Importance of Positive Peer Relations: The Impact of Psychological Flexibility on Children's Peer Liking, Resilience, and Loneliness

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IMPORTANCE OF POSITIVE PEER RELATIONS: THE IMPACT OF
PSYCHOLOGICAL FLEXIBILITY ON CHILDREN’S PEER LIKING, RESILIENCE,
AND LONELINESS

by

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Abstract

A substantial body of research documents that children’s peers provide an important social arena for children’s development and adjustment. In the current study, possible moderating effects of the link between children’s peer liking and loneliness were investigated, specifically psychological flexibility and resources promoting resilience. A total of 202 students (55% girls; 68% White) in grades 3 through 5 completed self- and peer-report measures on psychosocial functioning and social standing within their classroom. Latent moderated structural equation modeling revealed that children’s psychological flexibility reduced the negative association between a) peer acceptance and loneliness and b) resources promoting resilience and loneliness. Specifically, high levels of psychological flexibility provided protection against loneliness for children with low peer liking and low resources. These findings provide insight into the strengths-based factors underlying children’s social milieu. Clinical implications of targeting children’s psychological flexibility are discussed.
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Peers offer particularly significant social contexts for children, and a large literature documents the importance of successfully navigating peer relations for children’s concurrent and subsequent development and adjustment (e.g., see Rubin et al., 2006). Hinde (1992) offered a framework for understanding children’s peer relations considering multiple interdependent levels of social complexity, for example, individual, interaction, relationship, and group levels (Hinde, 1992). Each of these levels play an important role in children’s social, cognitive, emotional, and behavioral functioning (Rubin et al., 2015). The present research evaluated variables associated with Hinde’s individual and group levels by examining factors which may moderate children’s liking by peers and children’s self-reported feelings of loneliness. Specifically, we considered psychological flexibility and resources promoting resilience as potential moderators.

Peer Group Standing: Being Liked by Peers

Children, particularly elementary school-aged children, place a high value on their peer group social standing (Parker & Asher, 1993). Researchers have long known that children’s peer groups and social standing impact their development and functioning (Gifford-Smith & Brownell, 2002). There are a variety of methods researchers use to assess children’s social standing in the peer group. Generally, children provide nominations or ratings on peers in their classrooms. These measures involve one or more of the following: liking nominations, disliking nominations, sociometric ratings, or nominations for sociability behaviors. Following Coie et al. (1982), some researchers use a synthesis of measures such as social preference scores, which are calculated by subtracting disliking nominations from liking nominations. For the purposes of the current study, we use the term peer liking to represent the overall construct of children being well-liked and accepted by their peer group.
Being liked by peers is important in middle childhood (Rubin et al., 2015). The peer group becomes more and more important for both boys and girls as children approach adolescence (Rubin et al., 2006). Aside from the basic human need for connection and belonging, there are many positive outcomes related to being liked by the peers for school-aged children, such as academic achievement and adjustment (Kindermann & Gest, 2009; Ryan & Shin, 2018). Peer acceptance has even predicted academic readiness for children in kindergarten (Ladd et al., 1997) and was shown to mediate the association between prosocial behavior and subsequent academic achievement in a sample of Chinese primary school children (Guo et al., 2018). In addition to academic successes, high peer liking has been positively associated with good emotion regulation, good sense of humor, and leadership (Gest et al., 2001). Additional studies have found positive associations with self-esteem (Sletta et al., 1996), social competence, and achievement (Vandell & Hembree, 1994). Not surprisingly, children with a high number of mutual friends are generally better liked by their peer group (Gifford-Smith & Brownell, 2002; Parker & Asher, 1993). Though many studies on peer liking have not focused on gender, there are consistent findings in the field that children who display gender ‘typical’ behaviors are generally better liked amongst their peers (Rubin et al., 2006). Gender atypicality has been linked to lower peer acceptance and emotional and behavioral problems, particularly for boys exhibiting stereotypically feminine behavior (Rose & Smith, 2018).

Previous research has established a bidirectional link between peer liking and sociability behaviors, that is, the more positive social behaviors children exhibit the better liked they are by their peers and vice versa (Prinstein et al., 2018). Students with high levels of peer acceptance are viewed by peers as socially competent, cooperative, and friendly (Rubin et al., 2009). In a cross-lagged analysis of adolescent students in Greece (M = 12.6 yo), Motti-Stefanidi et al.
(2020) found that children with high levels of peer acceptance had improved conduct and increased school engagement one year later. Additionally, peer group belonging may help children who are experiencing stressors at home. In a study of early elementary-school children, family adversity only predicted externalizing behaviors for children with low levels of peer acceptance (assessed using social preference scores) but not for children with high levels of peer acceptance (Criss et al., 2002). Criss et al. (2002) further argued that temperament and social skills alone did not result in favorable outcomes for at-risk children but that positive peer relations (peer acceptance and friendships) led to favorable outcomes for those children, noting the importance of peers for adjustment.

Peer liking has also been associated with children’s emotional well-being (Rubin et al., 2015). In a study of children ages 6-12 (\(M = 8.11\)), Kim and Cicchetti (2012) found that high emotion regulation predicted high peer acceptance over time, which in turn was related to low internalizing symptoms (e.g., withdrawal, anxiety, depression) for children who had experienced maltreatment. Children who were able to regulate their emotions and display emotionally adaptive responses (e.g., empathy, self-awareness) are better accepted by their peers (Kim & Cicchetti, 2012). Some studies suggest that peer acceptance has a buffering effect on associations between children’s internalizing symptoms and negative outcomes. For instance, Kochel et al. (2017) found that high levels of peer acceptance (one standard deviation above the mean) mitigated the association between depressive symptoms at baseline and subsequent peer victimization in fifth and sixth graders. Additionally, research has established that depressive symptoms negatively predict subsequent peer acceptance (measured by social preference) in Chinese middle school students (Chen & Li, 2000) and in a United States sample of elementary school students transitioning to middle school (Kochel et al., 2012). When children are not
accepted by their peers, they are at a high risk of loneliness (Asher & Paquette, 2003; Sletta et al., 1996).

