

The Influence of Shyness and Social Approach/Withdrawal on the
Relationship between Interpersonal and Non-Interpersonal Stressors and Anxiety
Problems in Pre-Adolescent and Adolescent Children

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Dedication

I want to thank my father, mother, and brother for their unconditional love and support, as well as the many extended family members who have given me so much throughout my life. My parents have always been and continue to be so caring and generous and they are an inspiration to me. I am extremely grateful to have them. I especially want to thank my fiancé, Christopher, for his love, patience, and understanding throughout this process. I consider myself very fortunate to have such a wonderful partner in my life.

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Abstract of Dissertation

The Influence of Shyness and Social Approach/Withdrawal on the Relationship between Interpersonal and Non-Interpersonal Stressors and Anxiety Problems in Pre-Adolescent and Adolescent Children

This study investigated the relationship between interpersonal stressors and anxiety, as moderated by shyness and social approach/withdrawal tendencies. It was hypothesized that when faced with various types of stressors, children who are rated as shy with a tendency towards social withdrawal are at greater risk for anxiety problems than children rated as sociable with a tendency towards social approach. It was also hypothesized that shyness and social approach/withdrawal have a greater impact on the relationship between interpersonal stressors and anxiety than non-interpersonal stressors. Data was drawn from a larger joint study of coping and job loss, conducted through The George Washington University and Arizona State University. Cross-informant data obtained from both the parent and child from a large sample of 203 subjects were analyzed. The model proposed in this study was not supported, although analysis indicated that higher levels of interpersonal stressors are associated with higher levels of anxiety in contrast to non-significant findings regarding the association of non-interpersonal stressors and anxiety. These findings are discussed, including how both null results and significant findings provide direction for future research, as well as clinical implications for the treatment of children and adolescents.

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Introduction

There is interest in the relationship between stressors and anxiety, not only to further the understanding of theory but also to inform clinical interventions (Boer, Markus, Maingay, Lindhout, Borst, & Hoogendijk, 2002; Grant, Compas, Stuhlmacher, Thurm, McMahon, & Halpert, 2003; Kendler, Hettema, Butera, Gardner, & Prescott, 2003; McLowry, 1998; McMahon, Grant, Compas, Thurm, & Ey, 2003). Literature indicates that temperament is one factor that can have a significant impact on the vulnerability to stressors and their impact on the development of psychopathology (Bolger & Zuckerman, 1995; Compas et al., 2001; Clements & Turpin, 2000; Fordham & Stevenson-Hinde, 1999; Lengua et al., 1999; Lonigan, et al., 2004; Masi et al., 2003; McKnight, Huebner, & Suldo, 2002; O'Neill et al., 2004; Raghavan et al., 2002; Rettew, 2000; Van Ameringen et al., 1998). There is increasing evidence that individual differences in temperament shape the relationship between stressors and anxiety (Fordham & Stevenson-Hinde, 1999; Goldsmith et al., 1987; Van Ameringen, Mancini, & Oakman, 1998). However, many questions remain regarding specific pathways for the development of anxiety, including questions regarding the effects of specific types of stressors.

A review of the literature indicates that stressors have been difficult to define, measure, and categorize. Researchers have responded to this challenge in a number of ways ranging from simple event checklists to more elaborate analyses of qualitative aspects of stress, such as individual interpretation and threat appraisal (Brown & Harris, 1989; Cohen, Kessler, & Gordon, 1995; Grant et al., 2004; Grant et al. 2003; Hahn & Smith, 1999). This study uses a transactional definition provided by Brown and Harris

(1989) which takes into account both the objective facts of stressful events as well as the subjective meaning of those events for the individual. Furthermore, stressors were identified in context, taking into consideration the circumstances that led up to and followed the event. Another challenge in this study was to identify a way to categorize stressors into interpersonal and non-interpersonal domains, a particularly difficult challenge because one could arguably identify at least some interpersonal aspect in the most stress events, the event context, or its impact on the individual. However, if one accepts that stressors are significant in part due to their meaning to the individual, it stands to reason that different types of stressors will vary in their impact on the individual, and that potentially the processes involved may vary as well.

