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Social Skills as a Mediator between Anxiety Symptoms and Peer Interactions among Children and Adolescents

Luci M. Motoca¹, Sandra Williams², and Wendy K. Silverman^{1,3}

¹Florida International University

²Q-Q Research Consultants

Abstract

Objective—The present study used a cross-sectional design to examine the relations among youth anxiety symptoms, positive and negative peer interactions, and social skills. Also examined was the mediating role of social skills in the relations between youth anxiety symptoms and positive and negative peer interactions. Youth sex and age were examined as moderators.

Method—The sample consisted of 397 children and adolescents ($M = 10.11$ years; 53.4% boys; 74.8% Hispanic Latino) referred to an anxiety disorders clinic. Anxiety symptoms, positive and negative peer interactions, and social skills were assessed using youth and parent ratings.

Results—Structural equation modeling results indicated that for youth ratings only, youth anxiety symptoms were negatively related to positive peer interactions controlling for primary social phobia and comorbid depressive disorders. For both youth and parent ratings, youth anxiety symptoms were positively related to negative peer interactions and negatively related to social skills. Also for both youth and parent ratings, social skills mediated the relations between youth anxiety symptoms and positive and negative peer interactions. For parent ratings only, the effects of youth anxiety symptoms and social skills on peer interactions were significantly moderated by youth age. Youth sex was not a significant moderator using youth and parent ratings.

Conclusions—Findings suggest difficulties with social skills and peer interactions are problematic features of youth referred for anxiety problems. Findings highlight the need to improve understanding of anxiety symptoms, social skills, and peer interactions in this population.

Keywords

anxiety symptoms; peer interactions; social skills; youth sex; youth age

Peer interactions are important to children's and adolescents' social, academic, and emotional development (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006). Peer interactions provide children and adolescents (hereafter referred to as youth) with a context for skills learning and models for future relationships (Hartup & Sancilio, 1986). It is in the context of peer interactions that youth practice cooperation, assertion, empathy, and self-control skills. These essential social skills contribute to effective functioning by allowing youth to interact with others and avoid socially undesirable responses (Gresham & Elliot, 1990).

³Correspondence should be addressed to Wendy K. Silverman, Florida International University, Center for Children and Families, Child Anxiety and Phobia Program, 11200 SW 8th Street, AHC 1 Rm. 140, Miami, Florida 33199. silverw@fiu.edu.

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Research has documented difficulties in the peer interactions of youth with high levels of *social* anxiety symptoms (Ginsburg, La Greca, & Silverman, 1998), as well as youth with diagnosable social phobia (SOP; Spence, Donovan, & Brechman-Toussaint, 1999). Youth with diagnosable SOP also have been found to have social skills difficulties (e.g., Alfano, Beidel, & Turner, 2006; Beidel, Turner, & Morris, 1999; Spence et al., 1999).

Perhaps the word “social” explains in part why the peer interactions and social skills of young people with social anxiety symptoms and diagnosable SOP have received the lion’s share of research attention: The assumption is that these are the youth with “social” problems. The peer interactions and social skills of youth with other types of anxiety have rarely been studied (e.g., see Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010 for review). The scarcity of research is unfortunate because peer interactions and social skills are important for development (Parker et al., 2006). The scarcity of research also is unfortunate given the high prevalence of youth anxiety disorders (e.g., see Costello, Egger, Copeland, Erkanli, & Angold, 2011). Thus, a relatively large proportion of young people are not on the ‘radar screen’ of researchers and clinicians as possibly at risk.

The present study used a cross-sectional design to address two issues in a sample of youth referred for anxiety problems. The first issue was to study the relations among youth anxiety symptoms, peer interactions (positive and negative), and social skills. The relations that exist among these variables when anxiety is defined beyond social anxiety are unknown. The second issue was to evaluate a conceptual model whereby social skills mediate the relations between youth anxiety symptoms and peer interactions (positive and negative). The only study to examine factors that mediate the relation between youth anxiety symptoms and problematic peer relations used a community sample of socially anxious children (N = 333; ages 8-12 years; Greco & Morris, 2005). Results indicated that teacher-rated child social skills mediated the relation between child-rated social anxiety and peer-rated acceptance.

