of liking from their same-gender peers for school adjustment and extend previous research by partitioning the variance into different sources.

## **Study 2**

In Study 2, we aimed to further explore the applicability of the SRM to examine the relationship between children's class-wide and same-gender peer liking, and school adjustment in an older sample. In particular, we were interested to examine whether similar patterns of findings from Study 1 emerged with 9- to 11-year-olds with regard to: The extent the children liked their class-wide and same-gender peers, the extent to which children were liked by their class-wide and same-gender peers, and dyadic reciprocity of liking. It was

expected that, due to the age of the children, the amount of variance accounted for by the rater and target variance would be higher than in Study 1 because of the developing importance of peer relationships (Gifford-Smith & Brownell, 2003). Additionally, because of the age of the sample and because of the propensity to engage in same-gender relationships (Bukoswski et al., 1993), it was expected that the same-gender rater and target effects would be a stronger predictor of school adjustment than the class-wide rater and target effects.

As with Study 1, Study 2 examined whether the extent to which the children liked their class-wide and same-gender peers (rater effects) and the extent to which the children were liked by class-wide and same-gender peers (target effects) predicted child-rated school adjustment, and multigroup path analysis was used to explore gender differences in these relationships. In particular, school liking, loneliness, and social confidence were selected as indicators of school adjustment because older children who are not well integrated in to the peer environment report disliking school (Coyle, Jones, & Dick, 2004) and experiencing higher levels of loneliness (Asher & Paquette, 2003; Mouratidis & Sideridis, 2009). Further the social confidence that adolescents derive from their peer status is likely to bear on their self-efficacy (McElhaney, Antonishak, & Allen, 2008) which, in turn, influences their later psychosocial adjustment (Vecchio, Gerbino, Pastorelli, del Bove, & Caprara, 2007).

## **Method**

### **Participants**

One hundred and ninety-seven children (98 female and 89 male, 11 gender unknown who were excluded from subsequent analysis) were recruited from eight Year 5 and Year 6 classrooms across 5 primary schools in the UK ( $M_{\text{age}} = 9.87$ ,  $SD = 5.9$  months). The overall response rate for those children approached to take part in the study was 91.20% and within classrooms the response rate ranged from 69.56% to 92.59%. The schools were drawn from a range of catchment areas; four of the schools had a catchment area below the UK national average for professional employment and above the UK national average for unemployment

(Office of National Statistics, 2001). One of the schools had a catchment area above the UK national average for professional employment and below the UK average for unemployment. The sample was predominately white (85%).

### **Measures**

**Peer Liking.** Following Kingery and Erdley's (2007) recommendations, when working with older children, the participants were asked to report "how much time they like to spend with each person" in their class (children without parental consent were excluded from the list). Participants responded using a 5-point scale ranging from 1 (*I don't like to*) to 5 (*I like to a lot*).

**School liking.** Participants completed the Liking for School Questionnaire (Ireson & Hallam, 2005). The scale comprises 11 items designed to assess children's attitudes toward school (e.g., "This is a good school"), happiness in school (e.g., "I am very happy when I am in school"), the value of school (e.g., "School work is worth doing"), and the relationship to school (e.g., "The school and I are like..."). The children responded to the questions using a 5-point scale ranging from 1 (*Strongly agree*) to 5 (*Strongly disagree*) for items 1-9, a 4-point scale for question 10 ranging from 1 (*Very important*) to 4 (*Not important at all*), and a 5-point scale for question 11 ranging from 1 (*Good friends*) to 5 (*Enemies*). Questions were reverse scored and summed so high scores were indicative of higher school liking. The scale had moderate internal consistency ( $\alpha = .76$ ).

**Loneliness.** The children's loneliness was assessed using the same procedure as outlined in Study 1. The scale demonstrated good internal consistency ( $\alpha = .87$ ).

