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Parent Psychopathology and Children's Psychological Health: Moderation by Sibling Relationship Dimensions

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Abstract

Offspring of anxious adults are at heightened risk for psychological maladjustment; however factors that protect youth in the context of this risk have been rarely explored. Supported by literature showing the meaningful role of sibling relationships for children's psychological outcomes, this study examined the protective role of the sibling relationship for children in the context of risk for psychological maladjustment due to having a parent with a clinical anxiety disorder. Participants were 81 children ages 7 to 12 years (58% female; 82 % Caucasian), and their parents. Parents met DSM-IV-TR diagnostic criteria for a primary anxiety disorder, and youth did not meet diagnostic criteria for any psychiatric disorder. Parents completed questionnaires on their own psychological distress and use of parenting behaviors, and on their children's psychological adjustment. Children self-reported on the quality of their sibling relationship based on their closest-age sibling. Parenting behaviors were also coded based on a parent-child interaction task. Results of hierarchical regression models demonstrated that sibling relationship quality moderated the relation between parental psychological distress and child adjustment. Post-hoc simple slopes analyses showed that parental distress was significantly positively associated with greater child psychological problems only for children reporting low sibling companionship or high sibling conflict. Aspects of the sibling relationship did not moderate the association between self-rated or observer-rated parenting behaviors and child anxiety symptoms. Findings are consistent with developmental models and empirical literature emphasizing the protective role of sibling relationships for youth's psychological outcomes. Sibling relationships may be a salient target for youth psychological preventive or treatment interventions.

Keywords

Anxiety; Sibling; Parent psychopathology; Child psychological adjustment

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Psychological Risk to Offspring of Anxious Parents

Anxiety disorders are among the most common psychiatric conditions affecting youth (Costello et al. 2011; Velting et al. 2004), and the most widely recognized risk factor is having an anxious parent (Beidel and Turner 1997; Lieb et al. 2000; Turner et al. 1987). Apart from a clinical disorder, children in families where there is an anxious parent also have relatively more psychological symptoms, including fears/worries, lower perceptions of control, behavioral inhibition, insecure attachments, and social isolation relative to peers (Rosenbaum et al. 1988), and evidence deficits in academic and social functioning (Silverman et al. 1988; Turner et al. 1987).

The increased risk to offspring of anxious adults is due to both genetic and psychosocial influences. Environmental contributions include exposure to affected parents' emotional distress, for example, anger, irritability, or sadness, and/or negative parenting practices, such as overcontrol, criticism, and negativity (Affrunti and Ginsburg 2012; Bayer et al. 2006; Fisak and Grills-Tauechel 2007; Ginsburg and Schlossberg 2002; Ginsburg et al. 2004; McLeod et al. 2007; Merikangas et al. 1998; Pilowsky et al. 2006; Wood et al. 2003; Woodruff-Borden et al. 2002). Overall, it is well documented that offspring of anxious parents are at risk of psychological maladjustment and functional impairment. Existing research has identified protective factors, such as social support and social or academic competence, for children in the context of having a parent with a psychological problem (Affrunti and Ginsburg 2012; Barton et al. 2013; Conrad and Hammen 1993; Festa and Ginsburg 2011), but identification of additional protective variables is needed.

Sibling Relationship Quality and Child Outcomes

Sibling relationship quality, most typically assessed on dimensions of warmth (feelings of affection, intimacy, companionship, and closeness) and conflict (arguments, hostility, aggression), is a form of social support that is related to psychological adjustment concurrently and over time (Buhrmester and Furman 1990; Buist et al. 2013; Kim et al. 2007), and has the potential to offer children resilience in the context of risk for negative psychological outcomes (Buhrmester 1992; Dunn et al. 1994a, b; Stocker 1994; Volling 2003). Low warmth and high hostility within the sibling relationship have been associated cross-sectionally with high levels of internalizing problems including anxiety symptoms, depressed mood, and low self-esteem (Campion-Barr et al. 2013; Dunn et al. 1994a, b; Padilla-Walker et al. 2010; Stocker 1994). Self-reported and observed sibling conflict and aggression have been associated with externalizing problems such as antisocial behaviors in youth, whereas sibling relationships characterized by collaboration and affection were not linked with externalizing behaviors (Aguilar et al. 2001; Criss and Shaw 2005).