In the present study, the likely complex nature of the variables’ relations was examined through multivariate structural equation modelling (*SEM*). The study thus represents an initial effort to inform theoretical conceptualizations with respect to youth anxiety symptoms, peer interactions, and social skills. Unlike past research, primary diagnoses of SOP and comorbid depressive disorders were controlled for in the analyses to rule out alternative explanations for the variables’ relations given that youth suffering from both of these disorders experience social difficulties (e.g., Parker et al., 2006)¹.

In the absence of research with clinic referred anxious youth, we posited that past relations obtained with socially anxious youth would hold with anxious youth. The hypothesized relations illustrating the two main issues of interest are captured in the path diagram in Figure 1. Anxiety symptoms were hypothesized to be negatively related to positive peer interactions (*a*) and positively related to negative peer interactions (*b*). Anxiety symptoms were hypothesized to be negatively related to social skills (*c*). Social skills, in turn, would mediate the relations between anxiety symptoms and positive and negative peer interactions, respectively. Social skills were hypothesized to be positively related to positive peer interactions (*d*) and negatively related to negative peer interactions (*e*). (Positive and negative peer interactions are hereafter referred to as peer interactions unless we are referring to one or another.)

¹The analyses were also conducted using secondary SOP diagnoses as covariates. The same pattern of relations among youth anxiety symptoms, peer interactions (positive and negative), and social skills was found when secondary SOP diagnoses were used as covariates as when primary SOP diagnoses were used. Results are reported using primary SOP diagnoses as covariates.

The study used youth and parent ratings of the same constructs and tested two independent models to determine whether youth and parents have different perspectives with respect to the multivariate relations among the variables. This seems especially relevant when working with youth with anxiety problems and parents because the social functioning of anxious youth may be manifested internally raising the possibility for different perspectives with respect to the variables' relations. Our testing of independent youth and parent models allowed us to begin to examine this possibility. Low correlations between youth and parent ratings of the study's variables (highest was .26), similar to past reports (Achenbach, McConaughy, & Howell, 1987), further supported the use of independent youth and parent models.

Finally, past studies examining peer variables in clinic referred samples of anxious youth focused on children between ages 6 to 13 (e.g., Beidel et al., 1999; Ginsburg et al., 1998) or they were insufficiently powered to allow for analyses of youth sex and age as moderators (e.g., Spence et al., 1999). The present study used a relatively large sample to examine whether youth sex and age moderate the relations among youth anxiety symptoms, peer interactions, and social skills. In terms of sex, girls are generally more anxious than boys (Silverman & Carter, 2006). Of interest in this study was whether the variables' relations were stronger for girls than boys. In terms of age, the social skills involved in effective peer interactions become increasingly complex as children transition to adolescence. It is also at the transition to adolescence that peer interactions occupy substantially more time in the lives of young people (Parker et al., 2006). A wider age range (7 to 16 years) than past studies therefore was used to determine whether the strength of the variables' relations varies as a function of youth age. Given the scarcity of past research, we withheld from formulating specific hypotheses regarding the moderating roles of sex and age.

Method

Participants

Participants were 397 youth (46.6% girls) ages 7 to 16 years old ($M = 10.11$; $SD = 2.35$). Seventy one (17.9%) were European American; 297 (74.8%) were Hispanic Latino; 24 (6.0%) were of other ethnic backgrounds; and 5 (1.3%) did not report ethnicity. The majority were from middle income families. Youth were referred to an anxiety disorders research clinic due to excessive anxiety. The majority met diagnostic criteria for either a primary (88.3%) or secondary (98.1%) anxiety disorder (Diagnostic and Statistical Manual of Mental Disorders; American Psychiatric Association, 1994). To allow for broader symptoms, a very small proportion (1.9%) met diagnostic criteria for other disorders.

Measures

Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions (ADIS-IV: C/P; Silverman & Albano, 1996)—The ADIS-IV: C/P is a semi-structured diagnostic interview that assesses anxiety and other major disorders. The ADIS-C/P has good concurrent validity (Wood, Piacentini, Bergman, McCracken, & Barrios, 2002) and adequate to good inter-rater reliability estimates for specific anxiety diagnoses ($\kappa = 0.57$ to 0.86 ; Silverman, Saavedra, & Pina, 2001). In cases of multiple diagnoses, the relative interference of each specific diagnosis was used as the basis for assigning the primary diagnosis, the secondary diagnosis, and so on.

Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978)—The RCMAS contains 37 items that assess anxiety symptoms. Respondents rate each item as either Yes (1) or No (0). Total Anxiety scores range from 0 to 28. Higher scores indicate higher anxiety. RCMAS Total correlates significantly with measures of trait

anxiety and fear (Ollendick, 1983). Alphas for the RCMAS Total in the present sample were .88 for the youth version; .78 for the parent version (RCMAS/P).

Friendship Questionnaire (FQ; Bierman & McCauley, 1987)—The FQ was used to assess peer interactions. Respondents rate the frequency of specific positive (FQ-P) and negative (FQ-N) behaviors with peers using a 5-point Likert scale (0 = *never* to 5 = *every day*). The FQ-P includes 16 items (e.g., “Is there someone who saves you a seat at lunch?”), as does the FQ-N (e.g., “Is there someone who teases you and makes fun of you?”). The FQ discriminates between youth with positive versus rejected/neglected social status (Bierman & McCauley, 1987). Alphas for the FQ-P and the FQ-N in the present sample were .85 and .89 for the youth version; .79 and .88 for the parent version.

Social Skills Rating System (SSRS; Gresham & Elliott, 1990)—Respondents rate the frequency of social skills using a 3-point Likert scale (0 = *never*, 1 = *sometimes*, 2 = *very often*). Items assess cooperation, assertion, empathy, responsibility, and self-control behaviors. Gresham and Elliot (1990) reported 4-week retest reliability of .68 for the youth version and .87 for the parent version. They also reported evidence for criterion validity. Alphas for the SSRS Total in the present sample were .86 for the youth version; .89 for the parent version (SSRS/P).

Procedure

Parents contacted the clinic by telephone and were administered a brief screen to ensure anxiety was the presenting problem of their child. For youth with presenting anxiety problems, an initial evaluation appointment was scheduled. Youth with other presenting problems were referred to appropriate community agencies. Youth and parents signed informed assent/consent forms and completed the study's measures.

Data Analytic Plan

Preliminary analyses were conducted to examine outliers, non-normality, and missing data. The fit of the model in Figure 1 was evaluated through *SEM* using the traditional chi-square test of model fit, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). More focused tests of model fit were also pursued (modifications indices; standardized residuals) (Bollen & Long, 1993).

Mediation Analyses—The joint significance test was used to test for mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Paths *c*, *d* and *e* in Figure 1 need to be statistically significant to conclude that social skills mediate the relations between youth anxiety symptoms and positive and negative peer interactions, respectively.

Moderator Analyses

Youth Sex: A multigroup solution was pursued with girls and boys representing the two groups. The model was first tested with no equality constraints across the groups to establish a common model form for boys and girls. The equivalence of path coefficients was then tested by constraining all paths in Figure 1 to be equal across the groups. The fit of the unconstrained model was compared to the fit of the constrained model via a chi-square difference test. A significant chi-square difference would indicate the path coefficients in the model were moderated by youth sex.

Youth Age: Interaction terms between the mean centered age and youth anxiety symptoms and social skills, respectively, were included in the analyses to obtain their effects on peer

interactions. Significant interactions were plotted with the conditional effects of youth anxiety symptoms and social skills on peer interactions at low age (i.e., $-1SD$, 8 years old) and high age (i.e., $+1SD$, 13 years old), which are illustrative of younger and older children, respectively.

Results

Outlier analyses revealed an absence of outliers. Because non-normality was evident, *SEM* analyses were pursued in MPlus 6 (Muthén & Muthén, 2007) with an estimator robust to non-normality. Missing data were accommodated via full information maximum likelihood. Means, standard deviations, and correlations of study variables are presented in Table 1. Both youth ($\chi^2(1) = 0.01, p > .05$; CFI = 1.00, RMSEA < .001, SRMR = .001) and parent ($\chi^2(1) = 0.98, p > .05$; CFI = 1.0; RMSEA < .001; SRMR = .01) models yielded a good fit to the data. There were no modification indices and no absolute standardized residuals larger than 1.96. Path coefficients for the model are presented in Figure 2.