A review of the literature suggests that variations in temperament may impact the relationship between stressors and the development of psychopathology (Bolger & Eckenrode, 1991; Bolger & Zuckerman, 1995; Compas et al., 2001; Clements & Turpin, 2000; Fordham & Stevenson-Hinde, 1999; Lengua et al., 1999; Lonigan, Vasey, Philips, & Hazen, 2004; McKnight, Huebner, & Suldo, 2002; Smith & Prior, 1995). This study examines the impact of social temperament, and in particular, the aspects of shyness and social approach/withdrawal. I hypothesized that these aspects of social temperament moderate the relationship between stressors and anxiety, such that the stressor-anxiety relationship will be stronger for interpersonal stressors.

Stressors

Definition of “Stressors”

Historically, the concept of “stressor” has been defined in a variety of ways. Researchers agree that definitions “focus on environmental circumstances or conditions that threaten, challenge, exceed, or harm the psychological or biological capacities of the individual” (Grant et al., 2003). This is a transactional definition in that it is based upon the interaction between the environment and the individual. The challenge of defining the concept of stressors for research purposes has been to reconcile the theoretical importance of individual “meaning” with the methodological necessity of “objective” measurement of environmental events. The use of traditional checklist measures that focus solely on the “facts” of an event allows for objective measurement, but does not take into account the individual’s experience of an event. In contrast, relying solely on the individual’s interpretation of events incorporates meaning, but often leads to biased reports that are potentially confounded by the psychological disorders researchers are often attempting to investigate (Brown & Harris, 1989).

This study uses a definition provided by Brown and Harris (1989), as their definition takes into account both the facts of an event as well as the potential relevance of an event to an individual. Brown and Harris defined stressors as events that involve changes in activities, roles, persons or ideas, and that are likely to produce strong emotions because of the disruption or potential of disruption to an individual’s goals. These stressors are considered contextual in the sense that the circumstances surrounding the event (what led up to the event and what followed it) are taken into consideration during measurement, both in how a stressor is identified and how each stressor is given a

contextual rating “based on the notion of the likely response of an average person to an event occurring in the context of a particular set of biographical circumstances” (Brown & Harris, p. 24). Thus, this transactional definition of stressors accounts for individual and environmental elements, in that it is based on observable indicators of change that have meaning because of the likelihood of disruption to the individual.

Stressors and Anxiety in Children

There is considerable evidence that stressors are related to the development of psychopathology and well being in general, and more specifically, to the development of anxiety problems (Eley & Stevenson, 2000; Grant et al., 2003; Jackson & Finney, 2002; McMahon et al., 2003; Patton, Coffey, Posterino, Carlin, & Bowes, 2003; Rueter, Scaramella, Wallace, & Conger, 1999). There is some evidence that stressors are related specifically to the development of anxiety problems in children and adolescents (Boer et al., 2002; Eley & Stevenson, 1999; Kendler et al., 2003; Reuter et al., 1999). For example, Boer et al. (2002) found that parents reported that their anxiety-disordered children experienced a greater number of stressors in comparison to their non-anxiety-disordered siblings. In a study of twin children, Eley and Stevenson (1999) also found that threat events were significantly associated with anxiety. Also, Reuter et al. (1999) found that a build-up of stressors precipitated increases in anxiety symptoms and the development of anxiety disorders in adolescents.

A greater number of studies investigating the stressor-anxiety relationship has focused on adults, and while significant developmental differences between children and adults prevents the generalization of adult findings to children, adult research suggests the likelihood of similar relationships between stressors and anxiety in children (Grant et

al., 2003). In a study of over 7000 adult twins, Kendler et al. (2003) found that higher levels of stressors predicted anxiety. In a study of young adult medical students, Atketin et al. (2001) found a positive correlation between an increase in stressors and an increase in anxiety. De Beurs et al. (2001) found a positive relationship between stressors and anxiety in older adults.