Qualities of the sibling relationship during childhood also predict subsequent psychosocial outcomes. Sibling affection has been associated 1 year later with increased self-reported pro-social behavior, better self-regulation, and decreased externalizing behaviors (Padilla-Walker et al. 2010). Sibling conflict, on the other hand, has predicted increases in child anxiety symptoms, depressed mood, and delinquent behavior over 2- and 4-year periods, and the effect of sibling conflict explained unique variance beyond parenting and marital variables

(Bank et al. 2004; Stocker et al. 2002). Additional longitudinal data has supported the unique salience of the sibling relationship and found that individuals were more likely to become clinically depressed as adults if they had poor relationships with their siblings in childhood compared to those who had better childhood sibling relationships. There were no statistically significant associations, however, between the development of depression in adulthood and parental relationship quality (Waldinger et al. 2007).

The Protective Role of Sibling Relationships

The protective function of sibling relationships has been examined in the context of various risk factors. For instance, children living in disharmonious homes with highly frequent and intense marital discord showed significantly fewer emotional (i.e., anxiety, sadness, fears) and behavioral symptoms (i.e., school refusal, irritable moods, temper tantrums) in the presence of a positive sibling relationship, and subsequently lower levels of depression in adulthood (Jenkins and Smith 1990; Tucker et al. 2013). Likewise, the presence of an affectionate sibling relationship as compared to a non-affectionate one was associated with the development of fewer internalizing symptoms in response to negative life events (i.e., death of a loved one, natural disasters; Gass et al. 2007). For children facing increased risk for psychological maladjustment in the context of high-risk neighborhoods or low-income backgrounds, high sibling conflict has been associated with increased antisocial behavior whereas supportive sibling relationships were associated with fewer depressive symptoms, less delinquent attitudes, and more school engagement (Criss and Shaw 2005; Widmer and Weiss 2000). Finally, bullied children who experienced warm sibling relationship at home exhibited better emotional and behavioral adjustment (Bowes et al. 2010).

Overall, research suggests that, relative to parental or peer influence, siblings can have just as much or more of an effect on the developing child (Defoe et al. 2013) and that a positive sibling relationship characterized by warmth, support, and affection may lower a child's risk of developing emotional and behavioral problems in the face of specific risk factors. Research has not yet examined whether sibling relationship quality is protective for children in the context of risk associated with parental psychopathology. Recent data concluded that sibling relationship quality did not mediate associations between parent psychopathology and children's functioning, and authors concluded that the sibling bond may be better understood as a moderator or buffer against negative outcomes associated with parental symptoms (Hindman et al. 2013).

The Present Study

This study extends existing research by examining the protective role of the sibling relationship for children in the context of risk for psychological maladjustment due to having a parent with a clinical anxiety disorder. The predictor variables were selected based on their theoretical and empirical links with child psychological outcomes; specifically, parent psychological symptoms are associated with child psychological symptoms, and specific parenting behaviors are associated with child anxiety symptoms. Dimensions of sibling relationship quality were selected by those most often cited in the literature, specifically, a positive dimension (companionship/warmth) and a negative dimension

(conflict, aggression). We also accounted for research showing that gender composition, birth order, and age range of the sibling dyad can influence sibling relationship quality (Buist et al. 2013; Milevsky et al. 2011). For instance, research has found that higher quality relationships are generally more common in same-sex dyads than in mixed-sex sibling dyads (Aguilar et al. 2001; Buist et al. 2013), and that same-sex or mixed-sex dyads with an older sister are characterized by higher warmth and intimacy than older-brother-younger-sister dyads (Dunn et al. 1994a, b). Although data has been mixed with regard to the effects of age differences on sibling relationships, a recent meta-analysis found stronger associations between sibling conflict and internalizing symptoms for siblings who had smaller age differences (Buist et al. 2013).