**Social Confidence.** Participants completed the 17-item social confidence subscale from the Coping Resources Inventory Scales for Educational Enhancement (McCarthy, Seraphine, Mathney, & Curlette, 2000) using a 5-point scale ranging from 1 (*Strongly agree*) to 5 (*Strongly disagree*). Items were reverse coded and summed so high scores were indicative of higher social confidence and assessed the extent to which children felt that they could

disclose feelings to peers, behave independently, and be assertive in negotiating their needs (e.g., "I'm afraid to tell people what I think", reverse coded). The scale demonstrated good internal consistency ( $\alpha = .87$ ).

### **Procedure**

A similar procedure to that employed in Study 1 was used; the children completed the measures in classroom groups but worked individually.

### **Results**

As with Study 1, round robin social relations analyses were used to analyse the class-wide and same-gender ratings of liking. The analysis comprised 8 class-wide groups that ranged in size from 12 to 30 ( $M = 22.75$ ,  $SD = 5.92$ ) and 16 same-gender peer groups that ranged in size from 4 to 14 ( $M = 9.25$ ,  $SD = 3.30$ ). Following the analysis, for each individual, their class-wide and same-gender rater and target effects were exported in to SPSS. Together, these represented the extent to which each child liked, and was liked by, their class-wide and same-gender peers.

#### **Simple variance partitioning**

There was significant rater variance for class-wide,  $.09$ ,  $p < .05$ , and same-gender peers,  $.16$ ,  $p < .05$ , suggesting that the children differed in the extent to which they liked their peers. There was also significant target variance for class-wide,  $.10$   $p < .05$ , and same-gender peers,  $.25$ ,  $p < .05$ , indicating that the children differed in the extent to which they were liked by their peers and this effect was stronger for same-gender peers. The relationship/error variance suggests that 81% of the variance for class-wide peers and 60% of the variance for same-gender peers in liking could be attributed to both the unique relationship between individuals and also error. Finally, there was evidence of dyadic reciprocity of liking for class-wide, multivariate  $r = .183$ ,  $p < .05$ , and same-gender peers, multivariate  $r = .289$ ,  $p < .05$ : The children matched their expression of liking with their interaction partners and this effect was stronger for same-gender peers.

**Associations among measures**

Correlations were conducted to examine the associations between class-wide rater and target effects, same-gender rater and target effects, and school adjustment (Table 2). As evidence that the measures of school adjustment were assessing related but different facets, there were significant small to medium associations between the measures of school adjustment: The more children liked school, the lower their loneliness and the more socially confident they were. Also, the lower the children's social confidence scores, the higher their loneliness.

There was a large significant positive association between same-gender rater effects and same-gender target effects: The more children liked their same-gender peers, the more they were liked by their same-gender peers. However, there was not a comparable association between class-wide rater effects and class-wide target effects. Class-wide rater effects were strongly associated with same-gender rater effects: The more children liked their class-wide peers, the more the children liked their same-gender peers. There was a small association between class-wide target effects and same-gender target effects: The more children were liked by their class-wide peers, the more the children were liked by their same-gender peers. Similarly, a small association was evident between class-wide rater effects and same-gender target effects: The more children liked their class-wide peers, the more they were liked by their same-gender peers.

Class-wide rater effects and school liking were also associated, although the association was small: The more children liked their class-wide peers, the more they liked school. Similarly, a small significant association was evident between class-wide target effects, school liking, and social confidence: The more the children were liked by their class-wide peers, the more they liked school and the more socially confident they were. Same-gender target effects were associated with school liking and loneliness and the effect size was small

and medium respectively: The more the children were liked by their same-gender peers, the more they liked school and the lower their loneliness.

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Insert Table 2 here  
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### **Path analysis**

Multigroup path analysis was used to examine the extent to which liking class-wide and same-gender peers (rater effects) and the extent to which being liked by class-wide and same-gender peers (target effects) predicted school adjustment using AMOS version 18. The analysis comprised separate groups according to gender.