Anxiety has received less attention from researchers than depression, but as depression and anxiety are often co-morbid (and often difficult to distinguish in children), research on the stressor-depression relationship can provide some clues to the stressor-anxiety relationship (American Psychiatric Association, 2000; DeBeurs et al., 2001; Kendler et al., 2003). Patton et al. (2003) found that stressors play a causal role in the development of depression in adolescents. Williamson et al. (1998) found that depressed adolescents were more likely to have experienced a high number of stressors than normal controls. Based on previous findings of a positive relationship between stressors and anxiety, in part supported by adult literature and research on depression, I hypothesized a positive relationship between stressors and anxiety symptoms. However, it is also important to consider differences among types of stressors.

Interpersonal vs. Non-Interpersonal Stressors

To date, most researchers have investigated “stressors” in general, by including a wide range of stress types (interpersonal, academic, health, etc.) obtained through life events checklists, in which subjects endorse categories of stressors (Grant et al., 2003). One way to classify stressors by type is by dividing events into interpersonal vs. non-interpersonal categories. Jackson and Finney (2002) hypothesized that occurrences in the interpersonal domain may be the most challenging for young adults, and examined two

types of interpersonal stressors (family relations and affiliative opportunities with peers). O'Neill, Cohen, Tolpin, and Gunthert (2004) defined interpersonal stressors as events that occur directly to the subject and include arguments with family, partners, friends, or acquaintances, and being snubbed or ignored by family, partners, or friends. They defined non-interpersonal stressors as all other events, including academic stressors, personal illness, work-related stressors, extracurricular events, hassles (minor stressors), and any event that happens to someone other than the subject (O'Neill et al.). Sandler, Reynolds, Kliewer, and Ramirez (1992) investigated interpersonal stressors, defined by conflict with or separation from family, while controlling for all other types of stressors. More specifically, conflict events were defined as "any behavior involving the disruption of harmonious family relations. The behaviors include hitting, arguing, and all expressions of anger, conflict, or negative emotion between members of the family. They do not include single decreased contacts between family members when negative interactions between the family members do not occur" (Sandler et al., p. 243). Separation events were defined as "any event which involved decreased contact with important people in the child's family" (Sandler et al., p. 243).

It is important to consider differences between interpersonal and non-interpersonal stressors. According to the theoretical framework of Brown and Harris (1989) used in this study, stressors are in part defined by the meaning of events to an individual. Brown and Harris categorized types of threat associated with stressors as involving danger (i.e., the possibility of future unpleasantness or crisis), and/or loss, including several types of threat related to loss, such as loss of a person (including separation), a cherished idea, an aspiration, an opportunity, self-worth, and material or

financial items. Brown and Harris reported that anxiety was related to danger and threat of future loss, including the threat of further loss following an event. Ayers, Chow, and Sandler (2004) used factor analysis to identify three potential sources of threat associated with stressors: threat to self, threat to others, and goal frustration. “Threat to self” included negative evaluation by others, negative self evaluation, rejection by parents, rejection by peers, and physical harm to self; “threat to others” included harm to others and criticism of others; and “goal frustration” included loss of desired objects or activities and goal impedance (Ayers et al.).

In this study, I hypothesized that because interpersonal events are qualitatively different from non-interpersonal events in that they relate to different goals and therefore, different types of threat, interpersonal events have different meanings for an individual. For example, based upon the work of Brown and Harris (1989) and Ayers et al. (2004), one could conceive of interpersonal stressors as having different meanings for an individual because they threaten the individual’s goals of affiliation with others, relationship security, and positive evaluation by others. Thus, it was reasonable to hypothesize that these differences will influence the processes involved in the stressor-anxiety relationship. For the purposes of this study, interpersonal stressors are defined as a transaction between two or more people (including the focal child) that involve conflict (including the adverse treatment of the focal child by another person), loss (including separation of the focal child from a significant other), or negative evaluation of the focal child by another, or the perceived threat that conflict, loss, or negative evaluation will occur.

