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## Minor Illnesses, Temperament, and Toddler Social Functioning

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### Abstract

**Research findings**—Minor illnesses, such as upper respiratory infections, stomachaches, and fevers, have been associated with children’s decreased activity and increased irritability. Mothers of children who are frequently ill report more child behavior problems; however, previous research in this area has yet to simultaneously examine children’s temperament. This investigation examined whether experience with recurrent, minor illnesses and negative emotionality worked together to predict young children’s social functioning. This multi-method study utilized a sample of 110 daycare-attending children. Nurses went to the daycare centers weekly to perform health screens on the participating children. Minor illness experience was represented using a proportion created by dividing the number of illness diagnoses by the total number of health screenings completed from the time the child was enrolled in the study through his or her second birthday. Toddlers’ negative emotionality and social behavior were assessed using mothers’ and fathers’ reports. The two dimensions of negative emotionality and minor illness experience operated in different ways such that anger worked additively with minor illness experience and fearfulness interacted with minor illness experience to predict social behavior. Children who were described as more temperamentally angry displayed less social competence especially when they also experienced high proportions of minor illness. Temperamentally fearful children exhibited more externalizing problems when they experienced a higher frequency of illness whereas fearfulness was not associated to externalizing problems for children who experienced low proportions of illness.

**Practice or Policy**—Children’s frequent experience with minor illnesses combined with negative emotionality appears to place toddlers at a heightened risk for exhibiting behavior problems. These findings have implications for child and family well-being as well as interactions with childcare providers and peers within childcare settings. Interventions could be developed to target “at risk” children.

Children’s ability to successfully interact with their parents, siblings, and peers has been linked to positive developmental outcomes for children (Ladd, 1999; Tomasello, 2007). Positive social functioning is critical to success in school and work, resilience in the face of adversity, and resistance to mental disorders (Denham, 2006). Toddlerhood has been identified as a critical period for children’s internalization of parental rules and standards

with respect to behavior as well as morality (Emde, Biringen, Clyman, & Oppenheim, 1991; Kagan, Reznick, Snidman, & Garcia-Coll, 1984; Kochanska, 1994). Specifically, skills learned during this developmental period may set the stage for how children will later navigate their social world. Physical and psychological factors have been shown to influence social behavior in children (Eisenberg et al., 2009; Mattsson & Weisberg, 1970). While temperament has consistently been linked to social functioning in toddlerhood (Eisenberg, Fabes, Guthrie, & Reiser, 2000), less research has explored young children's early experience with minor illnesses. Given Mary Rothbart's research that temperament and its behavioral outcomes may indeed fluctuate with a child's development and exposure to environmental factors (Putnam & Sifter, 2008), the current investigation sought to explore the simultaneous contributions of temperament and children's experience with minor illnesses to their social functioning.

## Temperament and Social Functioning

Temperament refers to genetically-based individual differences in behaviors, including, but not limited to, activity level, emotional intensity, and regulation of emotions (Eisenberg et al., 2009; Paulussen-Hoogeboom, Stams, Hermanns, Peetsma, & van den Wittenboer, 2008; Rothbart, Ahadi, & Evans, 2000). These relatively stable characteristics are first displayed during infancy (McCrae et al., 2000) and have been linked to social functioning across childhood (Eisenberg, Fabes, Guthrie, & Reiser, 2000). For example, a child described as having a difficult temperament might display a high activity level, low regulatory control, high emotional reactivity, and proneness to anger (Eisenberg et al., 2009). Research investigations have overwhelmingly demonstrated associations between difficult temperament and maladjustment throughout childhood (Rothbart et al., 2000; Rubin, Burgess, & Hastings, 2002; Van Hecke et al., 2007). One study assessed children at two years of age and placed them into one of three temperamental categories: inhibited children whom displayed fearful behavior, less inhibited "exuberant" children, or low reactive children (Stifter, Putnam, & Jahromi, 2008). Findings from Stifter et al. (2008) indicated that children who were less inhibited displayed more problem behaviors than their counterparts when they reached preschool age.

