

BRIEF REPORT

Familial Risk and Sibling Mentalization: Links With Preschoolers' Internalizing Problems

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The current study explored whether older sibling mentalization moderated the relationship between familial risk for internalizing symptoms and the development of future internalizing problems in the younger siblings, referred to as target children. Data were collected on 397 older siblings at Time 1 (T1) when target children were newborn and their older siblings were on average 2.61 years old ($SD = .75$). Target children were on average 1.60 years old at Time 2 (T2). Internalizing problems were assessed via mother and partner reports. Familial risk was operationalized as the average of all older siblings' level of internalizing problems. Older sibling mentalization, indexed by internal state talk and reasoning, was observed and coded during a sibling pretend-play interaction at T2. Results revealed a significant interaction between familial risk of internalizing problems and older siblings' mentalizing abilities, showing that familial risk was related to target children's internalizing problems in the absence of sibling mentalization. Familial risk was not associated with target children's internalizing problems when siblings demonstrated mentalizing abilities. Findings support the need to consider sibling mentalization as a protective factor for children's internalizing problems.

Keywords: siblings, familial risk, internalizing problems, protective factors, internal state talk

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Nontwin siblings of children with internalizing problems (i.e., withdrawal, fearfulness, anxiety, and depression) have significantly higher rates of such disorders compared to control children (Ma, Roberts, Winefield, & Furber, 2015). Internalizing problems

in preschool children manifest themselves in similar ways to older children (irritability, lack of pleasure in activities, shyness; Sterba, Prinstein, & Cox, 2007). Having older siblings who exhibit internalizing symptoms can be a "risk factor" that increases the likelihood of younger children developing internalizing problems. Yet, many children with siblings with internalizing problems do not present such problems. Person and contextual factors have been found to protect children at risk from developing psychopathology (Jenkins, 2008). In the current study, we examined older sibling mentalization (operationalized as internal state talk and reasoning) as a protective factor for internalizing problems when children experienced familial risk of internalizing problems.

Familial Risk in Children's Internalizing Disorders

Familiality refers to the clustering of mental health problems within a family and does not distinguish between genetic or shared environmental causes of a disorder (Kendler, 1990). Genetic influences on internalizing problems, through genetically sensitive designs, are well established (Franić, Middeldorp, Dolan, Ligthart, & Boomsma, 2010).

A recent meta-analysis conducted by Ma and colleagues (2015) revealed that nontwin siblings of children with mood and anxiety disorders had significantly higher rates of such disorders compared to control siblings. Importantly, there is consistent evidence that younger aged siblings are more likely to have a diagnosis compared to older siblings likely due to exposure to maladaptive cognitions and behaviors, which can increase the risk for psychopathology. The higher prevalence rates of internalizing symptoms

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in nontwin siblings of children with such problems are a result of genetic and shared environmental factors. Throughout this article, we use the term *familial* to signify this risk. Because we did not have a genetically sensitive design, we are not able to identify possible mechanisms in this familiarity.

Sibling Relationships as Protective for Child Internalizing Problems

Sibling warmth refers to relationships that involve intimacy, affection, closeness, and support, and a recent meta-analysis revealed associations between warm sibling relationships and fewer internalizing problems (Buist, Deković, & Prinzie, 2013). Warm sibling relationships have also been studied as protective factors for children at risk for developing internalizing problems. Protective factors have been operationalized as factors that promote beneficial outcomes, in the presence of significant risk (Jenkins, 2008). Using a longitudinal design, Gass, Jenkins, and Dunn (2007) found that 5-year-old children experiencing stressful events were less likely to experience internalizing symptoms if they had an affectionate sibling relationship. Authors speculated that siblings who are warm may provide comfort and security in times of distress, and hence, children have a greater ability to cope, thereby decreasing the likelihood of internalizing problems.