The Relations among Youth Anxiety Symptoms, Peer Interactions, and Social Skills

Youth Ratings—The path coefficient from anxiety symptoms to positive peer interactions was statistically significant ($B = -.20, SE = .09, p < .05, 95\% CI = -.38 \text{ to } -.01$). As anxiety symptoms increased, positive peer interactions decreased. The path coefficient from anxiety symptoms to negative peer interactions was statistically significant ($B = .44, SE = .09, p < .001, 95\% CI = .25 \text{ to } .62$). As anxiety symptoms increased, negative peer interactions increased. The path coefficient from anxiety symptoms to social skills was statistically significant ($B = -.27, SE = .10, p < .05, 95\% CI = -.46 \text{ to } -.10$). As anxiety symptoms increased, social skills decreased.

Parent Ratings—The path coefficient from anxiety symptoms to negative peer interactions was statistically significant ($B = .53, SE = .09, p < .001, 95\% CI = .36 \text{ to } .70$). As anxiety symptoms increased, negative peer interactions increased. The path coefficient from anxiety symptoms to social skills was statistically significant ($B = -.60, SE = .10, p < .001, 95\% CI = -.80 \text{ to } -.44$). As anxiety symptoms increased, social skills decreased. The path coefficient from anxiety symptoms to positive peer interactions was statistically nonsignificant ($B = .04, SE = .11, p > .05, 95\% CI = -.17 \text{ to } .25$).

Social Skills as a Mediator between Youth Anxiety Symptoms and Peer Interactions

Youth Ratings—Again, the path coefficient from anxiety symptoms to social skills was statistically significant. The path coefficient from social skills to positive peer interactions was statistically significant ($B = .47, SE = .06, p < .001, 95\% CI = .37 \text{ to } .59$). As social skills decreased, positive peer interactions decreased. The path coefficient from social skills to negative peer interactions was statistically significant ($B = -.20, SE = .07, p < .05, 95\% CI = -.33 \text{ to } -.07$). As social skills decreased, negative peer interactions increased. The total effect of anxiety symptoms on positive peer interactions was $-.32$; the total effect of anxiety symptoms on negative peer interactions was $.49$. Anxiety symptoms accounted for 13% of the variance in social skills. Anxiety symptoms and social skills accounted for 21% and 12% of the variance in positive and negative peer interactions, respectively.

Parent Ratings—Again, the path coefficient from anxiety symptoms to social skills was statistically significant. The path coefficient from social skills to positive peer interactions was statistically significant ($B = .32, SE = .06, p < .001, 95\% CI = .20 \text{ to } .43$). As social skills decreased, positive peer interactions decreased. The path coefficient from social skills to negative peer interactions was statistically significant ($B = -.10, SE = .05, p < .05, 95\% CI = -.19 \text{ to } -.002$). As social skills decreased, negative peer interactions increased. The

total effect of anxiety symptoms on positive peer interactions was $-.14$; the total effect of anxiety symptoms on negative peer interactions was $.59$. Anxiety symptoms accounted for 15% of the variance in social skills. Anxiety symptoms and social skills accounted for 20% and 13% of the variance in positive and negative peer interactions, respectively.

Moderator Analyses

Youth Sex—The chi-square difference was statistically nonsignificant based on youth (χ^2 diff (5) = 5.77, $p > .05$) and parent (χ^2 diff (2) = 2.49, $p > .05$) ratings. The relations among youth anxiety symptoms, peer interactions, and social skills are thus similar for girls and boys.

Youth Age—No moderated relations were found based on youth ratings. Two moderated relations were found based on parent ratings. The path coefficient Age X RCMAS/P to FQ-P/P was statistically significant ($B = -.09$, $SE = .04$, 95% CI = $-.19$ to $-.01$, $p < .05$). The effect of RCMAS/P on FQ-P/P was $.31$, $p > .05$ at age 7; $-.30$, $p < .05$ at age 11; and $-.75$, $p < .05$ at age 16. Parent ratings of their child's anxiety symptoms were negatively related to positive peer interactions at high but not at low age (Figure 3). The path coefficient Age X SSRS/P to FQ-N/P was statistically significant ($B = .04$, $SE = .02$, 95% CI = $.01$ to $.08$, $p < .05$). The effect of SSRS/P on FQ-N/P was $-.22$, $p < .05$ at age 7; $-.14$, $p < .05$ at age 11; and $.14$, $p > .05$ at age 16. Parent ratings of their child's social skills were negatively related to negative peer interactions at low but not at high age (Figure 4).