Of the three main temperament constructs, extroversion, effortful control, and negative emotionality (Rothbart & Bates, 1998; Gartstein & Rothbart, 2003), research suggests that negative emotionality may be the most relevant to young children's behavior problems (Eisenberg et al., 2005; Singh & Waldman, 2010). Negative emotionality, defined as a child's inclination to react to stressful or novel situations with higher displays of negative emotions, such as anger, fear, and irritability (Paulussen-Hoogeboom et al., 2008), has consistently been associated with higher levels of internalizing and externalizing behaviors which, in turn, may negatively impact social competence (Eisenberg et al., 2009; Paulussen-Hoogeboom et al., 2008). Some researchers, however, have argued for the need to distinguish between the various types of negative emotions given their differential associations to children's social outcomes (Bridges, Denham, & Ganiban, 2004; Dougherty, 2006; Eisenberg et al., 2001; Muris, Meesters, & Blijlevens, 2007). In fact, research has found that fearful reactions to stressful or novel situations were more strongly related to internalizing problems (i.e., social withdrawal, depression) whereas anger and frustration were more strongly related to externalizing behaviors or aggressive tendencies (Eisenberg et al., 2001; Muris et al., 2007). In light of this research, the current study examined the emotional dimensions of anger and fearfulness separately with respect to toddlers' behavioral outcomes. Two sets of regression models were conducted, one set included anger and one set included fearfulness. We expected that, in line with previous research, different patterns of associations may exist for anger and fearfulness.

## Minor Illnesses and Social Functioning

Children's experiences with illness have clear repercussions on cognitive and social functioning (Fransoo, Roos, Martens, Heaman, Levin, & Chateau, 2008). For example, Gartstein, Noll, and Vannatta (2000) found that maternal reports and peer ratings of aggressive behaviors were higher for children with chronic illnesses. In contrast, others have found that chronically ill children displayed more submissive behavior and were less aggressive (Meijer, Sinnema, Bijstra, Mellenbergh, & Wolters, 2000). Regardless of the direction of effects, the ramifications of these studies are the same: children's social functioning may be hampered by their illness experience. That said, much of the research to date has focused on children's experience with chronic illnesses (i.e., diabetes, juvenile arthritis, cystic fibrosis) whereas children's minor illnesses, with the exception of ear infections (Roberts et al., 2004; Vernon-Feagans, Hurley, Yont, Wamboldt, & Kolak, 2007; Vernon-Feagans & Manlove, 2005), have garnered little attention.

The lack of research on children's minor illnesses is somewhat surprising given the frequency of children's upper and lower respiratory infections, stomachaches, and fevers. Moreover, research demonstrates that children with minor illnesses experience lower activity levels, fatigue, loss of appetite, increased irritability, and loss of age-appropriate behaviors during the time they were ill (Mattsson & Weisberg, 1970). Another study found that children experiencing minor illnesses accompanied by a fever also showed behavioral changes such as being less active and crying more (Haskins, Hirschbiel, Collier, Sanyal, & Finkelstein, 1981). Unlike children who suffer from chronic illnesses, children experiencing minor illnesses are often still attending school and attempting to navigate peer relationships while struggling with the previously mentioned symptoms; thus more directly affecting their social interactions. Therefore, we don't really see chronic and minor illness on a continuum, but rather we believe they may work in unique ways to impact children's social functioning. Even though illnesses that are relatively minor and of short duration may not necessitate visits to the doctor, it seems plausible that children who experience minor illnesses on a reoccurring basis may be at an increased risk for poor developmental outcomes. Indeed, research on children's experiences with recurrent, minor illnesses during preschool found a positive association between the number of illness episodes and maternal reports of behavior problems (Hart, Bax, & Jenkins, 1984). Though the empirical evidence suggests that children's frequent experience with minor illnesses negatively impacts their social behavior, these studies are limited in two ways. First, they relied on parent reports or doctor's visits to diagnosis the illness. The current study included a rigorous measure of minor illnesses. Nurses conducted weekly health screenings at the daycare centers. Second, none of these studies simultaneously examined the role of temperament. Thus, by including temperament we are able to consider the role that recurrent, minor illnesses play once temperament is considered and to examine the interaction between temperament and minor illnesses.