Sibling Mentalizing Abilities

Sibling mentalization has been examined as a protective factor for children at risk for poor cognitive development (Prime, Pauker, Plamondon, Perlman, & Jenkins, 2014; Prime, Plamondon, Pauker, Perlman, & Jenkins, 2016) but not psychopathology. Mentalizing has been broadly conceptualized as the capacity to understand others and oneself in terms of mental states (i.e., emotions, desires, and beliefs) as well as the ability to reason about behavior in terms of mental states (Rosso, Viterbori, & Scopesi, 2015). Various behaviors have been used to index mentalization in children. For instance, cognitive sensitivity refers to the degree to which children accurately perceive and respond to others' inferred cognitions (Prime et al., 2014). Another related construct, perspective taking, refers to a child's ability to interpret, understand, and appropriately respond to others' feelings and behavior (Stewart & Marvin, 1984). Other researchers have measured children's internal state talk and reasoning, which indexes their ability to think about one's own and others' thoughts and behaviors (Rosso et al., 2015). In the current study, mentalization was operationalized as internal state talk and reasoning during a sibling pretend-play interaction.

There are several reasons to hypothesize sibling mentalization as a protective factor for children at risk for internalizing problems. First, sibling mentalization may scaffold an understanding of children's own and others' mental states (Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki, & Berridge, 1996). For instance, older siblings who discuss emotions may promote emotion regulation by supporting younger siblings to develop links between situational cues and emotional experiences (Schultz, Izard, Ackerman, & Youngstrom, 2001).

Second, sibling mentalization is associated with greater warmth and support in sibling relationships, which, as discussed, have been shown to protect against risk for psychopa-

thology (Gass et al., 2007). For instance, Howe and Rinaldi (2004) reported that 3- and 4-year-old children who were better able to recognize others' points of view in affective and cognitive tasks were more emotionally sensitive during interactions with their 14-month-old siblings. Relatedly, Howe (1991) found that preschool children who directed more internal state language toward their 14-month-old sibling had more friendly interactions with their younger siblings.

Finally, sibling mentalization may foster secure attachments, which have been shown to protect children against undesirable mental health outcomes (DeKlyen & Greenberg, 2008). Mothers who respond to their children as individuals with internal thoughts and feelings and are able to take their child's perspective are more likely to develop secure attachments with their children (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002). Perhaps older sibling mentalization can nurture secure attachments and protect children in a similar manner.

Overall, older siblings play an important role in children's socialization. Emotion regulation becomes more autonomous over the second and third year of life and is associated with less internalizing problems (Eisenberg et al., 2001). Interactions with siblings who demonstrate mentalization (i.e., internal state talk and reasoning) may provide a context in which preschool children learn the basic skills associated with healthy emotion regulation such as labeling and understanding various emotions and linking feelings with thoughts and behavior.

Goals and Hypotheses of Study

The aim of the present study was to explore whether older sibling mentalization moderated the relationship between high familial risk for internalizing problems and the development of future internalizing problems in target children. It was hypothesized that there would be a significant interaction between familial risk and older sibling mentalizing abilities when predicting levels of internalizing problems in younger children. More specifically, we hypothesized that in the absence of older sibling mentalizing, familial risk will be related to elevated internalizing problems. In the presence of older sibling mentalization, familial risk will not be related to the amount of internalizing problems. To draw conclusions about the processes related to siblings, variables previously found to predict children's internalizing symptoms were included as covariates: socioeconomic status (SES), maternal sensitivity, single mother, teenage mother, and maternal depressive symptoms (Fergusson & Woodward, 1999; Goodman et al., 2011; Kok et al., 2013; Ram & Hou, 2003; Slopen, Fitzmaurice, Williams, & Gilman, 2010).

The present study adds to the current literature in two ways. First, studying nontwin siblings of children with symptoms of psychopathology is relatively recent, and therefore, protective factors for psychopathology specific to this at-risk sample of children have received little empirical attention. Second, older sibling mentalization has not been previously examined as a protective factor for child mental health problems. Sibling relationships are prevalent and long lasting and therefore provide a unique context in which children develop social and emotional skills (Buist et al., 2013). Finally, due to the stability of internalizing problems (Côté et al., 2009; Sterba et al., 2007), factors that prevent internalizing

problems early on in the face of risk can have important prevention and intervention implications.