In summary, positive experiences in the peer group, indexed in this research as being liked by peers, facilitate important socialization opportunities for school-aged children. Having high levels of peer liking has been associated with academic achievement and success, sociability behaviors, and skills such as emotion regulation. Being liked by peers has been well-established as having a negative association to loneliness. Children with low peer liking are at risk for feelings of loneliness and social dissatisfaction (Parker & Asher, 1993) along with other internalizing problems (Baskin et al., 2010; Boivin et al., 1995). In sum, lack of acceptance among peers is associated with poor psychological and social functioning.

**Feelings of Loneliness**

Though occasional loneliness may be normative, chronic loneliness is detrimental to children’s psychosocial functioning (Baoicco et al., 2019; Jobe-Shields et al., 2013; Qualter et al., 2013; Renshaw & Brown, 1993; Schinka et al., 2013). Boys and girls experience comparable rates of loneliness as evidenced by the lack of reported gender differences associated with mean levels of loneliness across middle childhood (Asher & Paquette, 2003; Jobe-Shields et al., 2011). Research indicates that loneliness can negatively affect children as young as five years of age and may positively predict later loneliness during adolescence (Qualter et al., 2013). In fact, studies have suggested that children may experience higher levels of loneliness than older adolescents and that its impact may be greater (Ladd & Ettekal, 2011). Loneliness has been conceptualized as having both cognitive and affective components, consisting of perceived social isolation and feelings of emptiness and sadness (Asher & Wheeler, 1985; Perlman & Peplau, 1981).
The link between loneliness and peer liking has been well established as indicated in the previous section (Asher & Paquette, 2003; Mouratidis & Sideridis, 2009; Parker & Asher, 1993). Asher et al. (1984) reported a modest association between loneliness and sociometric status for third- through sixth-grade children. Children with the low ratings of sociometric status reported greater feelings of loneliness and social dissatisfaction than their peers who were not low status. Cassidy and Asher (1992) reported that children who were not socially liked by their peers had a higher risk of becoming lonely than children who were socially liked by their peers. Mouratidis and Sideridis (2009) found that peer acceptance negatively related to loneliness for fifth and sixth graders. In addition to peer acceptance, other measures of social standing have negative associations with loneliness. For example, Putarek and Kerestes (2016) reported that early adolescents (M=12.9 years) who perceived themselves as popular and were perceived by their peer group as popular had lower levels of loneliness than adolescents who were not perceived as popular.

Feelings of loneliness have been associated with many negative psychosocial outcomes. Research suggests that children and adolescents who experience chronic loneliness are at risk for negative outcomes later in life, such as depression or problems with alcohol (Asher & Paquette, 2003; Baskin et al., 2010). Lasgaard et al. (2011) found that peer-related loneliness was positively associated with depression, general anxiety, social anxiety, and suicidal ideation in a sample of high school students. Ladd and Ettekal (2011) found a moderate positive relation between loneliness and depressive symptoms in early adolescents (ages 12+).

Importantly, children in middle childhood who struggle with social and interpersonal skills may be at risk for developing feelings of loneliness (Schinka et al., 2013). Social difficulties, such as withdrawal behaviors, low peer acceptance, and few or no friends, predict
high loneliness in children and adolescents (Parker & Asher, 1993; Renshaw & Brown, 1993). Children who have negative peer interactions may blame themselves for problems they experience within their peer group. If unchecked, self-blame may elicit other internalizing issues and lead to a “self-reinforcing cycle of negative socioemotional functioning” (Rubin et al., 2015). Withdrawn children are more likely than non-withdrawn children to develop unhealthy, maladaptive strategies (e.g., self-blame, avoidant coping) when experiencing provocative peer interactions (Burgess et al., 2006).

Taken altogether, loneliness can have a pervasive impact on children’s adjustment and overall functioning. Loneliness in middle childhood has been associated with poor social skills and competence, depressive and anxiety symptoms, and aggressive behavior (Schinka et al., 2013). Due to the aforementioned negative psychosocial correlates of loneliness, it is imperative that researchers uncover mechanisms that decrease the likelihood of loneliness for children who are not accepted by their peers. Previous studies emphasize the importance of exploring moderating effects for students who have low peer liking and loneliness in order to identify potential protective factors (Baskin et al., 2010). As noted at the outset, the potential buffering effects explored in the present research include a composite score assessing a range of resources that promote resilience and children’s ability to contact the present moment fully while engaging in values-driven action (i.e., psychological flexibility).

**Marshaling of Resources: A Socioecological Framework of Resilience**

Due to the associated risks with children experiencing chronic loneliness, it is crucial to examine potential strengths-based protective factors that reduce the impact that peer status has on loneliness. Ungar (2011) developed a socioecological model of resilience to emphasize the role that health-enhancing environmental resources play in children’s functioning and ability to
overcome obstacles. Children with greater access to a variety of quality resources are better prepared to successfully navigate challenges when they arise (Liebenberg et al., 2013). Similar to Hinde’s social complexity model, the socioecological definition of resilience considers the reciprocal interactions across multiple social contextual factors acting on an individual child, including the individual level (e.g., attitudes, beliefs, education), relationship level (e.g., peers, family, social network), community level (e.g., school, neighborhood), and societal level (e.g., norms, policies; Ungar, 2008). Embedded within this socioecological framework is children’s capability to navigate appropriate resources across multiple interacting systems when necessary. The present study seeks to fill the gap in the literature on how this construct impacts peer relations.