We hypothesized, broadly, that the sibling relationship would moderate the relation between parent-specific risk factors (psychological distress, parenting behaviors) and child psychological outcomes. Specifically, for offspring of anxious parents who characterize their sibling relationship negatively, low in companionship/warmth or high in conflict/aggression, there would be a positive relationship between parent psychological distress and child psychological problems. Similarly, for youth who characterize their sibling relationship negatively, there would be a positive relationship between anxiety-enhancing parenting behaviors and child anxiety symptoms. In contrast, the association between parent risk factors and child psychological outcomes would be attenuated in the context of positive sibling relationships.

Method

Participants

Participants were 81 children ages 7 to 12 years ($M=8.59$, $SD=1.56$; 58 % female), and their clinically anxious parents (62 mothers, 19 fathers). The sample consisted of primarily Caucasian (82 %) youth from intact (88 %) and high income families (79 %) earning over \$80,000 or more per year. Parents met DSM-IV-TR diagnostic criteria for a primary anxiety disorder based on the Anxiety Disorders Interview Schedule for DSM-IV (Brown et al. 1994). The most common disorder in the sample of parents was generalized anxiety disorder (66.7 %), followed by social phobia (16.0 %), panic disorder with agoraphobia (6.2 %), obsessive compulsive disorder (6.2 %), panic disorder without agoraphobia (3.7 %), and specific phobia (1.2 %). None of the children met DSM-IV-TR diagnostic criteria for any behavioral disorder, depression or anxiety, based on the Anxiety Disorders Interview Schedule for DSM-IV, parent and child versions (Silverman and Albano 1996; Silverman et al. 1988, 2001; Silverman and Eisen 1992).

Consistent with the dominant methodology in the sibling literature, participants with more than one sibling were questioned about their closest-in-age sibling. Siblings were ages 1 to 21 years ($M=8.56$, $SD=4.34$; 49.4 % female). There were about equal numbers of same-sex (52 %) and opposite-sex (48 %) sibling dyads. Fifty-eight percent (58 %) of youth informants were the older sibling, 38.3 % were younger, and 3.7 % were twins. The age difference for sibling dyads ranged from 0 years (twins) to 14 years; nearly two thirds (65.4 %) were within 3 years of age, and 34.6 % were 4 or more years apart.

Procedures

Families were recruited as part of a larger, IRB-approved study examining the impact of an anxiety prevention program for children of parents with anxiety disorders (Ginsburg 2009). Interested parents completed a phone screen. Eligible families were consented in person, and were invited to complete an office visit involving a comprehensive baseline evaluation. The present study utilized information collected during the baseline evaluation, including diagnostic interviews, measures completed by clinically anxious parents and at-risk children, and a parent–child interaction task. Children were aided by a research assistant during questionnaire completion to ensure complete and accurate data collection. Independent evaluators (IEs) administered semi-structured diagnostic interviews to determine if the parents and children met DSM-IV-TR diagnostic criteria for an anxiety disorder.

Measures

Sibling Relationship Quality—Children rated sibling warmth/companionship and conflict/aggression with their closest-in-age sibling using two scales of the *Sibling Inventory of Behavior* (SIB; Schaefer and Edgerton 1981; Volling and Blandon 2005), one of the more widely used measures of sibling relationship functioning (Buist et al. 2013). Items such as “We have fun together” and “My sibling starts physical fights with me” were answered on a 5-point scale (1=*never*, 5=*always*) and were summed to yield individual scores for companionship ($\alpha=0.86$) and conflict/aggression ($\alpha=0.86$), respectively. Higher scores reflect higher levels of the construct.

Child Psychological Adjustment—Parents completed the 118-item *Child Behavior Checklist for Ages 6–18* (CBCL/6-18) (Achenbach and Rescorla 2001) to report on children’s psychological adjustment. The CBCL is one of the most extensively tested rating scales available and possesses excellent psychometrics. It can be scored for the following eight syndromes: Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule Breaking Behavior, and Aggressive Behavior. For this study, the Total Problems score ($\alpha=0.85$) was used which is a composite of scales capturing internalizing problems (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints) and externalizing problems (Rule Breaking Behavior, Aggressive Behavior). Higher scores indicate greater problems.