Method

Original Sample

The current study was embedded within a larger longitudinal birth-cohort study, the Kids, Families, and Places (KFP) study. Women giving birth in Toronto and Hamilton between April 2006 and February 2008 were considered for participation. Recruitment occurred through a provincial health care program (Healthy Babies Healthy Children), which contacted the parents of all newborn babies within days of the newborn's birth. Inclusion criteria were as follows: newborn child ("target child") weighing more than 1,500 g, at least one older child within 4 years of the newborn ("next in age older sibling"), and an English-speaking mother who agreed to be videotaped in the home. A total of 501 families were enlisted. At Time 1, target children were ~2 months, and these families were followed up at 18 months. The KFP sample was similar to the general population of Toronto and Hamilton (2006 census data) in terms of number of persons in the household and income but had fewer nonintact families and immigrants, as well as a higher proportion of educated mothers (Meunier, Boyle, O'Connor, & Jenkins, 2013). The University of Toronto Ethics Board approved all procedures for this study, including informed consent.

Current Study

The current study is based on data from families who participated at both Time 1 (T1) and Time 2 (T2) waves of data collection ($N = 397$). Attrition from T1 to T2 was related to social risk: maternal depressive symptoms, $\chi^2(df = 1) = 7.2, p = .01$; teenage parenthood, $\chi^2(df = 1) = 6.7, p = .02$; maternal education (<high school), $\chi^2(df = 1) = 10.5, p = .002$; and family income (<\$20,000), $\chi^2(df = 1) = 7.1, p = .01$. These variables were entered as covariates in the analyses. Of the participating families, 74.3% had two children living in the home and the remaining families had three or more children in the home. The mean age of target children at T1 was 2.00 months ($SD = 1.06$), and 52.6% of the sample was male. The mean age of their next in age older siblings was 2.61 years ($SD = .75$), and 51.6% were males. On average, children were 1.6 years older at T2. The sample was diverse; 60.7% of mothers were Caucasian, 13.9% were South Asian, 6.3% were Black, 12.6% were East/South East Asian, and 6.5% were classified as "other." Just over half the mothers (57.7%) were born in Canada. Mothers had an average of 15.52 ($SD = 2.59$) years of education, and partners had an average of 15.64 ($SD = 2.64$) years of education. Average household income level for the sample at T2 ranged from \$75,000–\$84,999.

Procedure

At T1 and T2, mothers participated in a 2-hr home interview and completed paper-and-pencil measures about family life and each participating child. Partners (mostly fathers but due to a small proportion of same-sex couples, we use the term *partner* through-

out the article) completed the same measures. Sibling dyads and mother-target child pairs were observed in interactions.

Measures

Target child internalizing problems (T2). Each parent separately reported target children's internalizing problems using scales from the Ontario Child Health Study (OCHS; Boyle et al., 1993). Parents rated eight statements (e.g., "seems to be unhappy, sad, or depressed") on a never/not true (1) to often/very true (3) scale. A mean of the items was calculated, with higher values representing more internalizing problems. Internal consistency was adequate for mothers ($\alpha = .66$) and partners ($\alpha = .73$). Mother and partner reports were correlated ($r = .52, p < .001$), and therefore, a mean was computed to create a composite. Since the OCHS has been most widely used in children between the ages of 4 and 16 years (Weeks et al., 2014), the correlation with another measure of internalizing symptoms in young children, the Brief Infant Toddler Social Emotional Assessment, was examined (Briggs-Gowan & Carter, 2008). The correlation was high, $r = .64, p < .001$.

Familial risk (T1). Each parent separately reported internalizing problems of the target child's older siblings (up to a maximum of three) as described above. On average, the next in age older sibling was 2.61 years old. In homes with more than one older sibling, the third sibling was on average 5.80 years old, and the fourth sibling was 8.02 years old. *Familial risk* was computed by taking the average of all older siblings' internalizing problems at T1. Internalizing problems in sibling pairs (target child at T2 and older sibling(s) at T1) were correlated compared to randomly chosen children from the population (intra-class correlation [ICC]; families with two children, $ICC = .22, p < .001$; families with three or more children, $ICC = .55, p < .001$).