### Temperament × Minor Illnesses

The present study examined children's experience with recurrent, minor illnesses and their temperamental characteristics on early social functioning. The first goal was to examine whether children's experience with illness uniquely contributed to children's social functioning. We hypothesized that children with higher proportions of minor illnesses would display less social competence and more behavior problems. The second goal was to examine the interactive effects of temperament and minor illness experience on social functioning. In line with a sensitivity to context argument (Ellis, Boyce, Belsky, Bakermans-Kranenburg & van IJzendoorn, 2011), which contends that behaviorally reactive children may be more vulnerable to environmental stressors, we hypothesized that angry or socially fearful children would be at a greater risk for impaired social competence and higher levels

of behavioral problems when confronted with more experiences of minor illness. We have conceptualized recurrent, minor illnesses as an “environmental stressor” that may place angry or fearful children at an increased risk for poor developmental outcomes.

## Method

### Participants

One hundred and ten families consented to participate in an IRB-approved longitudinal study examining the health and development of daycare-attending children. Two-parent families were recruited from 11 daycare centers in central Pennsylvania before the child’s first birthday. To be eligible for participation in this study, both parents in each family had to be willing to participate in home visits that were conducted when the child was 1, 2, and 3 years of age. During these visits, couples were administered an interview about a typical day in their home. This interview included questions about demographic information that were considered as possible covariates in the current investigation, such as household income, education level, employment status, number of work hours, child’s age at entry into childcare, and number of hours in childcare. Mothers and fathers participated in a series of observational paradigms, including a family play, a family clean-up task, and a parent-child book reading task. Mothers and fathers also completed questionnaires about the target child’s temperament and behavior. As part of families’ participation in the study, children received weekly health screenings by the study nurses at their daycare centers.

The sample was comprised of 50 male and 60 female children who entered daycare, on average, at 3 months of age ( $SD = 2$  months). By the age of 2, the children were spending an average of 37 hours per week ( $SD = 10$  hours) in childcare. The sample consisted of predominately dual-earner, Caucasian families (94%) with 55% of the families earning between \$60,000 and \$100,000 annually. Fathers were, on average, 36 years old ( $SD = 6$  years) and worked an average of 45 hours per week. Mothers were, on average, 35 years old ( $SD = 5$  years) and worked an average of 38 hours per week.

### Measures

**Temperament**—The 108-item Toddler Behavior Questionnaire (Goldsmith, 1996) was utilized to assess child temperament when the child was 2 years old. Mothers and fathers rated each item on a 7-point scale ranging from 1 = never to 7 = always. The social fearfulness and anger/frustration subscales ( $\alpha$ ’s ranged from .89 to .91) were utilized in the current study. The social fearfulness subscale, comprised of 19 items, included items that tapped children’s fearfulness in novel or stressful situations. The anger/frustration subscale, comprised of 28 items, assessed behaviors such as crying, protesting, and frustration to limits. Mothers’ and fathers’ reports of social fearfulness ( $r = .25, p < .05$ ) and anger/frustration ( $r = .43, p < .001$ ) were correlated. Though the correlations between mothers’ and fathers’ reports were modest, their reports were averaged to reduce single reporter bias (Rushton, Brainerd, & Pressley, 1983).

**Child Illness**—Nurses visited daycare centers weekly to conduct health screenings on the children enrolled in the study. Upon completing the health screening, which included taking the child’s temperature, examining his or her ears, nose and throat, and listening to his or her lungs, the nurses made a diagnosis. Diagnoses included: upper respiratory infection, lower respiratory infection, gastrointestinal and other. It was common for children with respiratory infections to also show symptoms consistent with otitis media (i.e., inner ear infection); about half of the respiratory infection diagnoses were accompanied by a secondary diagnosis of otitis media. For the children included in this sample, nurses completed over 5000 health screenings. Each child had to receive a minimum of 15 health screenings from the time of

his or her enrollment in the study through his or her second birthday to be included in the current report; however, children received an average of 48 diagnoses ( $SD = 12$ ). A proportion score was then created for each child to represent his or her experience with minor illnesses. This proportion was created by dividing the number of illness diagnoses by the total number of diagnoses made. Proportion of minor illness scores ranged from .17 to .91 ( $M = .52$ ,  $SD = .16$ ).