When conceptualizing resilience, the socioecological theory emphasizes availability and accessibility of culturally meaningful resources that serve as protective factors that help shield children experiencing stressors from detrimental outcomes (Ungar, 2011). Thus, resilience is not static, but rather, a complex, dynamic response largely dependent on a variety of contextual factors (Masten et al., 1999). Within a school context, teachers and peers play a significant role in children’s ability to navigate their social milieu successfully. Social factors such as positive school relationships with teachers and peers have been found to be critical resilience-promoting resources for children facing high risks (Fergus & Zimmerman, 2005; Sanders et al., 2016). For instance, high quality teacher-student relationships were a protective factor for fourth and fifth graders at-risk for peer victimization, and social preference only predicted later peer victimization when children reported poor relationships with their teachers (Elledge et al., 2016).

Previous research supports social contextual factors serving as important resilience promoting resources for children. For example, belongingness to the peer group has been shown
to moderate the impact that low peer acceptance has on loneliness in a sample of eighth graders (Baskin et al., 2010). Sociodemographic factors such as gender and age are important considerations as the research suggests that girls and older children report greater resilience promoting factors than boys and younger children, respectively (Russell et al., 2021; Ungar et al., 2013). Other individual-level factors, such as sociability, communication skills, self-esteem, and self-efficacy, have been connected to resilience processes (Olsson et al., 2003). Not surprisingly, prosocial behaviors have been found to decrease subsequent peer victimization in second through sixth graders who had previously been victimized (Griese et al., 2016). Moore and Woodcock (2017) reported that elements promoting resilience, namely emotion regulation and connectedness, provide a buffer against depression and anxiety for children being bullied (M=12.10). Additionally, high levels of resilience factors, specifically personal competence and social resources, have been found to predict low levels of depression, anxiety, and stress for adolescents (M=16.4; Hjemdal et al., 2011).

Given the research support for resilience-related protective factors, having and utilizing resources across multiple levels seem to safeguard children who are experiencing social difficulties from negative outcomes. Examining resilience in the context of resources provides an integrated conceptualization of the interaction between children and their social ecology. A goal of the present study is to evaluate whether children’s navigation of various resources may buffer the impact that children’s peer liking has on their loneliness.

**Psychological Flexibility and Other Intraindividual Factors**

Another strengths-based factor that may attenuate the negative relation between peer liking and loneliness is psychological flexibility, which has not received much attention in research for middle childhood. Psychological flexibility refers to the ability to fully connect with
the present-moment and engage in values-driven action (Hayes et al., 2006). Created as a theoretical basis for Acceptance and Commitment Therapy (ACT), psychological flexibility has been used in research with adolescents and adults as an indicator of psychological health and functioning (Kashdan, 2010). There are six total processes (contact with the present moment, self as context, values, committed action, acceptance, and defusion) within psychological flexibility aimed at increasing one’s openness to their inner world (i.e., thoughts, feelings, etc.), awareness of the present moment and perceptions of the self, and engagement with their values through action (Hayes et al., 2006). For the present research, we consider the connection children’s psychological flexibility may have within their peer context and social functioning.

Regarding psychological functioning, several studies have found an inverse relation between psychological flexibility and internalizing symptoms. Specifically, greater psychological flexibility has been linked with fewer symptoms of depression and anxiety in research on children and adolescents. One recent study found that psychological flexibility attenuated the positive association of adverse childhood events and depressive symptoms in a sample of predominantly Black adolescents (Hostutler et al., 2022). Further, a randomized controlled trial found that increasing psychological flexibility decreased symptoms of anxiety and improved overall quality of life for children and adolescents (Hancock et al., 2018). Conversely, lack of psychological flexibility or psychological inflexibility has been positively related to several indicators of dysfunction and psychopathology (Oppo et al., 2019). Some studies have found higher scores of psychological inflexibility for girls than boys (Muris et al., 2017; Salazar et al., 2019). Psychological inflexibility has been positively associated with anxiety for school-aged children (8-10 yrs; Simon & Verboon, 2016); anxiety and depressive symptoms among inpatient adolescents (Venta et al., 2017); thought suppression for early to late
adolescents (Muris et al., 2017); shame, neuroticism, and emotion dysregulation in early adolescents (M=12.56; Paulus et al., 2016). These findings certainly indicate that psychological flexibility may play a valuable role in children successfully navigating their social milieu.

Though no studies directly examining children’s psychological flexibility in the context of their peer group were identified, existing research supports a link between them. Notably, research has suggested an impact of social cognitions on children’s thoughts and feelings about themselves and the actions they take in the peer group (Kupersmidt et al., 1996; Renshaw & Brown, 1993). Consistent with social information processing theory (see Crick & Dodge, 1994 for review), children with high levels of peer liking interpret social situations positively and prioritize maintaining healthy relationships (Gifford-Smith & Brownell, 2002). Alternatively, children with low levels of peer liking (i.e., rejected or neglected by the peer group) may misinterpret their peers’ prosocial intentions as hostile (Dodge et al., 1984). This negative attribution of intent may lead to disproportionate emotional reactions or behavioral responses, particularly for children who are socially anxious or shy (Rubin & Rose-Krasnor, 1992). If children become fused with these misattributions or negative cognitions, their social interactions may become strained resulting in potential avoidant behaviors, such as emotional distancing or social withdrawal, which are precursors to internalizing symptoms (Biglan et al., 2008).