Internal state talk and reasoning (T2). During the home visit, interviewers provided the target child and his or her next in age older sibling with a toy set and asked the older child to pretend play with their younger sibling for 10 min. Videotapes of sibling interactions were coded, and older sibling mentalization was operationalized as the presence of *internal state talk* (i.e., desires, emotions, beliefs) and *verbal reasoning* (justification or explanation of behavior) displayed by the older sibling during the pretend-play task. Behaviors were coded in 20-s snapshots. This temporal coding system has been validated in other studies (Pauker, Perlman, Prime, & Jenkins, 2016; Perlman, Lyons-Amos, Leckie, Steele, & Jenkins, 2015). Coders indicated the presence (1) or absence (0) of the older sibling's internal state talk and reasoning toward the younger sibling for each snapshot. Since some sibling dyads were unable to interact for the entire 10-min task (e.g., distraction), a final mentalization score was calculated by summing all instances of internal state talk and verbal reasoning divided by the number of snapshots. The internal consistency of the construct was good ($\alpha = .78$). Because the distribution of the variables making up the construct was zero inflated, the final mentalization score was dichotomized. Older siblings who had a score of 0 kept that score ($n = 120$). Siblings with any value greater than 0 were assigned a value of 1 ($n = 230$). The frequency of mentalization was similar for male (0 = 64, 1 = 113) and female next in age older siblings (0 = 56, 1 = 117). Due to the binary nature of all the variables included in the construct, a polychoric factor analysis was conducted in Stata 12.0 to measure

the construct's internal consistency. Initial polychoric factor analyses showed that the variable *beliefs* had a low factor loading (0.20) on the construct, which is not surprising given that the use of belief talk is less common in this age group than desire or emotion talk (Jenkins, Turrell, Kogushi, Lollis, & Ross, 2003). As a result, *beliefs* were removed from the construct and additional factor analyses were conducted. Eigenvalues demonstrated that the first factor explained 42% of the variance, and variables that make up the construct (desire, emotion, and reasoning) showed factor loadings ranging between 0.43 and 0.67. A graduate student (expert coder) and two undergraduate students (blind to the hypotheses of the study) coded all interactions. The expert coder double-coded 10% of the interactions, and reliability checks were carried out throughout the coding period to minimize drift ($\kappa = .92$).

The coding of covariates (target child gender, target child age, number of children in household, single mother, teenage mother, dyad age gap, household income, maternal sensitivity, and maternal depressive symptomatology) can be found in the online supplemental materials.

Data Analysis

Procedure. Multiple regression analyses were conducted using Mplus 7.2 to examine the relationship between familial risk and older sibling internal state talk and reasoning in the prediction of the target child's internalizing problems at T2. Covariates, predictor variables, and the interaction term (Familial Risk \times Internal State Talk and Reasoning) were included in the model. All continuous variables were centered to reduce multicollinearity between predictors and the interaction term and allow for testing of simple slopes (Holmbeck, 2002).

Missing data. Missing data for older sibling internal state talk and reasoning were low (12%). All other variables had minimal missing data (< 6%). Full-information maximum likelihood estimation was used to handle missing data, which estimates model parameters and standard errors using available information and is superior in terms of bias and efficiency compared to multiple imputation and listwise deletion (Enders & Bandalos, 2001).

Results

Descriptive statistics and correlations can be found in the online supplemental materials. Correlations were in the expected directions. Target child's internalizing problems at T2 and familial risk were moderately associated. There was a small negative association between target child's internalizing problems and older sibling internal state talk and reasoning. SES had a moderate relationship with the outcome variable, whereas single-mother status, teenage mother, maternal sensitivity, and maternal depressive symptoms had a small association.

Table 1 presents the results of the regression analysis. The overall regression, including covariates, predictors, and the interaction term, was statistically significant, $R^2 = .213, p < .001$, with 21% of the variance being accounted for by the main study predictors. Familial risk was significantly related to target children's internalizing problems, whereas sibling internal state talk and reasoning was marginally significant. The interaction was also significant, with 3.2% of the variance attributable to the interaction between familial risk and older sibling internal state talk and reasoning. Low SES was significantly associated with higher internalizing problems at T2.