**Social Behavior**—The 80-item Social Competence and Behavior Evaluation (SCBE) Scale (LaFreniere, Dumas, Capuano, & Dubeau, 1992) was utilized to assess social functioning at 2 years of age. Parents rated each item on a 6-point scale from 1 = never to 6 = always. Social competence, comprised of 40 items, included statements such as: “my child is sensitive to another’s problems” and “my child laughs easily.” Internalizing problems, comprised of 20 items, included statements such as: “my child maintains neutral facial expression (doesn’t smile or laugh)” and “my child remains apart/isolated from the group.” Externalizing problems, comprised of 40 items, included items such as: “my child is irritable, gets mad easily” and “my child hits, bites or kicks other children.” Even though the SCBE was initially designed for use with teachers, this measure has been used successfully with parents (Lobo & Winsler, 2006). For example, Lobo and Winsler reported parents’ internal reliability alphas similar to those found for teachers. They also found that parent and teacher reports were significantly correlated and that the patterns of findings in their study were similar regardless of the reporter. In the current study, internal consistency reliabilities were high for each of the subscales ( $\alpha$ 's ranged from .74 to .93). Mothers’ and fathers’ ratings were correlated ( $r$ 's = .27 to .34) and thus, to reduce single reporter bias, their scores were combined to create more robust composites for each subscale (Rushton et al., 1983).

**Child Care Quality**—The current report is part of a larger study of daycare attending children. A primary focus of the larger study was to examine child care quality and its impact on children’s health and development. Structural characteristics, such as ratios, group size, caregiver education, in line with NICHD Early Child Care Research Network (1999) were assessed. Process quality was assessed using Arnett’s Caregiver Interaction Survey (CIS; Arnett, 1989). For a more complete description of the coding of structural and process quality as well as how these indices were combined into one measure of child care quality, see Vernon-Feagans and Manlove (2005). The continuous measure of child care quality, where higher scores reflected higher quality, was considered as a covariate in the current investigation.

## Results

The overarching goal of this study was to examine the unique and joint contributions of temperament and experience with minor illnesses on children’s social functioning. First, correlations among the variables of interest were examined. Second, correlations were examined between potential covariates and social behavior. Third, regression analyses were conducted to examine the unique and combined contributions of temperament and minor illness experience on social behavior. Findings from these analyses will be presented.

Bivariate associations among the study variables are presented in Table 1. As shown in this table, anger and social fearfulness were positively correlated with problem behavior and negatively associated with social competence. Proportion of minor illness was not significantly correlated with temperamental characteristics or social functioning; however, as shown by the regression analyses presented below, minor illness experience works in combination with anger and social fearfulness to predict behavior.

Demographic characteristics (e.g., household income, parental education) child care experiences (e.g., age at entry into child care, number of hours per week in child care) and child care quality were examined as potential covariates for the regression models described below. Child care quality and children's child care experiences were not significantly related to social behavior in the current study. Household income was not significantly related either; however, maternal education, was positively associated with parents' ratings of internalizing problems ( $r = .20, p < .05$ ). Therefore, maternal education was included as a covariate in the regression models for internalizing problems.

To understand the contributions of minor illness experience above and beyond the contribution that temperamental characteristics (anger, social fearfulness) have on child adjustment (social competence, internalizing problems, externalizing problems), a total of 6 hierarchical regression models were tested – 3 models for anger and 3 models for social fearfulness. Temperament was entered in Step 1. Maternal education was also included as a covariate in Step 1 for the models examining internalizing behavior problems. Proportion of minor illnesses was entered in Step 2 and the interaction term of temperament and proportion of minor illnesses was entered in Step 3.

As shown in Table 2, each of the regression models that included anger explained a significant amount of variance in social competence, internalizing problems, and externalizing problems. Minor illness experience did not contribute additively or interactively to internalizing or externalizing behavior problems; however, minor illness experience explained a significant amount of the variance in social competence above and beyond anger. To better represent the associations between anger, proportion of minor illness, and social competence, regression lines were plotted (see Figure 1) for low (i.e., 1 SD below the mean) and high (i.e., 1 SD above the mean) levels of anger and proportion of minor illness. As shown in Figure 1, children with high proportions of minor illness displayed less social competence than children with low proportions of minor illness. In addition, temperamentally angry children displayed lower levels of social competence than children with low levels of anger. The regression models that included fear each explained a statistically significant amount of variance in social functioning (see Table 3). Minor illness experience did not contribute uniquely or interactively to social competence or internalizing problems; however, a significant interaction between social fearfulness and minor illness experience emerged for externalizing problems. Figure 2 illustrates the interaction between social fearfulness and minor illness experience. Following procedures outlined by Aiken & West (1991), simple slope analyses were conducted to test whether each of the plotted regression lines was significantly different from zero. Simple slopes analyses revealed that the slope of the line reflecting high proportions of minor illnesses was significantly different from zero,  $b = .37, t < .01$ , whereas the slope of the line depicting low proportions of illness was not significantly different from zero,  $b = .01, p = .96$ . Social fearfulness was associated with more externalizing behaviors when children experienced high proportions of minor illnesses from the time of entry into center-based care. Conversely, there was no association between social fearfulness and externalizing problems when children had low levels of minor illnesses.