Children’s perceptions, thoughts, and feelings about their social functioning and peer experiences certainly impact their psychosocial adjustment and development (Rubin et al., 2015). Within the framework of psychological inflexibility, children may avoid uncomfortable or stress-provoking social situations, which in turn limits their opportunities for social engagement with their peer group and negatively affects their psychosocial functioning (Kupersmidt et al., 1996; Renshaw & Brown, 1993). This social inhibition may evoke negative self-evaluations related to
social competence and peers’ perceptions exacerbating emotional distress (Renshaw & Brown, 1993). Prior findings from online studies have found that experiential avoidance moderates the relation between perceived ostracism and psychological distress for adults (M=27.3; Tyndall et al., 2018; Waldeck et al., 2017). This effect was only observed for those who had indicated having high perceived ostracism, suggesting the significance perceptions of disconnection and exclusion can have on emotional distress and the buffering impact psychological flexibility plays. Shifting internal patterns of avoidance to approach strategies may, in fact, positively impact children’s social functioning. For example, after receiving curriculum aimed at increasing psychological flexibility, students had significant increases on a measure of peer relations, suggesting improved peer interactions, relations, and engagement (Dixon et al., 2022).

In summary, psychological flexibility and its impact on psychological well-being would seem to make it an important construct for children’s peer relations. Though no prior studies examining this within a peer context were found, previous research suggests a connection between psychological flexibility and the way we experience, interpret, and behave in the world. Greater psychological flexibility promotes thriving and facilitates adaptive responses to life challenges. Thus, this strengths-based construct was explored as a moderator in the present study on the link between peer liking and loneliness.

**The Present Research**

As reviewed above, peer group experiences play a particularly important role in children’s adjustment and development. Many aspects of children’s psychosocial functioning, including subjective well-being, prosocial behaviors, and academic achievement, are related to children’s peer group adjustment (Rubin et al., 2015). The present study evaluated peer liking, which is widely documented as inversely associated with feelings of loneliness in the peer
relations literature, in a sample of school-aged children. Previous studies have implicated finding effective strengths-based protective factors that may lessen the impact low peer liking has on children’s loneliness (Baskin et al., 2010). Protective factors denote moderating or interaction effects in which the strength of the association between predictor and outcome variables changes across different levels of the moderating variable. Therefore, the primary aim of the current study was to examine two potential strengths-based moderators: resources promoting resilience and psychological flexibility. Adhering to a conservative and person-centered approach to data analysis, a secondary aim of this project was to assess for potential grade or gender effects and account for these in subsequent analyses if necessary.

Using Hinde’s social complexity model as a theoretical framework, the moderating variables were chosen in order to assess both intra- and interindividual factors that may reduce the impact that peer liking has on loneliness. It was hypothesized that both resources promoting resilience and psychological flexibility would attenuate the negative association between peer acceptance and loneliness. Specifically, it was expected that children’s perceptions of high levels of resources promoting resilience would reduce the impact their peer acceptance had on loneliness. Likewise, it was expected that higher levels of psychological flexibility would also reduce the impact of peer acceptance on loneliness. In sum, the present study was designed to consider two strengths-based protective factors that may lessen how children’s peer group liking impacts their loneliness.

Methods

Participants

Children attended a university-affiliated elementary school in the mid-south. A total of 202 children (111 girls; 91 boys) from third through fifth grade (64 third graders, 68 fourth
graders, and 70 fifth graders) participated in the current study. The racial composition of the participants was 68% white, 21% black, and 7% other ethnicities. Sex of participants (biological sex assigned at birth), and race, were reported by parents. The students who participated were largely from a middle-class socioeconomic background as evidenced by fewer than 20 percent of the students receiving any lunch subsidy. The measures and procedure for this study were approved by a university Institutional Review Board. At school enrollment, parents provided consent to allow their children to participate in a wide range of studies, each of which they were given specific information about, as well as the opportunity to decline participation for their children. Six parents declined to allow their children to participate in the study.

Measures

**Peer Liking Nominations**

To assess for how well-liked children were by classroom peers, we used a nomination procedure commonly used in peer relations research (see Coie et al., 1982). Children were given classroom rosters and asked to nominate the peers whom they “Liked the Most.” Students were allowed unlimited nominations of their classmates, and these nominations were summed to derive a peer liking score for each child based on the total nominations they were given. Higher scores indicated greater peer liking. To control for differences in classroom size, scores for this measure were standardized by classroom.

**Children’s Loneliness Scale (CLS)**

A common outcome measure in the peer relations literature, the Children’s Loneliness Scale (CLS) developed by Asher et al. (1984), and later refined by Asher & Wheeler (1985), was used to evaluate children’s feelings of loneliness and social dissatisfaction within the school context. This 24-item questionnaire contains 16 items assessing feelings of loneliness (e.g., “I
feel alone” and “I’m lonely”), social in/adequacy (e.g., “It’s hard for me to make friends at school”), and subjective appraisal of their peer status (e.g., “I am well liked by the kids in my class”) along with eight filler items (e.g., “I like sports”). The students rated each item using a 5-point Likert Scale ranging from 1 = Not true at all to 5 = Always true. A single loneliness score is calculated with higher scores indicating greater feelings of loneliness. This measure demonstrated excellent internal consistency ($\alpha = .94$).

**Child and Youth Resilience Measure (CYRM-12)**

The 12-item Child and Youth Resilience Measure is based on a socioecological definition of resilience measuring children’s perceptions of their individual, peer, family, school, and community resources (Liebenberg et al., 2013). The CYRM-12 is a self-report measure containing questions about children’s efficacy (e.g., “Do you finish the activities that you start?”), belongingness (e.g., “Do you feel you fit in with other children?”), and available social resources within their families and communities (e.g., “Do you know where to go for help?,” “Do you think your family/friends care about you when times are hard?”). The students answered each statement with either 1=No, 2=Sometimes, or 3=Yes. For our purposes, we have conceptualized the scores on this measure to reflect *resources promoting resilience* that children perceive available to them. Responses on the CYRM-12 were combined to produce a single score for each child, with higher scores indicating more availability and knowledge of resources promoting resilience. This measure was chosen due to its demonstrated validity as a screener for resilience characteristics and its age appropriateness for our population of interest. It is important to note that a measure of adversity or risk was not obtained for this study, so we have assumed rates of adversity, risk, and trauma to be comparable to the general population. The internal reliability for this measure in the present study was acceptable ($\alpha = .72$).
The Avoidance and Fusion Questionnaire for Youth (AFQ-Y)