To probe the nature of the significant interaction, the association between familial risk (one standard deviation above and below the mean) and target children's internalizing problems was plotted as a function of older sibling internal state talk and reasoning (Holmbeck, 2002; Figure 1). Testing of simple slopes demonstrated that the association between familial risk and internalizing problems was significant when older siblings did not exhibit internal state talk and reasoning, $\beta = 0.456, p < .001$, but not when older siblings displayed such abilities, $\beta = 0.073, ns$. Hence, high familial risk was associated with more internalizing problems in the absence of an older sibling who displayed internal state talk and reasoning skills. Further analyses to ensure that results were robust to data treatment decision are reported in the online supplemental materials.

Discussion

The goal of the present study was to examine the protective effect of sibling mentalization on child internalizing problems for

Table 1
Summary of Regression Analysis

	Internalizing problems (Time 2)	<i>b</i>	<i>SE</i>	β	<i>p</i> value
Covariates					
Socioeconomic status		-.191	.050	-.232	.000
Child gender		.017	.062	.013	.779
Child age		-.129	.232	-.030	.579
No. of kids in household		-.027	.033	-.031	.432
Single mother		-.110	.177	-.040	.533
Teenage mother		.356	.200	.111	.073
Dyad age gap		-.051	.047	-.054	.272
Maternal sensitivity		-.022	.042	-.026	.596
Maternal depression		.008	.005	.076	.129
Predictors					
Familial risk		.396	.085	.458	.000
Older sibling internal state talk and reasoning		-.121	.073	-.085	.091
Interaction					
Familial Risk \times Older Sibling Internal State Talk and Reasoning		-.333	.100	-.296	.001

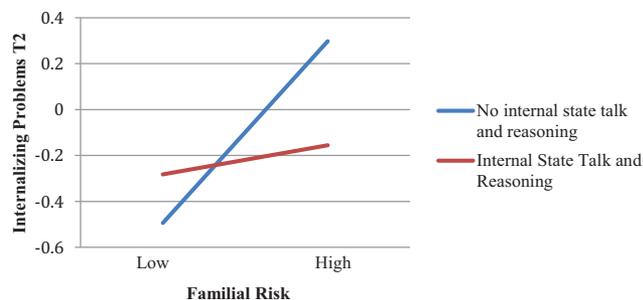


Figure 1. Children's internalizing problems as a function of familial risk and older sibling internal state talk and reasoning. Slope of no internal state talk and reasoning line is significant, $\beta = 0.456$, $p < .001$; presence of internal state talk and reasoning line is not, $\beta = 0.073$, ns . See the online article for the color version of this figure.

children at increased risk for developing such problems. In accordance with hypotheses, the interaction between familial risk and sibling mentalization was statistically significant. Target children at high familial risk for internalizing problems exhibited more internalizing problems than those children at low familial risk, but only if their older siblings did not display mentalizing abilities. Hence, older sibling mentalization was a protective factor for target children at high familial risk. These findings support the concept of resilience: A protective factor does not confer advantage to all children but rather only to children who need it the most, in this case being children at high familial risk (Jenkins, 2008).

Results also revealed that familial risk at T1 was significantly associated with higher target child internalizing symptoms at T2, supporting the work of Ma and colleagues (2015), demonstrating that siblings of children with internalizing problems are more likely to develop internalizing problems themselves compared to siblings of healthy children. Target children from lower SES households were more likely to develop internalizing problems, supporting research showing that internalizing problems tend to aggregate in economically disadvantaged families (Slopen et al., 2010). Finally, there was no significant correlation between familial risk and sibling internal state talk and reasoning, demonstrating that these processes are different and can be separated. This finding was also evident when examining the correlation between next in age older sibling's internalizing problems and older sibling mentalization ($r = -.10$, ns).

Findings of the protective effect of sibling mentalization can be considered through a sociocognitive framework. It has been suggested that children construct social understanding through interactions with their siblings (Howe & Rinaldi, 2004). Older siblings who direct internal state language toward their younger sibling may support young children in beginning to think about and discuss their own and others' thoughts, feelings, and behaviors (Dunn, Bretherton, & Munn, 1987). As a result, toddlers can begin to acquire the foundational skills that will later facilitate the integration of emotional and psychological experience, which may prevent internalizing symptoms in the face of risk. Internal state talk by an older sibling may also scaffold emotion knowledge in the younger sibling (Schultz et al., 2001). Children may acquire the skills needed to evaluate and process emotional stimuli, which may promote their own emotion regulation and protect against internalizing symptomatology (Schultz et al., 2001).