## Discussion

This investigation was the first to our knowledge to simultaneously examine children's experience with minor illnesses and temperament as correlates of early social functioning. Unlike previous research on illness which relied on doctors' visits, this study included a rigorous measure of illness experience. Children were screened weekly, regardless of whether they were exhibiting symptoms, at their respective daycares by study nurses. Thus, this approach enabled us to gain a more nuanced understanding of children's experience

with illness, especially those illnesses that may not necessitate a doctor's visit. Although the pattern of findings were different depending on the temperament dimension, anger or fearfulness, the results of this study support the notion that children with higher levels of negative emotionality may be at a heightened risk for poor outcomes when they also experience recurrent, minor illnesses.

Consistent with previous research, both dimensions of negative emotionality, anger and fearfulness, were positively associated with problem behaviors and negatively associated with social competence (Eisenberg et al. 2009; Paulussen-Hoogeboom et al., 2008). Regression analyses; however, revealed unique patterns depending on whether anger or fearfulness was included in the model. In the models that included anger, minor illness experience was a unique predictor of social competence after accounting for anger; however, illness did not emerge as a unique predictor of problem behavior nor did it interact with anger to predict any child outcomes. Given that internalizing and externalizing behavior are likely to be highly dependent upon one's disposition (Eisenberg et al., 2000), it is not necessarily surprising that minor illnesses did not contribute to problem behavior in the presence of anger. It is possible that the behavioral aspects of temperament and problem behavior may contain several overlapping features that limited our ability to detect the influence of illness experience on behavior problems. In contrast, features of social competence, such as cooperation, enjoyment, and empathy, are more distinct from the behavioral aspects of anger and thus, after taking anger into account, there was still a substantial amount of variance to be accounted for in social competence. Indeed, children's frequent experience with minor illnesses was a unique predictor of children's social competence such that children who experienced more frequent illnesses displayed less prosocial behavior. This finding is supported by previous research which suggests that children are more irritable and less active when ill (Haskins et al., 1981; Mattsson & Weisberg, 1970). These types of behaviors may interfere with children's ability to engage positively with those around them.

A different pattern of findings was found for the models including social fearfulness. Experience with minor illness did not make unique contributions to social competence or internalizing problems. Following from our earlier speculations, it may be that the features indicative of social fearfulness are highly related to these outcome variables thereby limiting the predictive power of illness experience. For example, socially fearful children display inhibition in social settings that may interfere with their ability to engage with others (Biederman et al. 2001, Kagan 1984, Kagan, Reznick & Snidman 1987, & Rubin, Burgess & Hastings 2002). Children's proportion of minor illnesses, however, worked in conjunction with social fearfulness to predict externalizing problems. Findings suggest that the experience of recurrent, minor illnesses may place socially fearful children at a greater risk for poor behavioral outcomes. In contrast, the association between fearfulness and externalizing problems was not significant for children exposed to fewer bouts of illness. Children who display higher levels of inhibition are more vulnerable when they experience more minor illnesses. These results provide support for both a differential susceptibility (Belsky, 1997) and sensitivity to context model (Ellis et al., 2011) in that children who display higher levels of inhibition appear to be more vulnerable in the face of an environmental stressor, such as minor illness experience.