The initial model contained all paths between the predictor variables and the outcome variables and was an adequate fit of the data, CFI = .98, GFI = .98, RMSEA = .05,  $X^2(8) = 10.50$ ,  $p > .05$ . However, a number of paths were not significant in either group and these paths were removed in turn and the fit statistics recalculated until all paths were significant in at least one of the models. The final model was a good fit of the data, CFI = 1.00, GFI = .96, RMSEA = .00,  $X^2(22) = 16.77$ ,  $p > .05$  (Figure 3 with unstandardised regression coefficients for boys and Figure 4 with unstandardised regression coefficients for girls). Again the procedure outlined by Byrne (2001) was used to examine gender differences; constraining all of the paths revealed gender differences across the models,  $\Delta\chi^2(6) = 55.45$ ,  $p < .001$ .

For boys, being liked by class-wide peers predicted school liking, although no such relationship emerged for girls there was no gender difference in path strength. Also, there was evidence of a marginally significant path between being liked by same-gender peers and loneliness: Being liked by same-gender peers predicted lower levels of loneliness in boys.

For girls, being liked by class-wide peers predicted higher levels of social confidence, and this path was significantly stronger than for boys,  $\Delta\chi^2(1) = 4.78$ ,  $p < .05$ . Also, being

liked by same-gender peers predicted experiencing lower levels of loneliness in girls, and this path was significantly stronger than for boys,  $\Delta\chi^2(1) = 47.25, p < .001$ .

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Insert Figure 3 and 4 here  
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## Discussion

Study 2 demonstrated that the components of 9- to 11-year-olds class-wide and same-gender peer liking could be identified through the application of the social relations analysis. Specifically, there was evidence of significant rater variance and target variance. Therefore, there were differences in the extent children liked their peers (rater variance) and the extent to which the children were liked by their peers (target variance). There was also dyadic reciprocity of liking with children matching each others' expressions. For the same-gender peer group the amount of variance that was attributable to the extent children were liked by peers exceeded the extent to which the children liked their peers. This finding suggests that in 9- to 11-year-olds same-gender peer liking is more reflective of the extent to which children are liked by their peers and is similar to the findings of Zimmer-Gembeck et al. (2010).

There was some evidence of a relationship between the extent children were liked by their peers and school adjustment although these relationships varied according to gender and social group. For boys, being liked by class-wide peers was predictive of higher school liking. For girls, being liked by all peers was predictive of higher social confidence. For both boys and girls, being liked by same-gender peers was predictive of lower loneliness, although this result was stronger for girls. Together, these findings suggest that in older children the extent to which children are liked by their class-wide and same-gender peers is important for school adjustment, although the effects vary according to social group and

school adjustment measure. This finding is consistent with the argument that children's peer relationships vary according to gender in terms of composition and importance (Erwin, 1995).

### **Summary and concluding discussion**

There was clear evidence that the dyadic components of peer liking for class-wide and same-gender peers, assessed using a rating scale measure, could be identified in 6- to 8-year-olds and 9- to 11-year-olds. Specifically, a significant amount of variance was attributed to the extent to which children liked their peers and the extent to which children are liked by their peers. However, the amount of variance attributable to these components varied during childhood and according to social group. In younger children (Study 1) the proportion of variance accounted for by the extent to which the children were liked by their class-wide peers exceeded the proportion of variance that was accounted for by the ratings of liking class-wide peers. However, the opposite finding was found for same-gender peers in Study 1: The proportion of variance that was accounted for by the extent to which the children liked their same-gender peers exceeded the proportion of variance that was accounted for by the ratings of liking elicited from same-gender peers. Conversely, in 9- to 11-year-olds (Study 2) there was little difference in the amount of variance accounted for by the extent to which children liked their class-wide peers and the amount of variance that was accounted for by the extent to which children were liked by their class-wide peers. However, the amount of variance accounted for by the extent to which children were liked by their same-gender peers exceeded the amount of variance that was accounted for by their ratings of liking for same-gender peers.