There is little research featuring the examination of interpersonal vs. non-interpersonal stressors in relation to the development of anxiety in children. Instead, much of the work done in this area has focused on one particular stressor (e.g. parent-child disagreement, asthma, etc.) rather than the broader interpersonal domain (McMahon et al., 2003). More broadly, there is some preliminary evidence to support the hypothesis that specific stressors have different effects on the development of different psychopathology than non-interpersonal stressors (Eley & Stevenson, 2000; Jackson & Finney, 2002; Kendler et al., 2003; Kendler, Karkowski, & Prescott, 1998; O'Neill et al., 2004; Rudolph et al. 2000; Sandler et al., 1992). For example, Kendler et al. (1998) reported modest findings that certain types of events (e.g., legal problems, work problems) were more positively related to General Anxiety Disorder than to Major Depression in adult female twins. In a study of male and female adult twins, Kendler et al. (2003) found that anxiety was predicted by loss and danger, and not by humiliation or entrapment. O'Neill et al. (2004) found that reactivity to interpersonal stressors is a predictor of depression in young adults. There is also some suggestion in the literature that different stressors may influence the development of psychopathology in different ways (Griffith, Dubow, & Ippolito, 2000). For example, Griffith et al. (2000) found that family and peer stressors were related to increased approach coping, and that specific stressors were predictive of stressor-specific adjustment. These findings suggest that different types of stressors may have different pathways to the development of psychopathology.

Shyness and Social Approach/Withdrawal

Definitions

Literature suggests that stress and coping processes may operate differently for different people according to individual differences in temperament and personality (Bolger & Eckenrode, 1991; Bolger & Zuckerman, 1995; Compas et al., 2001; Clements & Turpin, 2000; Fordham & Stevenson-Hinde, 1999; Lengua et al., 1999; Lonigan, Vasey, Philips, & Hazen, 2004; McKnight, Huebner, & Suldo, 2002; Smith & Prior, 1995). This study investigates the role of temperament as defined by Rothbart (in Goldsmith et al., 1987), who described the construct as “relatively stable, primarily biologically based individual differences in reactivity and self-regulation” (p. 510). Buss and Plomin (in Goldsmith et al.) added that temperamental traits are genetic, inherited personality traits that are distinguishable from other groups of personality traits in that they appear in infancy.

Most temperament research has focused on infancy and early childhood, and adult research has focused on inherited and acquired personality traits that are viewed to develop from early temperament, such as the Big Five Model of Personality (Hagekull & Bohlin, 2003). However, there is much less research on temperament in late childhood and adolescence. Temperament commonly is viewed as a stable trait, although the expression of temperament is thought to change over time as the individual’s abilities and capacities change with experience, maturity, and exposure to environmental factors (Goldsmith et al., 1987; Lonigan et al., 2004). Thus, it is important to study temperament at different developmental stages, particularly the understudied stages of late childhood and adolescence.

A variety of traits are included within the construct of temperament, and theorists have described several in various domains. This study focused on social approach/withdrawal (or “social inhibition”) and shyness, as these traits have been shown to have influence on variables of interest in this study. The terms social inhibition and social approach/withdrawal are often used interchangeably. For some researchers, however, the terms are not always considered synonymous. Some researchers define the construct solely in terms of behavioral tendencies, whereas others include arousal or affective reactivity (Goldsmith et al., 1987; Kagan, Reznick, & Gibbons, 1989; Van Ameringen et al., 1998). For the purpose of this study, the most common definition of social approach/withdrawal (the behavioral tendency towards or away from novel or unfamiliar social stimuli) will be used (Prior, Smart, Sanson, & Oberklaid, 2000). However, social approach/withdrawal does not capture the entire dimension of social temperament.

Another element of social temperament is shyness. Shyness is often used synonymously with social approach/withdrawal, but is sometimes considered a distinct, but highly correlated construct (Fordham & Stevenson-Hinde, 1999; Prior et al., 2000). Fordham and Stevenson-Hinde (1999) observed that “although there is some evidence that shyness manifests itself in withdrawn behavior, such behavior does not necessarily reflect shyness” (p. 757). One can distinguish between the constructs of social approach/withdrawal and shyness in terms of behavioral versus affective tendencies. Van Ameringen et al. (1998) stated that social approach/withdrawal “refers to a characteristic propensity to react to social novelty with inhibition. In contrast, shyness refers to feelings of discomfort in social situations but not nonsocial situations” (Van Ameringen

et al.). While some researchers make this distinction in the measurement of social temperament, in this study, shyness and social approach/withdrawal are usually highly correlated and it is likely that these two traits are different aspects of the same construct. Thus, for the purposes of this study, shyness and social approach/withdrawal were combined to form a single measurement of social temperament.