The current investigation sheds light on how children's own physical and psychological characteristics contribute to their social functioning; however, as this investigation demonstrated, there was still considerable variance to be explained in children's behavioral outcomes. While parenting practices and family dynamics were beyond the scope of this particular paper, we fully acknowledge the important role that these environmental factors play in children's early social development. For example, sensitive parenting has been

associated with more positive social outcomes for children whereas unresponsive parenting behavior has been linked to negative outcomes for children (Denham et. al., 2000). Moreover, investigations that have included fathers have considered emergent family dynamics, such as coparenting, and their role in the prediction of children's social functioning (Kolak & Vernon-Feagans, 2008; Volling, Kolak, and Blandon, 2009). Kolak and Vernon-Feagan's (2008) study illustrated that positive coparenting behavior was protective for toddlers, especially daughters, in the face of family stress. Family dynamics may be adversely impacted by children who are temperamentally sensitive or who are frequently ill which could, in turn, exacerbate children's behavior problems. In contrast, family environments, characterized by warmth and supportiveness, may be better able to support children's development.

This investigation was also limited in two other ways. First, children had to be attending daycare prior to their first birthday to be enrolled in this study. As a result, all of the parents were dual-earner couples, and thus, this recruitment strategy may have limited the sample diversity, especially with respect to socioeconomic status and the generalizability of these findings to other populations. Second, this study's procedure for assessing illness may have underestimated children's illness experiences, especially illnesses that included vomiting or fever. Most daycare centers have policies that prohibit children's attendance when these symptoms are present and therefore, it is possible that a child may not have been screened by the nurse because he or she was absent due to illness.

Even though this methodology may have interfered with our ability to fully capture children's illness experience when they were absent from daycare, utilizing objective exams performed by medical professionals was a significant improvement over prior research and one of the main strengths of this investigation. Some research has relied on parental reports of children's illness (Rocha & Prkachin, 2007); however, children under the age of two lack the vocabulary necessary to accurately express illness symptoms (Franck, Noble, & Lioffi, 2010). Thus, studies relying on parent reports likely underestimate children's illness experiences. Previous research has considered the number of children's doctor visits as an indicator of children's illness experience (Fransoo et al., 2008); however, this approach may also underestimate the occurrence of minor illness because minor illnesses may not require a visit to the doctor.

A second strength of this study was that multiple methods – parental reports and nurses' health screenings – were utilized to assess the constructs. Children's proportion of minor illnesses was not correlated with the temperament dimensions. It is likely that had parents provided reports of children's illness experience the shared method variance between these constructs would have made it more difficult to examine their simultaneous impact on social functioning due to the possibility of parents misinterpreting a minor illness with general fussiness or negative temperament. Indeed, it is possible that parents' ratings of temperament were influenced by the negative behavior (i.e., irritability, distress) children exhibit when they are sick (Haskins et al., 1981; Mattsson & Weisberg, 1970). Finally, mothers' and fathers' reports of children's temperament and social behavior were composited to create more robust variables. This procedure reduced the likelihood that the associations between temperament and social functioning were due solely to biases of one reporter (mothers).

In summary, temperamentally vulnerable children who experience frequent illnesses appear to be more susceptible to poor developmental outcomes. These findings highlight the complexity of social functioning and future research should continue to explore the additive and interactive effects of individual characteristics, both physical and psychological, on children's behavior. In addition, the difficulties associated with caring for children who are



frequently ill and exhibiting problem behavior may affect the entire family and thus, investigations that examine the impact that children's minor illnesses on parenting stress and overall family functioning would be beneficial. This research also has implications for those who regularly interact with young children in child care settings. It serves to illustrate that temperament characteristics and illness experience can be conceived as risk factors that shape children's early social experiences and their social functioning. Given the importance of child's social competence and behavioral regulation to their success across the life span, it would be wise to develop interventions to buffer "at risk" children from poor developmental outcomes and their families from associated distress.