Child Anxiety Symptoms—Child anxiety symptoms were assessed via parent report on the 41-item *Screen for Child Anxiety Related Disorders, parent version* (SCARED). The SCARED has good internal consistency and can discriminate between youth with anxiety, depressive, and disruptive disorders, as well as between distinct anxiety disorders (Birmaher et al. 1999). Parents used a 3-point Likert scale (0=*Not true or hardly ever true*, 2=*Very true or often true*) to respond to items such as, “My child is a worrier,” “My child feels nervous with people he/she doesn’t know well.” The SCARED consists of 5 subscales: panic/somatic, generalized anxiety, separation anxiety, social phobia, and school phobia. The total score was used for this study, and higher scores indicate higher levels of child anxiety as reported by the child’s parent. Cronbach’s alpha for this sample was 0.91.

Parental Psychological Distress—Parents rated their general psychological distress using the 53-item *Brief Symptom Inventory* (BSI; Derogatis 1993). The BSI is a shortened form of the 90-item Symptom Checklist-90-Revised (SCL-90-R; Derogatis 1994). Respondents indicated on a scale from 0 (*not at all*) to 4 (*very much*) the extent they were troubled by physical and emotional complaints. For this study, the Global Severity Index (GSI) provided a single composite score of current symptoms of somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychosis, and higher scores suggest greater severity of psychological distress. The GSI has been established as a valid measure of general psychopathology through correlations with clinical scales on the Minnesota Multiphasic Personality Inventory and total scores on the SCL-R-90 (Derogatis 1977). Prior studies reported 2-week test-retest and internal consistency reliabilities of the GSI, which ranged from 0.68 to 0.91 and 0.71 to 0.90, respectively (Derogatis and Melisaratos 1983). In this study, internal consistency was excellent ($\alpha=0.95$).

Parenting Behavior—Parents reported on their perceptions of their own parental rearing behaviors using the 40-item *Egna Minnen Beträffande Uppfostran* (“*My Memories of Upbringing*”) parent version (EMBU; Muris et al. 2003). The EMBU was validated on a sample of 1681 children in the Netherlands (Muris et al. 2003) and has been widely adapted and utilized in other countries as a measure of perceived parenting practices (Affrunti and Ginsburg 2012; Li et al. 2012; Niditch and Varela 2012; Waters et al. 2012). Three specific EMBU subscales, parental rejection, overprotection/control, and anxious rearing, were selected for the current study based on previous research demonstrating a positive correlation between the subscales and child anxiety symptoms (Affrunti and Ginsburg 2012; Castro et al. 1993; Grüner et al. 1999; Muris et al. 2003; Niditch and Varela 2012; Waters et al. 2012). Each subscale is comprised of 10 items which are answered on a 4-point Likert scale (1=*No*, 2=*Yes, but seldom*, 3=*Yes, often*, 4=*Yes, most of the time*). Internal consistency and test re-test reliability of the EMBU are satisfactory (alphas between 0.66 and 0.81) (Muris et al. 2003). In this sample, the internal consistency for overcontrol was not acceptable ($\alpha=0.50$), so this subscale was dropped, whereas the rejection subscale ($\alpha=0.71$) and anxious rearing subscale ($\alpha=0.76$) were retained for analyses.

Four parent behaviors, overcontrol, granting of autonomy, anxious behavior, and criticism/blaming the child, were also rated based on a videotaped parent–child interaction task conducted during the evaluation (Drake and Ginsburg 2011). This task required parent–child dyads to copy pictures using an etch-a-sketch board with the parent controlling the right knob and the child controlling the left knob. Dyads worked cooperatively to complete three pictures and were given a maximum of 5 min to complete each picture. Parent behaviors during the final, most complicated drawing were coded by trained IEs using a manualized coding system. IE training included readings, review and discussion of sample interactions with senior coders, and matching on at least 80 % of parental behavior ratings on 5 sample interaction videos. All study recordings were coded by two trained IEs who independently watched and rated interactions for each behavior on a scale from 0 (*never present*) to 4 (*present most of the time*). Higher scores reflected greater usage (both intensity and

frequency) of the behavior by the parent. Inter-rater agreement was 100 % for this sample, meaning raters agreed within 1 point for all parent behaviors.