A potential explanation for this finding may reflect young children's limited person perception abilities and the associated difficulties in making fine grained judgements of personality characteristics (Heller & Berndt, 1981; Rholes & Ruble, 1986). In older children, the proportion of variance that was attributed to the ratings of being liked by same-gender peers was higher than that in younger children. A potential explanation for these differences

may rest in the role of children's reputations and behaviour in social interactions (Bellmore & Cillessen, 2006; Hill & Pillow, 2006). The participants in Study 2 could be more aware of their classmates' behaviour because of the amount of time the children had spent with their classmates during their school careers would generally be higher than those in Study 1. Future research could explore further why these patterns of social interactions vary during childhood and whether these patterns could be replicated in a more heterogeneous sample. However, contrary to expectation the relationship between same-gender peer liking and school adjustment was not stronger in Study 2 than Study 1 suggesting that the role of same-gender peers remain consistent during childhood. The stability and patterns of change could be further examined in future research through the combination of the social relations analysis and latent trajectory analysis.

In both studies, there was also evidence of dyadic reciprocity of liking. This finding is consistent with the expectation that when in social interactions individuals tend to match the behaviour of their interaction partner (Kenny, 1994). Similarly, the evidence of reciprocal liking supports the theory that positive reciprocal behaviour is crucial for relationship formation and maintenance (Sprecher, 1998). However, the present research adds to this existing research through the application of the social relations analysis which allowed reciprocity of liking to be assessed whilst the other components of the dyadic relationship were statistically controlled for.

Study 1 and Study 2 provided evidence of the extent to which the components of children's class-wide and same-gender peer liking predicted school adjustment. In both studies being liked by same-gender peers (target effects) was associated with, and predictive of, some aspects of school adjustment. This finding is consistent with findings of previous research with both younger and older children that did not use the SRM as a way of analysing peer acceptance (e.g., Flook, Repetti, & Ullman, 2005; Ladd & Coleman, 1997; Wentzel & Caldwell, 1997). Similarly, there was evidence that the extent to which children were liked

by their class-wide peers predicted younger girls' loneliness, older boys' school liking and older girls' social confidence. However, the findings of the present research represent a unique contribution to the area because the indicator of being liked by peers was not confounded by the other components of the dyadic relationship of liking. Together these findings underscore, and add to the growing literature that outlines, the importance of children's social status within the same-gender peer group and wider peer-group for school adjustment. Therefore, it may be necessary to develop training programmes similar to that of Lewis, Powers, Kelk, and Newcomer (2002) for children to develop the social skills necessary to maintain positive peer relationships because of the importance of these for school adjustment. Specifically, Lewis et al. reinforced positive play ground behaviour through tokens and the class group could then select group based activities when the class had received sufficient tokens. Such group activities could then serve to enhance class-wide peer relationships.

Consistent with the research of Zimmer-Gembeck et al. (2010), the present research identified the various components of dyadic ratings of liking through the application of the SRM to the analysis of children's peer acceptance. These findings have implications for how future research examines peer liking and adds to the discussion concerning the appropriateness of rating scale measures of peer liking (see Gifford-Smith & Brownell, 2003). Specifically, these findings suggest that children's peer liking can be divided into the extent to which children like their peers and the extent to which they are liked by peers. Therefore, researchers should consider using the social relations analysis when rating scales are used to assess peer liking to allow the components of peer liking to be identified separately before subsequent analysis is conducted.