Children were given the Avoidance and Fusion Questionnaire for Youth (AFQ-Y) developed by Greco et al. (2008) based on principles of Acceptance and Commitment Therapy (ACT). The AFQ-Y is a 17-item self-report measure containing items that examine cognitive fusion (e.g., “The bad things I think about myself must be true”), experiential avoidance (e.g., “I push away thoughts and feelings that I don’t like”), and behavioral ineffectiveness (e.g., “I can’t be a good friend when I feel upset”). Children rated each item based on how true each statement they believed each statement was for them using a 5-point Likert Scale ranging from 0=Not True at all to 4=Very True. Scores were reverse coded such that higher overall scores indicated higher psychological flexibility. This measure demonstrated good internal reliability in the present data (α = .84).

Procedure

The data for this study were part of a larger project examining children’s peer relations. Trained graduate students administered the measures to participants during the 2014-2015 school year. There were eight classes overall that had between twenty and twenty-four students in each classroom. The data were collected in forty-minute sessions for each classroom one session in each of the fall and spring semesters. At the beginning of each data collection session, children were informed about the purpose of the research, our commitment to their privacy and confidentiality, and their right to refuse or discontinue participation at any time without penalty. No children refused to participate. A senior graduate student read instructions from a written script that explained the measure to the students before they began filling out the measure, and three to four additional graduate and undergraduate students were available to answer questions. All graduate and undergraduate students who participated in data collection were trained on how
to answer questions about the measures and how to check the questionnaire packets upon completion. The students were thanked for their participation and assured that their responses would not be shared with anyone outside of the research team.

**Analytic Plan**

The primary goals of the present research were to assess the impact of potential moderating factors—resources promoting resilience and psychological flexibility—on children’s peer liking and loneliness. Preliminary analyses were conducted to examine descriptive statistics, including means, standard deviations, skewness, kurtosis, and zero-order correlations, following guidelines established by Tabachnick and Fidell (2013). To address the primary study aims, Latent Moderated Structural (LMS) equation modeling was performed using Mplus version 9.5, following guidelines provided by Klein and Moosbrugger (2000). As an initial step to prevent potential confounding, the associations between grade and gender and outcomes were examined to determine if they should be included as covariates. For the primary research aim, three competing models were tested to examine direct and conditional (i.e., interactive) effects of each predictor on loneliness as well as interaction effects of the predictors on loneliness. All models were estimated using Maximum Likelihood estimation for Robust standard errors (MLR), which assumes data are missing at random (MAR). Latent variables were created for two of the measures (CYRM-12, AFQ-Y) in order to obtain a corrected estimate that accounts for measurement error, and latent variable interaction terms were utilized for the same reasons. Unit loading identification (ULI) constraint was used to fix the reference variables in each latent variable to 1.0, and residual variances were fixed using one minus the reliability (i.e., internal consistency coefficient alpha) multiplied by the observed total score variance (Hayduk, 1987).
The predictor variables were centered using GRANDMEAN which facilitates parameter interpretation.

**Model Selection and Fit**

A backward elimination strategy informed the model selection (for review of variable selection strategies see Chowdhury & Turin, 2020); whereby all possible interaction terms were initially included (e.g., Model 1) and removed sequentially if not statistically significant at $p < .05$ starting with the three-way interaction, then all possible two-way interactions, etc. (e.g., Model 2 contained all (significant and non-significant) two-way interactions, and Model 3 contained only significant two-way interactions). Because traditional fit indices are not available in models containing random effects (i.e., LMS), the Akaike information criterion (AIC) and Bayesian information criterion (BIC) were used for comparisons between models to ensure that the best fitting model was selected. AIC and BIC estimate the relative quality of a model and allows for a comparison of goodness of fit between models (Burnham & Anderson, 2004). Lower values of both AIC and BIC suggest the better fitting model.

**Results**

Descriptive statistics including zero-order correlations, means, standard deviations, kurtosis, and skewness of the measures are provided in Table 1. As expected, peer liking was significantly correlated with resources promoting resilience, $r (192) = .27, p < .01$, and significantly negatively correlated with loneliness, $r (194) = -.34, p < .01$. Loneliness was significantly negatively correlated with resources promoting resilience, $r (190) = -.47, p < .01$, and significantly negatively correlated with psychological flexibility, $r (190) = -.36, p < .01$. The two variables considered as potential moderators (resources promoting resilience and psychological flexibility) were significantly negatively correlated, $r (192) = -.20, p < .01$. Of
particular interest, the only non-significant correlation found was between peer liking and psychological flexibility, $r (194) = .08, p = .300$.

As an initial step in the analyses, grade, gender, and the interaction (grade x gender) were added to the model to examine significant effects across all variables (peer liking, loneliness, psychological flexibility, and resources promoting resilience). Analyses revealed significant effects of grade on psychological flexibility (unstandardized $B = 0.16, SE = 0.06, p < .001$) and resources promoting resilience (unstandardized $B = 1.39, SE = 0.31, p < .001$). Grade was not significantly related to peer liking (unstandardized $B = 0.005, SE = 0.08, p = .95$) or loneliness (unstandardized $B = -0.06, SE = 0.06, p = .34$). Analyses revealed no significant effects for gender on any of the variables (peer liking unstandardized $B = 0.15, SE = 0.14, p = .29$; loneliness unstandardized $B = 0.09, SE = 0.11, p = .41$; psychological flexibility unstandardized $B = -0.17, SE = 0.09, p = .06$; resources promoting resilience unstandardized $B = 0.75, SE = 0.51, p = .15$). Additionally, there was not a significant Grade x Gender effect on any of the variables (peer liking unstandardized $B = 0.02, SE = 0.17, p = .91$; loneliness unstandardized $B = -0.06, SE = 0.13, p = .65$; psychological flexibility unstandardized $B = -0.13, SE = 0.11, p = .24$; resources promoting resilience unstandardized $B = 0.03, SE = 0.65, p = .96$). Due to the significant effects of grade on psychological flexibility and resources promoting resilience, grade was added to all subsequent models as a covariate. Since gender and the interaction term yielded no significant results, these were dropped as covariates in the hypothesized model.