Overcontrolling behavior was coded if a parent provided unsolicited help, took over the task (i.e., grabbed the child's knob), or directed the child's behavior by commanding or using harsh words. Granting of autonomy was coded if a parent allowed the child to help with the task by accepting their suggestions for task completion, explicitly encouraged the child's approach to the task, and followed the child's lead during the task. Anxious behavior was coded if the parent made fearful statements such as, "I think we messed it up" or "Uh oh I don't think this is right," sought reassurance from the child, expressed worry, or engaged in perfectionistic behaviors. Criticism/blaming the child was coded if the parent expressed that it was the child's fault for making mistakes or not copying the drawing perfectly or if the parent openly rejected the child's attempts and suggestions during the task.

Results

Descriptive Statistics

Table 1 presents descriptive statistics for the study variables. There were no differences in sibling relationship ratings or outcome variables based on sibling gender composition or age difference. However, there were differences for child total problems based on birth order. Specifically, children who were older within their sibling dyad ($M=32.49$, $SD=17.77$) received higher parent reports for total problems than children who were younger ($M=24.25$, $SD=14.42$), $F(1, 74)=4.50$, $p<0.05$. Subsequent moderator analyses include gender composition, age difference, and birth order as covariates. Inter-correlations among study variables are reported in Table 2. Since one criterion for moderation specifies no association between an independent variable and moderator, sibling companionship was not pursued as a moderator in a model involving anxious rearing.

Moderation Analyses

In order to examine whether aspects of the sibling relationship moderated the associations between parent psychological symptoms and child psychological symptoms, and between parenting behaviors and child anxiety symptoms, each interaction term (i.e., sibling companionship versus parent psychological distress, sibling conflict versus parent psychological distress, sibling companionship versus parental rejection, etc.) was tested in a separate hierarchical regression model. Independent and moderator variables were centered before computing interaction terms. The first step included the covariates, independent variable (parent psychological distress, parenting variable), and the moderator (sibling companionship, sibling conflict). The second step included the interaction term. Significant interactions were probed using simple slopes analysis which has increased power and less Type II error while retaining Type I error equivalent to testing the significance of the interaction term (Aiken and West 1991; Holmbeck 2002). Specifically, two new conditional moderator variables were created for each moderator by re-centering the variables at 1 SD above and below the mean, and computing new interaction terms with each conditional variable. Two post-hoc regressions per moderator were run, first to generate the slope for the high condition (for instance, when sibling companionship is 1 SD above the mean) and

second to generate the slope for the low condition (when sibling companionship is 1 *SD* below the mean). Significance tests (*t*) for each slope were computed to indicate whether the simple slope significantly differed from zero. The sample size of 81 yielded a power of 0.80 to detect an R^2 change of 0.10 (Cohen 1988).

As depicted in Tables 3 and 4 and Figs. 1 and 2, the association between parent psychological distress and child psychological symptoms was moderated by both sibling companionship and conflict. According to Cohen's effect size benchmarks, the R^2 statistic for companionship indicates a small effect, and the R^2 statistic for conflict indicates a medium effect, suggesting that results should be interpreted cautiously (Ellis 2010). Simple slopes analysis revealed a significant positive association between parent psychological distress and child psychological problems among participants with relatively lower sibling companionship, $b=17.55$, $t(72)=3.43$, $p=0.001$ and among those with relatively higher sibling conflict, $b=20.53$, $t(72)=4.23$, $p<0.001$. On the other hand, there were not significant associations between parent distress and child problems for those with relatively higher sibling companionship, $b=2.54$, $t(72)=0.57$, $p=0.57$ or lower sibling conflict, $b=2.06$, $t(72)=2.06$, $p=0.59$. Aspects of the sibling relationship did not moderate the associations between self-reported or observer-rated parenting behaviors and child anxiety symptoms.