There was also evidence that gender moderated the relationship between peer liking and school adjustment in Study 1 and Study 2 as the path coefficients for boys and girls could not be set equal in either study. In Study 1 being liked by same-gender peers for boys only

significantly predicted on-task classroom involvement and marginally maturity, whereas for girls being liked by same-gender peers significantly predicted all three types of school engagement. Also, in Study 1 the extent to which girls were liked by their class-wide peers predicted higher levels of loneliness. This finding is somewhat counter intuitive. However, a potential explanation for this is that whilst the girls are liked by their class-wide peers, they may not feel that their social provisions are being met and as such experience feelings of loneliness (Maragalit, 1998). In Study 1, for boys, liking same-gender peers was predictive of lower levels of teacher-rated engagement with school and again this finding initially seems counter intuitive. However, it may be those boys who have high levels of liking of same-gender peers spend time investing in their social relationships at the expense of investing time in engaging with school work. For example, research Kutnick and Kington (2005) has suggested that when boys are paired with friends to complete a science reasoning task they perform worse than when paired with acquaintances or when girls are paired with friends. Also, in Study 2, for girls the more they were liked by their same-gender peers the lower their loneliness and the more they were liked by their class-wide peers the more confident that they felt. Conversely, for boys, the more they were liked by their class-wide peers the more they liked school. Together these findings suggest that there are gender differences that vary according to age in the relationship between peer liking and school adjustment and add to the growing literature that underscores the importance of peers for children's psychosocial adjustment (Bukowski & Adams, 2005; Gifford-Smith & Brownell, 2003; Hay et al., 2004).

Although the social relations analysis is an appropriate statistical technique for examining peer liking in children, and it was possible to identify the components of the relationship, there are some limitations of the approach which need to be acknowledged. For example, the model assumes that the dyadic reciprocity is linear. However, as the strength and statistical nature of the reciprocity is not assessed the model may not capture non-linear patterns in reciprocity (Kenny et al., 2006; Kenny & La Voie, 1984). Additionally, the SRM

does not take in to account extradyadic effects that may be influencing dyad members but rather it assumes that individuals are not influenced by the actions of the dyads that they are not a part of (Kenny & La Voie, 1984). However, in the context of the present research the potential impact of extradyadic effects may have been reduced by asking the children to provide the ratings individually and by keeping them confidential. Further, it should be noted that the number and size of groups for Study 1 and Study 2 exceed those recommended to achieve power of .80 (Kenny et al., 2006).

In both Study 1 and Study 2 same-gender and class-wide ratings were included in the same analytical model. We acknowledge that the same-gender scores were based on a subset of the class-wide data and as such the scores were not based on independent data. However, the strength of association between these variables does not indicate extreme collinearity (Kline, 2011). Further, including the same-gender and class-wide measures in to the same models reflect that children's same-gender peer relationships tend to occur and be influenced by the wider social group and environment, in this case the class peer group (Bukowski & Adams, 2005).

The findings of Study 1 and Study 2 reflect the importance of being liked by peers for school adjustment. However, what remains unclear from the present research is the extent to which the children are aware of their own likeability and social status within the peer group. Such an awareness may be important for the maintenance of position within the social network (Hill & Pillow, 2006) and awareness of these aspects may also influence children's school adjustment. Additionally, developing a reflective awareness of social position may also facilitate children in the development of social skills. However, research suggests that for some children having high quality relationships with an aggressive social network is associated with externalising behaviour (Lansford, Criss, Pettit, Dodge, & Bates, 2003). Therefore, future research could explore children's self-knowledge of their status within the peer group extending the work of Cillessen, van Ijzendoorn, van Lieshout, and Hartup (1992)

with rejected children. A potential way to explore this could be through the application of social relations analysis to examine metaperceptions of liking where children are asked to report how much they think that each of their peers likes them, similar to the research by Bellmore and Cillessen (2003).

In summary, the present studies found evidence that children's class-wide and same-gender peer liking assessed using rating scales could be examined using the SRM. Further, there was evidence that the relative importance of the extent to which children liked their peers and the extent to which children were liked by their peers varied according to age and social group. Liking was also reciprocal in nature with children matching expressions of liking. Finally, there was also evidence that the ratings of liking that the children elicited from their same-gender peers was most frequently associated with aspects of children's school adjustment. Consequently, the findings suggest that there are implications for how children interact with their peers for their school adjustment although there were some counter intuitive findings. Therefore, practitioners and researchers should carefully consider how children's peer relationships are fostered to facilitate school adjustment. Together, these findings demonstrate the applicability of the social relations analysis to children's peer liking and underscore the importance of peer acceptance for school adjustment.