Discussion

The study's findings support the mediational role of youth social skills in the relations between anxiety symptoms and peer interactions, both positive and negative. Specifically, high youth anxiety symptoms were related to low social skills based on both youth and parent ratings. Low social skills, in turn, were related to few positive peer interactions and frequent negative peer interactions based on both youth and parent ratings. The study's findings also indicated high youth anxiety symptoms were related to frequent negative peer interactions based on both youth and parent ratings. Based on youth but not parent ratings, high youth anxiety symptoms were related to few positive peer interactions.

The study also examined whether youth sex and age moderate the variables' relations. Two significant moderation findings emerged for youth age but not youth sex based on parent but not youth ratings. The first moderation finding was that older but not younger children with high anxiety symptoms were viewed by their parents as having increasingly few positive peer interactions. The second moderation finding was that younger but not older children with low social skills were viewed by their parents as having frequent negative peer interactions.

The present study contributes to the literature in several ways. First, the present study evaluated a conceptual model whereby the complex multivariate nature of the variables' relations was examined using *SEM*. The study advances understanding about the social difficulties of youth referred for anxiety problems because it documents that not only socially anxious youth have difficulties with their peer interactions and social skills, but also youth with anxiety symptoms broadly defined. Further, primary SOP and comorbid depressive disorders were ruled out as alternative explanations because both were controlled for in the analyses. The present study's findings suggest the need for researchers and clinicians to have on their radar screens youth referred for anxiety disorders as at potential risk -- not a trivial proportion of young people given the 7% to 28% prevalence rate (e.g., Costello et al., 2011).

Second, the present study used a large sample of youth in a wide age range to examine whether youth sex and age moderate the variables' relations. As noted, youth age moderated the variables' relations based on parent ratings. One possible explanation for the first moderation finding is that as children grow older, parents may be more attuned to how their child's anxiety may be related to positive peer interactions because older children are expected to be more autonomous in arranging peer interactions (e.g., Parker et al., 2006). For older anxious children, parents' expectations for autonomy may result in more opportunities to independently arrange peer interactions, and thereby more occasions for anxiety symptoms to interfere with positive peer interactions. Indeed, parents' ratings of their child's anxiety showed a relation with positive peer interactions for youth ages 11 through 16. Developmentally, this age range overlaps with adolescence, when peer interactions are encouraged and take on increasing importance (e.g., Parker et al., 2006). Since younger children rely more on their parents for protection, this may explain the second moderation finding whereby younger but not older children with low social skills were viewed by their parents as having frequent negative peer interactions. One possible explanation for this is that younger children with low social skills may elicit in their parents a view that they are physically and emotionally weak and thus unlikely to defend themselves (Rubin & Burgess, 2001). These are speculations at this point, but if replicated, the moderation findings suggest intriguing possibilities for future research.

Third, the present study is the first to document the pattern of relations using youth and parent ratings of the same constructs. Most findings were robust across youth and parent report. Two differences in perspectives emerged, however, based on the study's moderation analyses. These differences in perspectives support the use of both informants' ratings in the assessment of peer difficulties when presented with youth referred for anxiety problems (e.g., see Achenbach et al., 1987). The use of both informants' ratings in the assessment of peer difficulties seems particularly important when working with youth clinic populations, as usually the parents seek treatment for their child. If parents of anxious children notice things are amiss with their child's peer interactions and social skills, then perhaps it would be useful to educate parents about these social difficulties. Overall, the findings suggest on a clinical level the need for clinicians to inquire routinely about the peer interactions and social skills of youth referred for anxiety problems to obtain a fuller picture of their functioning. Such inquiry might lead to implementing social skills training to improve the peer interactions of youth referred for anxiety problems.

Limitations and Future Research

The present study has limitations. First, the study was cross-sectional and causality cannot be inferred. It is important for future research to examine the timing of anxiety symptoms relative to problematic social skills and difficulties with peer interactions to elucidate the direction of effects. Second, mediators other than social skills need to be considered in future work to help account for the relations between youth anxiety symptoms and peer interactions. Third, although the study took advantage of a predominantly Hispanic sample, the influence of ethnicity within the study's conceptual model remains to be tested in future studies. It also would seem important to conduct comparative research on school samples of anxious withdrawn/solitary children and children referred for anxiety disorders to clarify whether conclusions found in these populations generalize with our sample (Gazelle, Workman, & Allan, 2010; Ladd, Kochenderfer-Ladd, Eggum, Kochel, & McConnell, 2011).