Discussion

This study assessed specific dimensions of sibling relationship quality as moderators between parent-related risk factors (parental psychological distress and anxiety-promoting parenting behaviors) and child psychological outcomes (total psychological problems, anxiety symptoms) for a sample of offspring of anxious parents. Consistent with hypotheses, the association between parental psychological distress and child psychological adjustment differed based on the quality of the sibling relationship (as reported by the child). Specifically, children of psychologically distressed parents who had poor quality sibling relationships (i.e., described their sibling relationships as having frequent arguments and teasing, little quality time and fun together) had more psychological symptoms including worry, depressed mood, and aggressive behavior than their peers who had positive quality sibling relationships. There was no association between parent distress and child psychological outcomes for children who described their sibling relationships as positive (i.e., characterized by high companionship or low conflict). These findings are consistent with emerging literature emphasizing the protective role of the sibling relationship for youth's psychological outcomes, and is the first known study to examine sibling relationships in the context of psychological risk due to having a clinically anxious and psychologically distressed parent. In light of the small sample size ($N=81$) and associated small-medium effects, the results should be considered preliminary and in need of replication.

Models of child development have long acknowledged the salience of siblings (e.g., Bronfenbrenner's ecological model of child development; Bronfenbrenner and Morris 1998) as this is a relationship that typically outlasts other proximal relationships such as those with parents and friends, and is experienced by a majority of individuals (Milevsky et al. 2011). Results from this study broaden the existing literature base regarding the developmental

implications of sibling relationships for children's social, emotional, and behavioral adjustment (Buhrmester 1992; Dunn et al. 1994a, b; Volling 2003), and highlight positive sibling relationships as a source of resilience for youth in the context of parental psychological distress. Whereas the developmental psychopathology literature implicates numerous biological, behavioral, and relational characteristics of the child that can be protective in the context of risk (Calkins et al. 2007), the relational component has emphasized the parent-child bond to the relative exclusion of the sibling bond. These findings lend additional perspective to why some individuals at risk go on to experience psychological difficulties and others do not, and suggest that the sibling relationship may benefit from routine assessment and clinical attention in cases when a child is embedded in a situation of risk. Preventive interventions focused on offspring of anxious parents (Ginsburg 2009) and universal school-based populations (Barrett et al. 2006) show promise but, like empirically-based cognitive-behavioral treatments for youth anxiety, do not target the sibling relationship in the intervention model. Strategies aiming to reduce sibling conflict do exist, as well as proposals to improve interventions by identifying how to increase pro-social relations such as perspective taking and behavioral control (Kramer 2010) and could certainly strengthen family-based prevention and treatment models for youths' psychological well-being.

Although the two tested sibling relationship dimensions moderated the association between parent psychological distress and child total psychological symptoms, moderation was not found for the relationship between self- and observer-rated anxiety-enhancing parenting behaviors and child anxiety symptoms. The self-reported parenting behaviors and one of four observed parenting behaviors were significantly correlated with anxiety symptoms, and in the expected directions, showing that higher levels of rejection and anxious rearing, and lower levels of autonomy granting were associated with higher child anxiety symptoms. Contrary to hypotheses, however, the strength of these associations was not influenced by qualities of the sibling relationship. It is possible that the sample size limited our ability to detect the expected effect, or that the specific measures used did not effectively capture the parenting behaviors of interest. Indeed, unacceptable internal consistency for the EMBU "overprotection" scale, a theoretically meaningful construct, precluded its inclusion in this study. Also, the laboratory-based parent-child interaction task may not have successfully elicited parenting behaviors that occur in natural, day-to-day interactions. It would be worthwhile for this investigation to be replicated with a larger sample and with alternative measures of parenting behavior. Moreover, since parenting styles are influenced by child anxiety level (Hudson et al. 2009), a re-examination of this empirical question would be improved by including children with a greater range of anxiety symptoms compared to the nonclinical sample of youth represented here. It is also possible that parenting behaviors are not as robust a risk factor for child anxiety as theory suggests. Results of meta-analytic data have suggested that the connection between parenting behaviors and child anxiety has been greatly overestimated (McLeod et al. 2007), and there is meaningful variability in the literature to further question the degree of influence of parenting on anxiety. Certainly the lack of moderation based on two distinct measures of parenting in the current study offers some confidence in the null result.