**Primary Analyses**

A series of structural equation models was performed to test the hypothesized model, accounting for grade as a covariate. Using a backward elimination strategy, paths that were not significant were dropped one at a time from each model until only significant interaction effects
remained. First, the three-way interaction (peer liking x resources promoting resilience x psychological flexibility; unstandardized B = -0.01, SE = 0.04, p = 0.74) in Model 1 was dropped. Next, the hypothesized interaction between peer liking and resources promoting resilience yielded non statistically significant results (Model 2, unstandardized B = 0.01, SE = 0.02, p = .47) and was dropped. Model 3 contained only significant two-way interactions and demonstrated the best fit (see Table 2 for model comparisons) across the models tested. Therefore, Model 3 was retained as the final model, and these results are presented below (see Table 3 for standardized estimates, and Figure 1 for a graphic depiction).

As noted above, support for the hypothesized model was mixed. Analyses revealed a significant interaction between peer liking and psychological flexibility (unstandardized $B = 0.27$, $SE = 0.07$, $p < .001$) on children’s loneliness, such that peer liking and loneliness were only significantly related at low levels of psychological flexibility. Specifically, peer liking predicted loneliness for children who rated themselves at low levels of psychological flexibility (-1 SD, unstandardized $B = -0.23$, $SE = 0.06$, $p < 0.001$); however, peer liking was not significantly related to loneliness at average (unstandardized $B = -0.08$, $SE = 0.04$, $p = 0.07$) or high levels of psychological flexibility (unstandardized $B = 0.07$, $SE = 0.06$, $p = 0.23$; see plots of all interactions in Figures 2 and 3). Additionally, the direct effect of resources promoting resilience on loneliness was also significantly moderated by psychological flexibility (unstandardized $B = 0.09$, $SE = 0.03$, $p < .001$). Specifically, the relation of resources promoting resilience predicting loneliness became less negative (i.e., “was buffered” by PF) as children’s rating of their psychological flexibility (PF) increased (-1SD PF: unstandardized $B = -0.18$, $SE = 0.03$, $p < 0.001$; average PF: unstandardized $B = -0.13$, $SE = 0.02$, $p < 0.001$); and +1SD PF: unstandardized $B = -0.08$, $SE = 0.03$, $p < 0.01$).
Finally, there was no support for the hypothesis that resources promoting resilience moderated the effect of peer liking on loneliness. It is important to note that in the context of mean-centered interaction terms, the simple effects of each predictor are interpreted as the effect of that variable at average moderator values. As such, at average levels of psychological flexibility and resources promoting resilience, taking into account the effect of grade, there was a negative direct effect of resources promoting resilience on loneliness (unstandardized $B = -0.13$, $SE = 0.02$, $p < .001$) and a negative direct effect of psychological flexibility on loneliness (unstandardized $B = -0.29$, $SE = 0.08$, $p < .001$). Additionally, there was a small direct effect of peer liking on loneliness at average levels of psychological flexibility that was not significantly different from zero (unstandardized $B = -0.08$, $SE = 0.04$, $p = .07$) as there were conditional effects across this path as described in the previous paragraphs. Note, the interactions are conceptualized and presented here with psychological flexibility as the moderator; however, additional post-hoc probing of the interaction effects (i.e., switching the predictor and moderator roles) were conducted to examine the conditional effect of psychological flexibility on loneliness at different levels of peer liking or resources promoting resilience, respectively. These interaction effects provide similar patterns of findings (see Table 3 for more information).

In sum, the effects of peer liking on loneliness and the effects of resources promoting resilience on loneliness change based on different levels of children’s psychological flexibility. As psychological flexibility increases for children, the relation between their peer liking and loneliness is reduced as well as the negative relation between their resources promoting resilience and loneliness. Stated differently, having high levels of psychological flexibility attenuates the effect that peer liking and resources promoting resilience have on children’s loneliness.


Discussion

Peers are extremely important for development and adjustment and a large body of research has confirmed that being liked by peers inversely predicts loneliness for school-aged children. However, less is known about specific factors that may strengthen or weaken that association. To fill this gap in the research, the present research examined the impact of two strengths-based moderators on the association between peer liking and loneliness with third through fifth graders. Results from latent moderated structural analysis demonstrated the attenuating effect of psychological flexibility on a) the relation between peer liking and loneliness and b) the relation between resources promoting resilience and loneliness when accounting for grade as a covariate. That is, psychological flexibility interacts separately with both peer liking and resources promoting resilience to impact children’s loneliness.