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**Notes**

<sup>1</sup>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). For ease of presentation the term rater is used in the present manuscript in preference to the SRM term actor and the term target is used in preference to the SRM term partner.

<sup>2</sup>The data used in Study 1, represents a subsample of data that has been used in previous publications to address different research questions (Betts & Rotenberg, 2007a, 2007b, 2008; Betts, Rotenberg, & Trueman, 2009a, 2009b, 2010; Rotenberg et al., 2010). The data used in Study 2, represents a subsample of data that has been used in previous publications to address different research questions (Betts & Hartley, in press).

Table 1

*Study 1: Summary of intercorrelations, means and standard deviations for rater effects, target effects, and school adjustment*

	Descriptives		School adjustment							
	<i>M</i>	<i>SD</i>	2	3	4	5	6	7	8	9
1. Class-wide rater effects	-.01	1.68	.06	.08	.07	.02	.03	.01	-.03	.01
2. Class-wide target effects	.01	.55		.01	.04	-.05	.15*	.07	.01	.03
3. Same-gender rater effects	3.57	.74			.44***	-.09	.02	.05	.04	-.12
4. Same-gender target effects	3.58	.62				-.07	-.17*	.44***	.22**	.14
5. School liking	28.77	8.96					-.35***	.17***	.09	.22**
6. Loneliness	9.53	4.40						-.24**	-.10	-.17*
7. On-task classroom involvement	9.70	2.59							.46***	.52***
8. Positive orientation	7.85	2.31								.63***
9. Maturity	5.40	2.51								

Note. *df* = 192

\*\*\*  $p \leq .001$ , \*\*  $p < .01$  \*  $p < .05$

Table 2

*Study 2: Summary of intercorrelations, means, and standard deviations for rater effects, target effects, and school adjustment*

	Descriptives		School adjustment					
	<i>M</i>	<i>SD</i>	2	3	4	5	6	7
1. Class-wide rater effects	-.02	.51	.09	.56***	.25**	.18*	-.04	-.03
2. Class-wide target effects	.01	.53		.13	.34***	.24**	-.13	.20*
3. Same-gender rater effects	3.24	.75			.50***	.16	-.12	-.04
4. Same-gender target effects	3.23	.84				.16*	-.32***	.04
5. School liking	40.52	5.44					-.20*	.19*
6. Loneliness	7.50	3.53						-.44***
7. Social confidence	52.30	12.35						