An alternative explanation of the results may be that mentalization promotes secure attachment between siblings. For instance, similar to parents, a sibling who is able to perceive behaviors and emotional states through the child's eyes can create a secure attachment that provides a child with a sense of security, which provides a context in which young children learn healthy emotion regulation strategies (DeKlyen & Greenberg, 2008). As a result, children who exhibit secure base behavior with their sibling may be less likely to develop feelings of fear and hopelessness associated with anxiety and depression in the face of risk (Buist et al., 2013).

Limitations and Conclusions

The current findings should be considered in light of limitations. First, to reduce burden on families, we only collected observational data on the next in age older sibling. In the future, it would be useful to examine mentalization of all siblings in the home and its relation to mental health. Second, since target children were 2 months old at T1, a baseline measure of internalizing problems was not conducted. Future work should longitudinally examine internalizing problems to enable statements of directionality between predictor and outcome variables.

These limitations should be viewed in the context of the strengths of this study. To our knowledge, this is the first study to examine the protective effects of sibling internal state talk and reasoning on internalizing problems. The results of this study add to the literature of the protective effects of sibling relationships and offer new avenues for prevention of internalizing problems. Moreover, utilizing different respondents for the predictor and outcome variables suggests that the results are a valid reflection of the relationship between familial risk, older sibling internal state talk and reasoning, and child outcome rather than a product of reporter bias.

Investigating protective factors for siblings of children with internalizing problems is an important area of research given the strong stability of internalizing symptoms across the life course with downstream consequences on peer relations, academic achievement, and early mortality (Bayer et al., 2011). Therefore, examining factors that may promote resiliency can have important prevention and intervention implications.

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Call for Papers for a Special Section of the *Journal of Family Psychology*: Grandparents Across Cultural Contexts

Editor: Belinda Campos

The *Journal of Family Psychology* invites manuscripts for a special section on grandparents across cultural contexts. Grandparents are recognized by scholars and laypeople alike as having a special role in families. Despite this recognition, research that studies grandparents or the experiences of other family members with grandparents is rare. Yet, there is reason to believe that grandparents are more important than ever due to longer human life spans. Grandparents across the world are active in the lives of their grandchildren at various life stages and, at times, take on the role of primary caregiver. Moreover, there is great cultural variability in family relationships and much to learn about grandparents from the world's cultures. For example, in many parts of the world, grandparents are the key people entrusted by parents to take care of children while in others grandparents play more hands-off roles. Grandparents may fill important kin-keeper roles that bind families together or provide critical material resources for children and grandchildren (e.g., assistance with education costs or the purchase of property). Thus, empirical research that addresses grandparents and examines grandparenting across cultural contexts needs to be added to the family psychology knowledge base.

The intent of this special section is to bring together empirical papers examining grandparent's roles in their families, including, but not limited to the lives of adult children, grandchildren, and society more broadly as well as the ways in this unique relationship contributes to more well-studied family processes (e.g., attachment, relationship quality, conflict, emotion in social interaction). Altogether, this section is envisioned to bring together cutting-edge research on grandparents and provide novel insights on the contribution of grandparents to the psychology of families. We look forward to empirical studies that examine grandparents within their cultural contexts to consider for publication.

The deadline for receipt of papers for this special section is **January 1, 2018**. Questions regarding the special section should be addressed to the section editor (bcamposuci.edu). Please follow the journal's Instructions to Authors for information about how to prepare an article, which can be found on the journal's web page: www.apa.org/journals. Manuscripts must be submitted electronically through the Manuscript Submission Web Portal of the *Journal of Family Psychology* (www.apa.org/journals/fam.html). Please be sure to specify in the cover letter that the submission is intended for the special section on grandparents. All papers will be initially screened by the editors and papers that fit well with the theme of this special section will be sent out for blind peer review.