The findings of this study must be interpreted in the context of limitations which offer perspectives on future directions. While the questionnaire methodology employed in this study for measuring sibling relationship indices (e.g., warmth, conflict) corresponds to standards set by the field, it may oversimplify the complex and evolving nature of sibling relationships. Future research should extend the methodologies and conceptualizations of the sibling relationship quality dimensions (Bascoe et al. 2012; Buist et al. 2013), including measurement of the relationship at multiple time points, use of multi-method assessment, and assessment of additional relationship indices (e.g., rivalry, empathy, teaching). The age range of siblings in the current study was broad (ages 1 to 21 years) and, although the majority of siblings were between age 5 and 15 years and two-thirds were spaced no more than 3 years apart from the target child, it is possible that results would change with a more restricted age range. Future investigations with larger sample sizes are encouraged to explore the impact of sibling age and dyad age spacing. Also, this study did not account for the direction of effects, and examined sibling relationship quality at only 1 time point. Some literature has found that greater internalizing symptomatology and lower self-esteem predicted increases in sibling conflict over time (Campione-Barr et al. 2013), highlighting that the sibling relationship and youth psychological functioning have reciprocal influences. Also, this study focused on risk of parent factors for child outcomes, but studies show these associations to also have bidirectional influence. Finally, the generalizability of the study is limited due to sample characteristics including restricted child age (7 to 12 years), and predominance of Caucasian, middle-upper class families, particularly because the quality of sibling relationships change for some in adolescence, and siblings from low SES groups are more likely to have more negative relationships (Dunn et al. 1994a, b).

Despite these limitations, the study draws attention to children's sibling relationship quality as an important source of resilience for youth, and highlights the need for additional research on sibling relationships as a potential protective factor and intervention target. Although the specific context of risk in this study was having a clinically anxious parent, the independent variable was parents' general psychological distress which corresponds to all mental health disorders and may be present in the absence of a disorder, lending some degree of generalizability of study results beyond offspring of anxious parents. Overall, strengthening children's abilities to effectively communicate and problem-solve with siblings may hold meaningful implications for promoting positive emotional and behavioral health outcomes in at-risk youth.

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Fig. 1.

Relation between parent psychological distress and child total emotional and behavioral problems among children with high versus low sibling companionship/satisfaction. Simple slopes analysis revealed a significant positive association between parent psychological distress and child psychological problems among youth who reported relatively lower sibling companionship ($b=17.55$, $t=3.43$, $p=0.001$)

Fig. 2.

Relation between parent psychological distress and child total emotional and behavioral problems among children with high versus low sibling conflict. Simple slopes analysis showed a positive association between parent distress and child problems among youth who reported relatively higher sibling conflict ($b=20.53$, $t=4.23$, $p<0.001$)

Table 1

Descriptive statistics of study variables

Construct	<i>n</i>	Min	Max	<i>M</i>	<i>SD</i>	<i>SEM</i>	Skew
Self-reported Parent Behaviors ^a							
Rejection	80	11.00	25.00	15.61	2.95	0.33	0.87
Anxious Rearing	80	14.00	34.00	23.32	4.27	0.48	0.34
Observer-rated Parent Behaviors ^b							
Overcontrol	73	0.00	4.00	0.86	1.04	0.12	0.96
Granting of Autonomy	73	0.00	4.00	1.23	0.91	0.11	0.79
Anxious Behavior	73	0.00	4.00	1.14	1.10	0.13	0.76
Critical Behavior	73	0.00	1.00	0.07	0.25	0.03	3.49
Parent Psychological Distress ^c	80	0.11	2.98	1.00	0.59	0.07	1.02
Sibling Relationship Quality ^d							
Companionship & Involvement	81	6.00	30.00	16.96	5.92	0.66	0.05
Conflict & Aggression	81	5.00	25.00	15.24	5.43	0.60	0.18
Child Outcomes							
Anxiety Symptoms ^e	81	0.00	44.00	17.02	10.58	1.18	0.47
Total Psychological Symptoms ^f	79	2.00	78.80	28.71	16.84	1.90	1.01