Note. *df* = 143,

\*\*\*  $p < .001$ , \*  $p < .05$

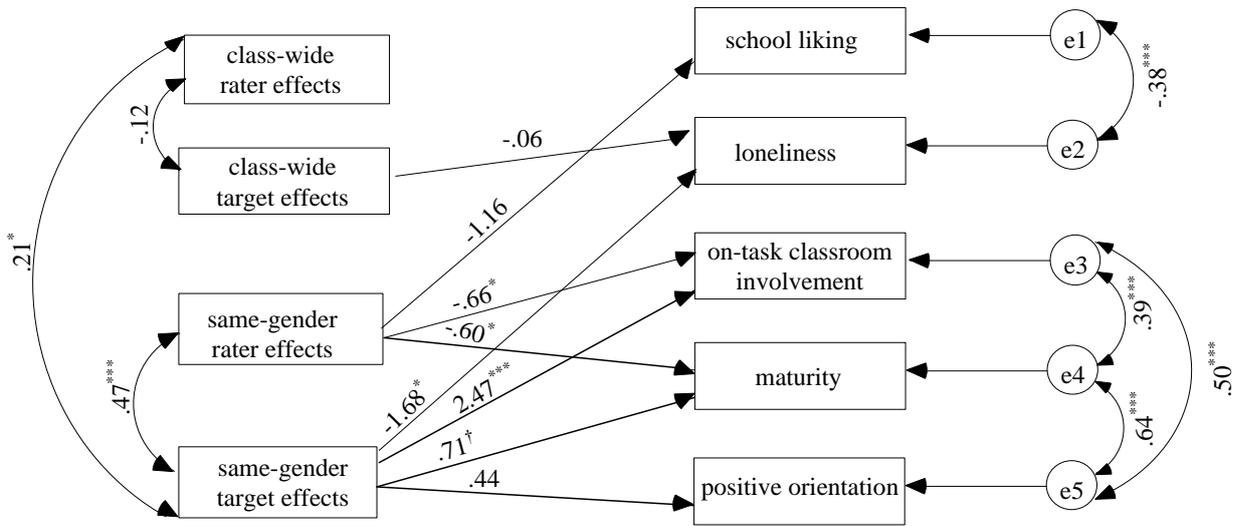


Figure 1. Study 1: The final path analysis for the relationship between boys' class-wide target effects, same-gender rater and target effects, and school adjustment, e = error, †  $p = .074$ , \*  $p < .05$ , and \*\*\*  $p \leq .001$ .

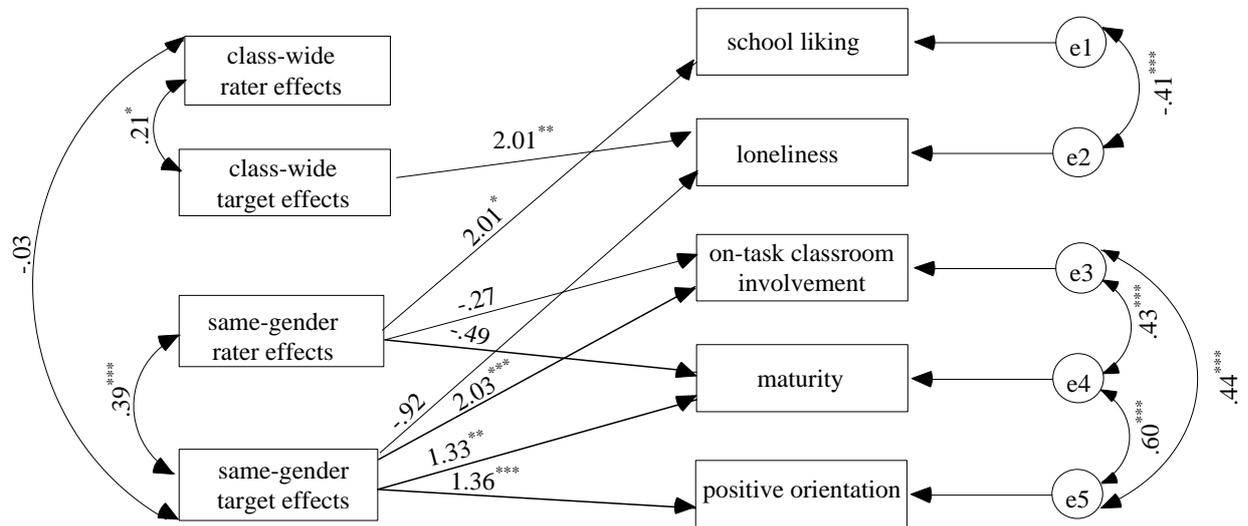


Figure 2. Study 1: The path analysis for the relationship between girls' class-wide target effects, same-gender rater and target effects, and school adjustment, e = error, \*  $p < .05$ , \*\*  $p < .01$  and \*\*\*  $p \leq .001$ .