## Acknowledgments

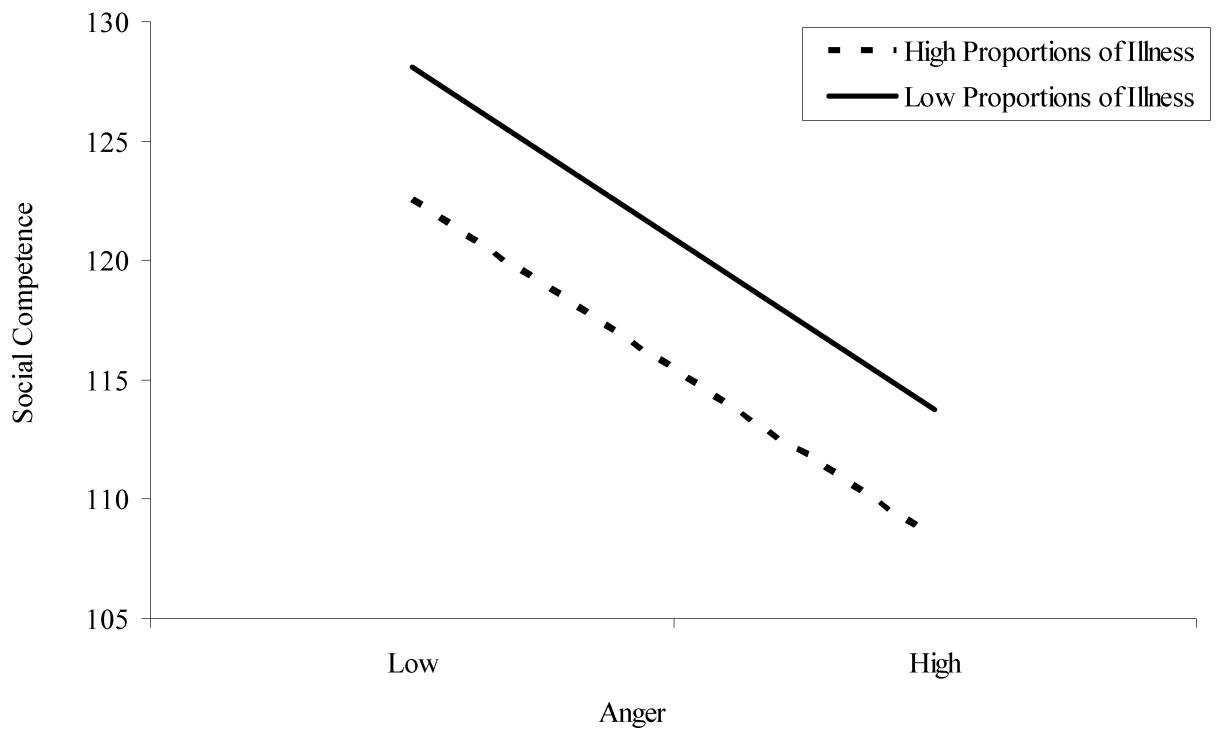
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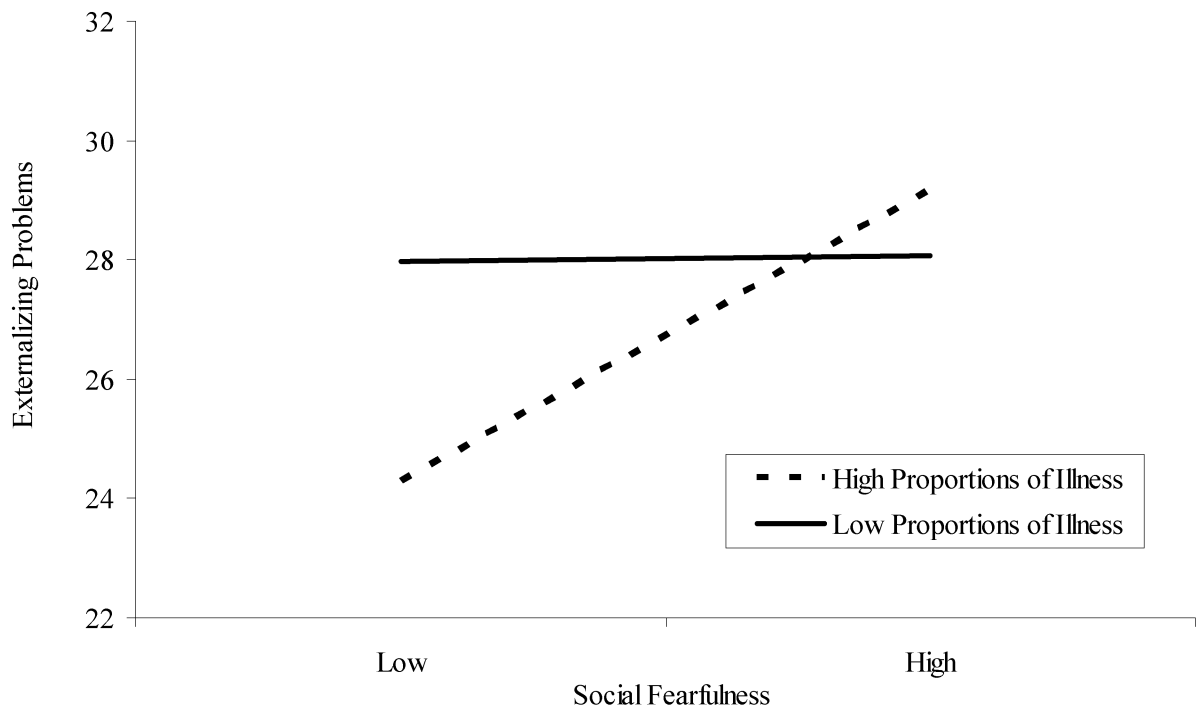
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**Figure 1.** The association between anger and social competence for low and high proportions of minor illness.