Psychological flexibility moderated the association of peer liking on loneliness, indicating a stronger impact of being liked by peers at low levels of psychological flexibility. This finding is consistent with the literature stating that intraindividual factors matter a great deal in children’s socioemotional functioning. For instance, children’s social competence, emotion regulation, temperament, etc., have all been shown to relate to their social milieu (Criss et al., 2002; Kim & Cicchetti, 2012; Vandell & Hembree, 1994). For children with average to high levels of psychological flexibility, peer liking did not significantly predict loneliness. Given the vast research evidence supporting the inverse association between peer liking and feelings of loneliness, this finding extends our understanding of the role intraindividual processes may play in children’s peer relations. Additionally, this finding provides support for overcoming potential negative impacts of low peer liking by increasing children’s psychological flexibility. Such adaptability may offer protection against stressful social situations and harmful psychological
outcomes (Gloster et al., 2017). Though main effects are typically not interpreted when a significant interaction effect is present, it is worth noting that peer liking was not significantly correlated with psychological flexibility in these analyses. One possible interpretation for this may be that children value other aspects when evaluating who they like. For example, playing together at recess or having the same favorite television show may be more salient factors children consider when determining who they like rather than psychological flexibility. It may also be the case that psychological flexibility is difficult to observe in others, particularly for this age group.

Unexpectedly, analyses indicated that psychological flexibility moderated the association of resources promoting resilience on loneliness, such that as psychological flexibility increased, the effect of resources promoting resilience on loneliness diminished. In other words, the higher children’s psychological flexibility was, the less of an impact available resources promoting resilience had on loneliness. The effect resources promoting resilience had on loneliness remained at all levels of psychological flexibility; even when children had high psychological flexibility, their resources promoting resilience still impacted their loneliness. It is worth noting that switching the predictor and moderator variables produced a similar effect in that psychological flexibility still significantly related to loneliness, but the strength of this effect lessened as resources promoting resilience increased. Accordingly, both factors matter when considering their combined impact on children’s loneliness. In short, having greater psychological flexibility lessened the magnitude of a) the effect of peers on loneliness and b) the effect of resources promoting resilience on loneliness.

Contrary to our initial hypotheses, resources promoting resilience did not moderate the path between peer liking and loneliness. Having greater resources did not alter how children’s
peer liking impacted their loneliness. There was a direct effect of resources promoting resilience on loneliness, which is consistent with previous studies that have found the positive impact that social resources in particular have on negative psychosocial outcomes, such as depression (Moore & Woodcock, 2017) and victimization (Griese et al., 2016). Even though this direct effect was present, the relation of peer liking on loneliness did not change based on different levels of resources promoting resilience, or vice versa. In other words, resources promoting resilience impacted children’s loneliness directly, but there did not seem to be an added benefit of resources promoting resilience for children who were not well-liked by their peers. Though contrary to our predictions, this finding highlights the considerable importance of peers and their social milieu during middle childhood, above and beyond other external supports that children may have in their social ecology.

**Limitations and Future Directions**

The following limitations in the present study may be addressed with future research. First, the current study focused only on peer liking rather than examining other dimensions of social standing that have been delineated in the peer relations literature, such as popularity or sociometric ratings. Second, this study was cross-sectional and does not provide an understanding of how these variables fit together developmentally or temporally for children. Future longitudinal studies can provide such a developmental analysis. Additionally, the effects of grade were not fully explored in the model since this was not a primary aim for the study. Further investigation into potential grade effects may uncover important shifts in developmental trajectories of children’s psychological flexibility or determine separate classes of students who demonstrate similar patterns across variables. Third, only self- and peer-reported measures were collected for the current study, and these findings may be bolstered by obtaining teacher- or
parent- reports. Finally, the students in our sample attended a university-affiliated school which may limit generalizability of the results; therefore, replication in other regions of the United States as well as other countries would strengthen the external validity of these findings.

**Clinical Implications**

These findings provide important implications for researchers and professionals in the field. First, few studies have examined psychological flexibility in middle-aged children; therefore, these findings provide a unique look into psychological flexibility in children of this age group. Second, our findings highlight the importance psychological flexibility has on peer relations, providing a key pathway for intervention in the school context. Fostering children’s psychological flexibility seems to be related to positive peer experiences. Interventions specifically targeted to promote children’s psychological flexibility have the potential to protect children lacking peer acceptance from chronic loneliness and subsequent internalizing symptomatology. As noted previously, introducing AIM curriculum—an ACT-based intervention designed for schools—led to increased psychological flexibility and mindfulness at one-year follow ups for middle school students (Dixon et al., 2021). With this in mind, researchers and practitioners alike are tasked with developing and delivering effective intervention strategies that cultivate psychological flexibility within their classrooms.

**Conclusion**

Peers contribute uniquely to children’s development and psychosocial functioning. By examining potential strengths-based moderators, the present study extends existing knowledge of how peer liking is associated with loneliness in middle-aged children. Latent moderated structural equation modeling was utilized to determine conditional effects of psychological flexibility in the context of peers. The present work offers insight into intraindividual processes
(i.e., involved in psychological flexibility) that may provide a buffer from the lack of culturally meaningful resources and harmful effects of loneliness for children who are not liked by their peers. Findings illustrate the importance of psychological flexibility on children’s social world and offer an identifiable intervention point that can be achieved through directed curriculum or skill-building within the classroom.
References


occuring social networks and capturing their effects. *Handbook of peer interactions, relationships, and groups*, 100-117.


structure of the child and youth resilience measure (CYRM-12) for young children in a disadvantaged community. *Children and Youth Services Review, 120*, 105746.


flexibility and ostracism: Experiential avoidance rather than cognitive fusion moderates distress from perceived ostracism over time. *Journal of Contextual Behavioral Science, 7*, 72-80.


Appendix

Table 1

Zero-order correlation coefficients, means, standard deviations, and shape of the distribution

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peer Liking</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loneliness</td>
<td>-.339**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Resources Promoting Resilience</td>
<td>.265**</td>
<td>-.466**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>4. Psychological Flexibility</td>
<td>.075</td>
<td>-.360**</td>
<td>.199**</td>
<td>--</td>
</tr>
<tr>
<td>Mean</td>
<td>4.20</td>
<td>1.66</td>
<td>31.29</td>
<td>-1.09</td>
</tr>
<tr>
<td>SD</td>
<td>2.69</td>
<td>0.73</td>
<td>3.69</td>
<td>0.63</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.45</td>
<td>1.19</td>
<td>-1.09</td>
<td>0.63</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.25</td>
<td>1.71</td>
<td>0.95</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*Note.* Values computed using SPSS and based on raw scores. **p < 0.01 (2-tailed).