SEM standard error of the mean^aParent report on the *Egna Minnen Beträffande Uppfostran* scale (Muris et al. 2003).^bObserved parenting behaviors during a cooperative parent–child task.^cGlobal Severity Index score on the parent-reported Brief Symptom Inventory (Derogatis 1993).^dChild report on the Sibling Inventory of Behavior (Volling and Blandon 2005).^eParent report on the Screen for Child Anxiety Related Disorders (Birmaher et al. 1999).^fParent report on the Child Behavior Checklist (Achenbach and Rescorla 2001)

Table 2

Bivariate correlations between study variables

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Rejection	0.111	-0.134	-0.098	-0.202	-0.115	0.179	0.034	-0.209	0.295 ^a	0.378 ^a
2. Anxious Rearing	1	0.053	-0.383 ^a	-0.011	-0.048	0.290 ^a	0.241 ^b	-0.098	0.253 ^b	0.100
3. Overcontrol		1	-0.274 ^b	0.622 ^a	0.245 ^b	-0.242 ^b	-0.049	0.003	0.013	-0.009
4. Granting of Autonomy			1	-0.228	-0.131	0.027	-0.033	-0.127	-0.233 ^b	-0.157
5. Anxious Behavior				1	0.115	-0.136	-0.045	0.021	-0.035	-0.148
6. Critical Behavior					1	-0.255 ^b	-0.190	0.227	-0.212	0.011
7. Parent Psychological Distress						1	0.091	-0.013	0.017	0.262 ^b
8. Sibling Companionship							1	-0.600 ^a	0.152	-0.090
9. Sibling Conflict								1	-0.253 ^b	0.091
10. Child Anxiety Symptoms									1	0.495 ^a
11. Child Total Psychological Problems										1

^aCorrelation is significant at the 0.01 level (2-tailed)^bCorrelation is significant at the 0.05 level (2-tailed)

Table 3

Hierarchical multiple regression analyses predicting children's total psychological distress and sibling companionship ($N=79$)

Step	Variable	<i>b</i>	<i>SE (b)</i>	β	R^2	F
1	Sibling Gender Composition	-0.11	3.61	-0.003		
	Sibling Age Spacing	1.31	0.72	0.303		
	Sibling Birth Order	-2.31	5.13	-0.076		
	Parental Distress	10.05	3.27	0.334		
	Sibling Companionship	-0.24	0.32	-0.085	0.153	2.63*
2	Parent Distress x Sibling Companionship	-1.27	0.60	-0.233	0.203	3.05**

* $p < 0.05$,

** $p < 0.01$

Unstandardized regression coefficients (*b*) are presented based on values at the final step

Table 4

Hierarchical multiple regression analyses predicting children's total psychological distress and sibling conflict ($N=79$)

Step	Variable	<i>b</i>	<i>SE (b)</i>	β	R^2	F
1	Sibling Gender Composition	-2.30	3.61	-0.069		
	Sibling Age Spacing	1.32	0.70	0.304		
	Sibling Birth Order	-3.73	4.87	-0.122		
	Parental Distress	11.30	3.22	0.375		
	Sibling Conflict	0.27	0.33	0.085	0.152 [*]	2.62 [*]
2	Parent Distress x Sibling Conflict	1.70	0.55	0.340	0.252 ^{**}	3.04 ^{**}

^{*} $p<0.05$,

^{**} $p<0.01$

Unstandardized regression coefficients (*b*) are presented based on values at the final step