**Figure 2.**  
The interaction between social fearfulness and proportion of minor illness experience on externalizing problems.

**Table 1**Intercorrelations among proportion of illness, temperament, and social functioning ( $n = 110$ )

	1.	2.	3.	4.	5.	6.
1. Minor Illness Experience	-					
2. Anger	-.10	-				
3. Social Fearfulness	.12	.25**	-			
4. Social Competence	-.13	-.44***	-.32***	-		
5. Internalizing Problems	.08	.26**	.36***	-.58***	-	
6. Externalizing Problems	-.07	.71***	.19*	-.53***	.40***	-

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

**Table 2**

Regressions examining the contribution of minor illness experience to the prediction of child social functioning above and beyond anger ( $n = 110$ )

	$\beta$	$\Delta R^2$	$\Delta F$
Social Competence			
Step 1: Anger	-.44***	.20	26.54***
Step 2: Minor Illness Experience	-.17*	.03	4.11*
Step 3: Anger $\times$ Minor Illness Experience	.00	.00	.00
<i>Final Model: <math>R^2 = .23</math>; <math>F(3, 106) = 10.37</math>***</i>			
Internalizing Problems <sup>a</sup>			
Step 1: Maternal Education	.24*	.12	7.38***
Anger	.27**		
Step 2: Minor Illness Experience	.08	.01	.70
Step 3: Anger $\times$ Minor Illness Experience	.03	.00	.12
<i>Final Model: <math>R^2 = .13</math>; <math>F(4, 103) = 3.85</math>**</i>			
Externalizing Problems			
Step 1: Anger	.71***	.51	111.03***
Step 2: Minor Illness Experience	.00	.00	.00
Step 3: Anger $\times$ Minor Illness Experience	.02	.00	.08
<i>Final Model: <math>R^2 = .51</math>; <math>F(3, 106) = 36.38</math>***</i>			

<sup>a</sup>Maternal education was missing for two cases; therefore, the sample size for this analysis was based on a sample of 108.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

**Table 3**

Regressions examining the contribution of minor illness experience to the prediction of child social functioning above and beyond social fearfulness ( $n = 110$ )

	$\beta$	$\Delta R^2$	$\Delta F$
<b>Social Competence</b>			
Step 1: Social Fearfulness	-.32***	.10	12.31***
Step 2: Minor Illness Experience	-.09	.01	.93
Step 3: Social Fearfulness $\times$ Minor Illness Experience	.12	.01	1.71
<i>Final Model: <math>R^2 = .12</math>; <math>F(3, 106) = 5.01</math>**</i>			
<b>Internalizing Problems<sup>a</sup></b>			
Step 1: Maternal Education	.22*	.18	11.28***
Social Fearfulness	.35***		
Step 2: Minor Illness Experience	.00	.00	.00
Step 3: Social Fearfulness $\times$ Minor Illness Experience	.07	.00	.54
<i>Final Model: <math>R^2 = .18</math>; <math>F(4, 103) = 5.70</math>***</i>			
<b>Externalizing Problems</b>			
Step 1: Social Fearfulness	.19*	.04	4.17*
Step 2: Minor Illness Experience	-.10	.01	1.02
Step 3: Social Fearfulness $\times$ Minor Illness Experience	.19*	.04	4.12*
<i>Final Model: <math>R^2 = .08</math>; <math>F(3, 106) = 3.15</math>*</i>			

<sup>a</sup>Maternal education was missing for two cases; therefore, the sample size for this analysis was based on a sample of 108.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$