Table 2

Model fit comparisons

<table>
<thead>
<tr>
<th>Model</th>
<th>Free Parameters</th>
<th>AIC</th>
<th>BIC</th>
<th>Loglikelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 (all interaction effects)</td>
<td>24</td>
<td>2801.876</td>
<td>2881.274</td>
<td>-1376.938</td>
</tr>
<tr>
<td>Model 2 (all two-way interactions)</td>
<td>23</td>
<td>2800.007</td>
<td>2876.097</td>
<td>-1377.004</td>
</tr>
<tr>
<td>Model 3 (only sig. two-way interactions)</td>
<td>22</td>
<td>2798.710</td>
<td>2871.492</td>
<td>-1377.355</td>
</tr>
</tbody>
</table>

*Note.* Lower values of AIC and BIC indicate better model fit; higher values of the loglikelihood indicate better fit. AIC = Akaike information criterion; BIC = Bayesian information criterion.
Table 3

Unstandardized and standardized coefficients, interaction effects, and simple slopes of interaction terms

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Unstandardized coefficient</th>
<th>SE</th>
<th>t-statistic</th>
<th>Sig.</th>
<th>Beta</th>
<th>SE</th>
<th>t-statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Liking (PL)</td>
<td>-0.080</td>
<td>0.044</td>
<td>-1.824</td>
<td>0.068</td>
<td>-0.110</td>
<td>0.059</td>
<td>-1.854</td>
<td>0.064</td>
</tr>
<tr>
<td>Resources Promoting Resilience (RPR)</td>
<td>-0.127</td>
<td>0.022</td>
<td>-5.813</td>
<td>0.000</td>
<td>-0.551</td>
<td>0.082</td>
<td>-6.692</td>
<td>0.001</td>
</tr>
<tr>
<td>Psychological Flexibility (FLEX)</td>
<td>-0.291</td>
<td>0.084</td>
<td>-3.460</td>
<td>0.001</td>
<td>-0.233</td>
<td>0.068</td>
<td>-3.436</td>
<td>0.001</td>
</tr>
<tr>
<td>Grade</td>
<td>0.180</td>
<td>0.053</td>
<td>3.381</td>
<td>0.000</td>
<td>0.204</td>
<td>0.061</td>
<td>3.359</td>
<td>0.001</td>
</tr>
<tr>
<td>FLEX X PL</td>
<td>0.267</td>
<td>0.071</td>
<td>3.770</td>
<td>0.000</td>
<td>0.209</td>
<td>0.057</td>
<td>3.661</td>
<td>0.000</td>
</tr>
<tr>
<td>Low levels of FLEX</td>
<td>-0.234</td>
<td>0.060</td>
<td>-3.917</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mean levels of FLEX</td>
<td>-0.080</td>
<td>0.044</td>
<td>-1.824</td>
<td>0.068</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>High levels of FLEX</td>
<td>0.073</td>
<td>0.060</td>
<td>1.210</td>
<td>0.226</td>
<td>--</td>
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<td>--</td>
<td>--</td>
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<tr>
<td>Low levels of PL</td>
<td>-0.552</td>
<td>0.106</td>
<td>-5.213</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>Mean levels of PL</td>
<td>-0.291</td>
<td>0.084</td>
<td>-3.460</td>
<td>0.001</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>High levels of PL</td>
<td>-0.030</td>
<td>0.112</td>
<td>-0.268</td>
<td>0.789</td>
<td>--</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>FLEX X RPR</td>
<td>0.090</td>
<td>0.028</td>
<td>3.258</td>
<td>0.001</td>
<td>0.225</td>
<td>0.071</td>
<td>3.167</td>
<td>0.002</td>
</tr>
<tr>
<td>Low levels of FLEX</td>
<td>-0.141</td>
<td>0.031</td>
<td>-4.506</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mean levels of FLEX</td>
<td>-0.090</td>
<td>0.022</td>
<td>-4.162</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>High levels of FLEX</td>
<td>-0.038</td>
<td>0.027</td>
<td>-1.400</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Low levels of RPR</td>
<td>-0.586</td>
<td>0.153</td>
<td>-3.824</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mean levels of RPR</td>
<td>-0.287</td>
<td>0.096</td>
<td>-3.005</td>
<td>0.000</td>
<td>--</td>
<td>--</td>
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<tr>
<td>High levels of RPR</td>
<td>0.012</td>
<td>0.148</td>
<td>0.079</td>
<td>0.000</td>
<td>--</td>
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</table>

Note. All values derived from Model 3. SE is the standard error of the parameter estimate. Low levels are one standard deviation below the mean; high levels are one standard deviation above the mean.
Figure 1

Model 3

Note. Final model with standardized estimates. Grade was included in testing but omitted from the figure. **p < 0.01, ***p < 0.001.
Figure 2

Plots of the interaction of psychological flexibility and resources promoting resilience on loneliness
Figure 3

Plots of the interaction of psychological flexibility and peer liking on loneliness

![Graph showing the interaction of psychological flexibility and peer liking on loneliness. The x-axis represents Low Peer Liking and High Peer Liking, while the y-axis represents Loneliness. There are two lines: one for Low Psychological Flexibility and one for High Psychological Flexibility. The line for Low Psychological Flexibility shows a steeper decrease with an intercept of 2.00 and a slope of -0.23, with a p-value less than 0.001. The line for High Psychological Flexibility shows a shallower decrease with an intercept of 1.55 and a slope of -0.03, with a p-value of 0.23.](image)