Implications for Research, Policy, and Practice

The present study documented relations among youth anxiety symptoms, peer interactions, and social skills and constitutes an important step in conceptualizing these relations. Findings supported a conceptual model whereby social skills mediate the relations between

youth anxiety symptoms and peer interactions. Successful peer interactions may be accomplished through social skills training (e.g., Beidel, Turner, & Morris, 2000). Longitudinal designs that begin assessments in early childhood and establish the temporal ordering of constructs are needed to identify the most plausible pathways and mediators of the observed relations between youth anxiety symptoms and peer interactions.

References

- Achenbach TM, McConaughy SH, Howell CT. Child-adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*. 1987; 101:213–232. doi:10.1037/0033-2909.101.2.213. [PubMed: 3562706]
- Alfano CA, Beidel DC, Turner SM. Cognitive correlates of social phobia among children and adolescents. *Journal of Abnormal Child Psychology*. 2006; 34:189–201. doi: 10.1007/s10802-005-9012-9. [PubMed: 16514553]
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4th ed.. Author; Washington, DC: 1994.
- Beidel DC, Turner SM, Morris TL. Psychopathology of childhood social phobia. *Journal of American Academy of Child and Adolescent Psychiatry*. 1999; 38:643–650. doi: 10.1097/00004583-199906000-00010.
- Beidel DC, Turner SM, Morris TL. Behavioral treatment of childhood social phobia. *Journal of Consulting and Clinical Psychology*. 2000; 68:1072–1080. 10.1037//0022-006X.68.6.1072. [PubMed: 11142541]
- Bierman K, McCauley E. Children's descriptions of their peer interactions: Useful information for clinical child assessment. *Journal of Clinical Child Psychology*. 1987; 16:9–18. doi: 10.1207/s15374424jccp1601_2.
- Bollen, KA.; Long, JS., editors. *Testing structural equation models*. Sage; Newbury Park, CA: 1993.
- Costello, EJ.; Egger, HL.; Copeland, W.; Erkanli, A.; Angold, A. The developmental epidemiology of anxiety disorders: phenomenology, prevalence, and comorbidity. In: Silverman, WK.; Field, A., editors. *Anxiety disorders in children and adolescents: Research, assessment and intervention*. Cambridge University Press; Cambridge, U. K.: 2011. p. 56-75.
- Gazelle H, Workman JO, Allan W. Anxious solitude and clinical disorder in middle childhood: Bridging developmental and clinical approaches to childhood social anxiety. *Journal of Abnormal Child Psychology*. 2010; 38:1–17. doi: 10.1007/s10802-009-9343-z. [PubMed: 19707867]
- Ginsburg G, La Greca AM, Silverman WK. Social anxiety in children with anxiety disorders: Relations with social and emotional functioning. *Journal of Abnormal Child Psychology*. 1998; 26:175–185. doi: 10.1023/A: 1022668101048. [PubMed: 9650624]
- Greco LA, Morris TL. Factors influencing the link between social anxiety and peer acceptance: Contributions of social skills and close friendships during middle childhood. *Journal of Behavior Therapy*. 2005; 37:197–205. doi:10.1016/S0005-7894(05)80068-1.
- Gresham, FM.; Elliot, SN. *The Social Skills Rating System*. American Guidance Service, Inc.; Circle Pines, MN: 1990.
- Hartup, WW.; Sancilio, MF. Children's friendships. In: Schopler, E.; Mesibor, GB., editors. *Social behavior in autism*. Plenum; New York: 1986. p. 61-79.
- Kingery JN, Erdley CA, Marshall KC, Whitaker KG, Reuter TR. Peer experiences of anxious and socially withdrawn youth: An integrative review of the developmental and clinical literature. *Clinical Child and Family Psychology Review*. 2010; 13:91–128. doi: 10.1007/s10567-009-0063-2. [PubMed: 20069362]
- Ladd GW, Kochenderfer-Ladd B, Eggum ND, Kochel KP, McConnell EM. Characterizing and comparing the friendships of anxious-solitary and unsociable preadolescents. *Child Development*. 2011; 82:1434–1453. doi: 10.1111/j.1467-8624.2011.01632.x. [PubMed: 21883155]
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 2002; 7:83–104. doi: 10.1037/1082-989X.7.1.83. [PubMed: 11928892]
- Muthén, LK.; Muthén, BO. *Mplus User's Guide*. 6th ed.. Muthén & Muthén; Los Angeles, CA: 2007.