The Role of Social Temperament

Adult research provides considerable evidence that personality traits affect reactivity to stressors (Bolger & Zuckerman, 1995; Cooper, Agocha, & Sheldon, 2000; Kendler, Gardner, & Prescott, 2003; Raghavan, Le, & Berenbaum, 2002). However, similar research of children and adolescents is less advanced. Research suggests that certain temperamental traits may increase or decrease vulnerability to certain types of stressors. As interpersonal stressors are common and varied, researchers have begun to take a particular interest in examining this domain of stressors in relation to different aspects of temperament. For example, in a study with college freshman, O'Neill et al. (2004) found that affective reactivity is a risk factor for depression, but only when combined with interpersonal stressors (vs. non-interpersonal stressors). Raghavan et al. (2002) found that interpersonal stressors and sociotropy predicted dysphoria, whereas achievement-related stressors and autonomy predicted hostility, for a sample of adult women. While these studies suggest that temperament influences the relationship between stressors and psychological symptoms, it is unclear whether such effects occur with other temperamental traits, such as shyness and social approach/withdrawal.

I hypothesized that social temperament moderates the direct effects of stressors on anxiety problems. Social temperament has been linked to symptoms and disorders on the

anxiety spectrum (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Hymel, Rubin, Rowden, & LeMare, 1990; Kagan, 1997; Lonigan et al., 2004; Rettew, 2000). Research indicates that shyness is a prominent temperamental characteristic of adolescents with anxiety (Masi, Mucci, Favilla, Brovedanu, Millepiedi, & Perugi, 2003). Van Ameringen et al. (1998) investigated social (vs. non-social) inhibition and shyness as distinct constructs, and found that social temperament was more strongly related to anxiety disorder symptomatology in college students. In a longitudinal study, Prior et al. (2000) found that children with stable ratings of shy-inhibited temperament across middle childhood increased risk for anxiety problems in adolescence.

Research suggests that social temperament plays a moderating role in the relationship between interpersonal stressors and psychological symptoms. (Hymel et al. 1990; Lonigan et al., 2004; McKnight et al., 2002). For example, McKnight et al. (2002) found that the traits of extraversion and neuroticism, as well as overall life satisfaction, were related to the number of stressors experienced and subsequent problem behavior in pre-adolescent children and adolescents. Hymel et al. (1990) found some evidence that shy-anxious and social withdrawal traits influenced the relationship between social difficulties in early childhood and subsequent internalizing and externalizing problems in middle childhood. However, these findings were relatively modest and suggest the need for further research to clarify the social temperament-anxiety relationship.

I hypothesized that social temperament more strongly influences the stressor-anxiety relationship (both direct and indirect effects) for interpersonal stressors, as both this dimension of temperament and this category of stressors are interpersonal in nature.

To date, this has not been extensively tested, and thus there is little research directly supporting this specific hypothesis. However, based upon the literature reviewed above, one may speculate as to ways in which social temperament may shape these processes. Regarding social temperament as a moderator of stressors' direct effects on anxiety, one possibility is that since children who are shy and tend towards social withdrawal are by definition, less adept in interpersonal situations in general, and thus, likely to react more negatively to interpersonal stressors (Goldsmith et al., 1987; Kagan, 1997; Kagan et al., 1989; Van Ameringen et al., 1998). Another possibility is that children who are shy and tend towards social withdrawal are at greater risk for general anxiety problems, because they are specifically at greater risk for social anxiety, which by definition is associated with challenging interpersonal situations (Fordham & Stevenson-Hinde, 1999; Masi et al., 2003; Prior et al., 2000). Yet another possibility is that children who are shy and tends towards social withdrawal may interpret and cognitively appraise interpersonal stressors more negatively than non-interpersonal stressors. For example, Bruch and Belkin (2001) found a maladaptive attributional style predicted shyness for interpersonal stressors, but not for non-interpersonal stressors, in that shy adults were more likely to perceive interpersonal stressors as uncontrollable events.