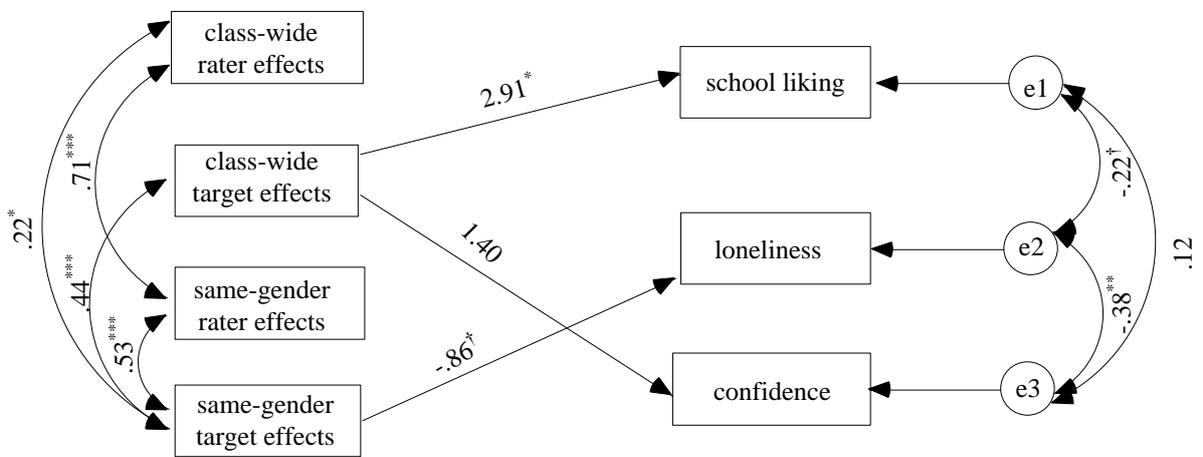


Figure 3. Study 2: The final path analysis for the relationship between boys' class-wide rater and target effects, same-gender rater and target effects, and school adjustment, e = error, †  $p \leq .055$ , \*  $p < .05$ , \*\*  $p < .01$  and \*\*\*  $p \leq .001$ .

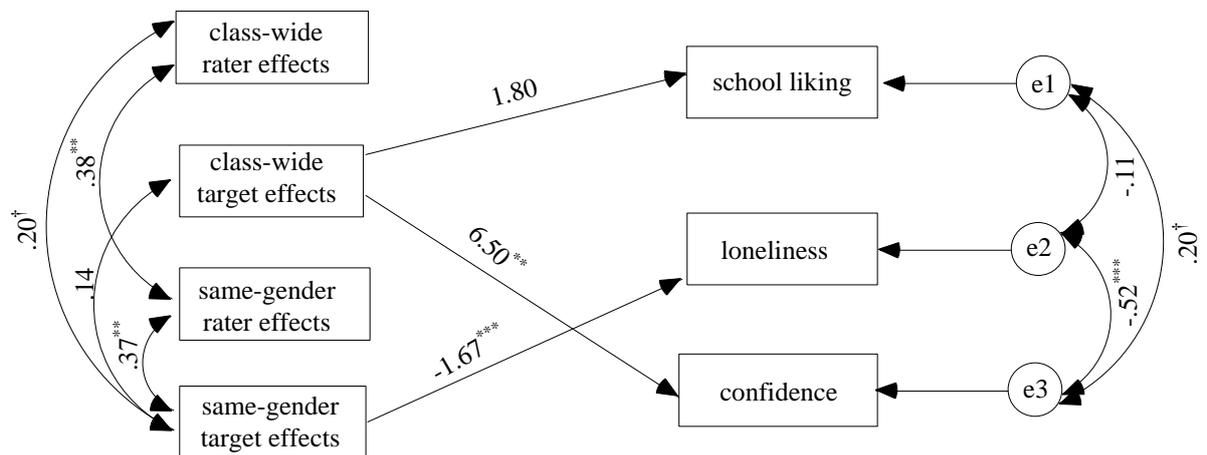


Figure 4. Study 2: The final path analysis for the relationship between girls' class-wide rater and target effects, same-gender rater and target effects, and school adjustment, e = error, †  $p \leq .095$ , \*  $p < .05$ , \*\*  $p < .01$  and \*\*\*  $p \leq .001$ .