- Ollendick TH. Reliability and validity of the revised fear survey schedule for children (FSSR-R). *Behaviour Research and Therapy*. 1983; 21:685–692. doi: 10.1016/0005-7967(83)90087-6. [PubMed: 6661153]
- Parker, J.; Rubin, KH.; Erath, S.; Wojslawowicz, JC.; Buskirk, AA. Peer relationships and developmental psychopathology. In: Cicchetti, D.; Cohen, D., editors. *Developmental psychopathology*. Vol. 2: Risk, disorder, and adaptation. 2nd ed. Wiley; New York: 2006. p. 419-493.
- Reynolds CR, Richmond BO. What I think and feel: A revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology*. 1978; 6:271–280. [PubMed: 670592]
- Rubin, KH.; Burgess, K. Social withdrawal. In: Vasey, MW.; Dadds, MR., editors. *The developmental psychopathology of anxiety*. Oxford University Press; Oxford, UK: 2001. p. 407-434.
- Silverman, WK.; Albano, AM. *The Anxiety Disorders Interview Schedule for Children for DSM-IV: Child and Parent Versions*. Oxford University Press; New York: 1996.
- Silverman, WK.; Carter, R. Anxiety disturbance in girls and women. In: Worell, J.; Goodheart, CD., editors. *Handbook of girls' and women's psychological health: Gender and well-being across the lifespan*. Oxford University Press; New York: 2006. p. 60-68.
- Silverman WK, Saavedra LM, Pina AA. Test-retest reliability of anxiety symptoms and diagnoses with the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40:937–944. doi: 10.1097/00004583-200108000-00016. [PubMed: 11501694]
- Spence SH, Donovan C, Brechman-Toussaint M. Social skills, social outcomes, and cognitive features of childhood social phobia. *Journal of Abnormal Psychology*. 1999; 108:211–221. doi: 10.1037/0021-843X.108.2.211. [PubMed: 10369031]
- Wood JJ, Piacentini JC, Bergman RL, McCracken J, Barrios V. Concurrent validity of the anxiety disorders section of the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions. *Journal of Clinical Child and Adolescent Psychology*. 2002; 31:335–342. doi: 10.1207/153744202760082595. [PubMed: 12149971]

Figure 1. Conceptual Model

RCMAS = Revised Children's Manifest Anxiety Scale; SSRS = Social Skills Rating System; FQ-P = Friendship Questionnaire Positive Interactions; FQ-N = Friendship Questionnaire Negative Interactions; P = parent.

Figure 2.

Path Coefficients *SEM* Model Unstandardized path coefficients are presented with the estimates for youth ratings' model followed by the estimates for the parent ratings' model. Youth sex, primary social phobia, and comorbid depressive disorders were included as covariates, but are excluded from the figure to avoid clutter. Paths were included from each of these variables to the mediator and outcomes. The residuals indicate the proportion of unexplained variance in the endogenous variables. $** = p < .001$; $* = p < .05$; $*** =$ significant interaction effect.

Figure 3.
Youth Age as a Moderator of the Relation between Anxiety Symptoms and Positive Peer Interactions.

Figure 4.
Youth Age as a Moderator of the Relation between Social Skills and Negative Peer Interactions.

Table 1

Means, standard deviations and correlations of study variables

	1	2	3	4	5	6	7	8
1. RCMAS	-							
2. SSRS	-.16**	-						
3. FQ-P	-.15**	.43**	-					
4. FQ-N	.25**	-.19**	.04	-				
5. RCMAS/P	.11*	-.12*	-.07	.02	-			
6. SSRS/P	.02	.16*	.07	-.05	-.32**	-		
7. FQ-P/P	-.02	.13*	.26**	.01	-.08	.32**	-	
8. FQ-N/P	.12*	-.17*	-.09	.26**	.33**	-.19**	.03	-
<i>M</i>	13.06	55.46	49.59	33.10	12.95	46.59	43.18	29.06
<i>SD</i>	6.75	12.03	13.56	12.95	5.66	11.29	12.91	10.31

Note: RCMAS = Revised Children's Manifest Anxiety Scale; SSRS = Social Skills Rating System; FQ-P = Friendship Questionnaire Positive Interactions; FQ-N = Friendship Questionnaire Negative Interactions; P = parent.

** = $p < .001$;

* = $p < .05$