Another possibility is that shyness and social withdrawal may decrease the likelihood of a child's usage of "socially-oriented" coping strategies (i.e., support-seeking). For example, one study found that shy children are less talkative in general and tend to exhibit poor communicative competence (Evans, 1993, as cited in Fordham & Stevenson-Hinde, 1999). This suggests that shy children may be less likely to communicate their needs and share their problems. It also suggests that people included

in the social network of shy children are generally less aware of the children's circumstances, creating a social environment that fails to facilitate support seeking by the child. Yet another possibility is that shyness and social withdrawal decrease access to available resources (e.g., fewer friends, qualitatively different friendships). Hymel et al. (1990) found that children who evidence social withdrawal increasingly receive negative evaluations by both peers and teachers, and with interpersonal problems with peers. Another study found that shy children are perceived by their peers as less approachable, less socially competent, and ultimately, less desirable social partners (Evans, 1993, as cited in Fordham & Stevenson-Hinde, 1999). This suggests that shy, socially withdrawn children may have fewer people and fewer close relationships as resources from which to seek support. These possible explanations for a relationship between shyness/social withdrawal and support seeking provided a rationale for investigating the potentially interactive effects of these particular dimensions of temperament and coping.

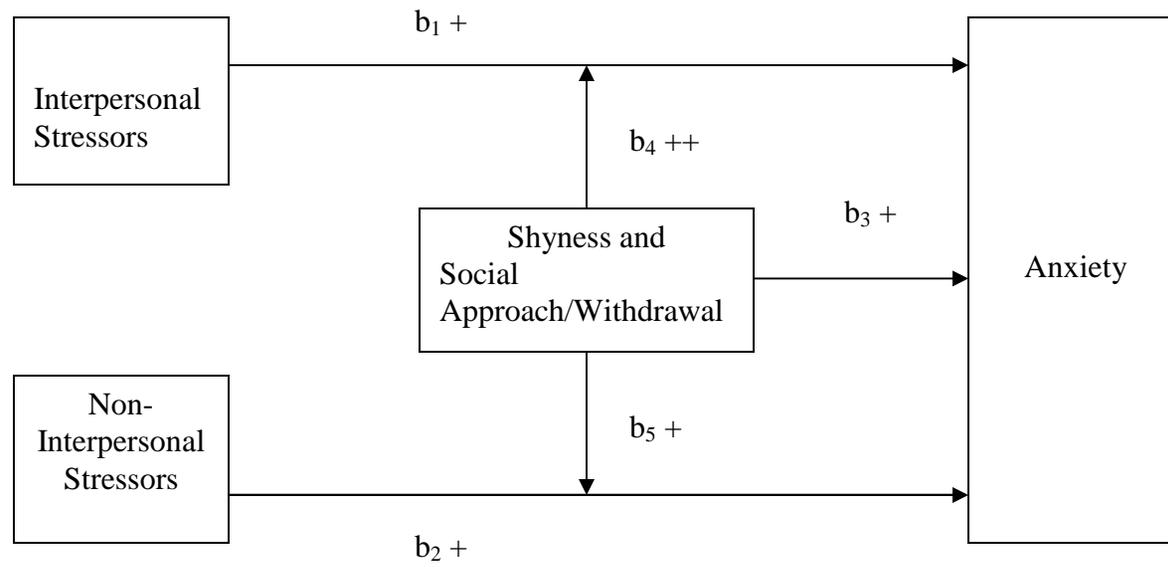
Theoretical Model and Hypotheses

Figure 1 illustrates the model tested in this study. It integrates these specific hypotheses:

- 1) Higher levels of interpersonal stressors will be associated with higher levels of anxiety (b_1).
- 2) Higher levels of non-interpersonal stressors will be associated with higher levels of anxiety (b_2).
- 3) Higher levels of shyness and social withdrawal will be associated with higher levels of anxiety (b_3).
- 4) The direct effects of interpersonal stressors and non-interpersonal stressors on anxiety will be moderated by individual differences in shyness and social approach/withdrawal. Shyness and social approach/withdrawal will moderate the main effects such that the positive association between stressors and anxiety will be stronger for children rated as higher in shyness and social withdrawal (b_4 and b_5).
- 5) The moderator effect in this model will be stronger for interpersonal stressors than for non-interpersonal stressors ($b_4 > b_5$).

Figure 1.

Model of Hypotheses



Methods

Overview of the Children of Unemployed Parents Study (CUPS)

Data was drawn from a larger study conducted jointly by The George Washington University and Arizona State University. The purpose of this field study was to test a theoretical model of child and family adaptation to the stressors associated with parental job loss. During the study 203 families meeting eligibility criteria were screened into the study and agreed to participate. This included 99 single-parent and 104 two-parent families. After enrollment, parents and children were interviewed in their homes, and completed a set of study questionnaires as part of the time 1 (T1) assessment. Parents and children were also videotaped as they engaged in a discussion about coping with a selected stressor. Families also identified two of the child's teachers, and these teachers were sent questionnaires about current child functioning. Families were re-contacted three times across the next 18 months. Six months after initial interviews were completed, parents and teachers were mailed a set of questionnaires about child functioning (T2). Twelve months after initial interviews, the family was again re-contacted and participated in both in-home and telephone interviews (T3). Eighteen months after initial interviews, parents and teachers were again sent questionnaires through the mail (T4).

Sampling Frame

The field period for enrolling families in the CUPS Study began in December of 2000, and continued through June of 2002. Follow-up data collection continued through October of 2004. The families included in this sample were drawn from diverse communities that included a range of family income levels, parent education levels, and

ethnic diversity. The counties from which we sampled included both suburban and urban environments from the greater Washington and Baltimore region. The sampling frame was family-based (focusing on parent-child relationships, within either two-parent or single-parent households), exposure-based (focusing on families recently exposed to a major life event – job loss), service-system-based (focusing on job seekers registering unemployment with the Maryland Department of Labor, Licensing, and Regulation (MDLLR)), and geographically-based, sampled from nine counties in Maryland. These included Baltimore City, Baltimore County, Montgomery County, Prince George’s County, Anne Arundel County, Howard County, Frederick County, Carroll County, and Harford County.

Families were sampled based on information from the MDLLR. During the period of recruitment MDLLR received between 1337 and 2934 weekly applications for unemployment insurance (UI) from recently unemployed workers in these counties. MDLLR provided the project with weekly lists of all applicants who had applied for unemployment insurance four weeks earlier. A randomly selected subset of these applicants received letters describing the study and soliciting participation, as described below.

Sampling Procedures

Sub-sampling for initial contact. The weekly number of UI applicants varied substantially over the course of the study. In order to keep a constant flow of participants, we adopted the following procedures. First, when weekly numbers were relatively low we included all UI applicants in our initial sample. When weekly numbers were higher, we eliminated applicants from the three least populous counties that were also the most

physically distant from our interviewers' homes (Frederick County, Carroll County, and Harford County). This happened for 55-60% of the weekly samples. When the weekly numbers were even higher, we also randomly sub-sampled from the other five counties. This happened in 27 of the 82 sampling weeks, with random sub-sampling rates varying from 52 to 96% of the available pool. This led to a weekly sampling rate of 611 to 2020 UI applicants, with an average weekly rate of 1541 applicants. All together we sent letters to 123,246 applicants over the 82 sampling weeks.

Initial Contact and Screening. A description of the study was mailed to each person in the weekly pool, along with a letter from the director of the MDLLR unemployment insurance division. The letter included a postage-paid postcard and a toll-free 800 number for those interested that could be used to contact the project to indicate interest in the study. A screening interviewer attempted to contact by telephone everyone who returned a postcard or who called the 800 number. The interviewer then administered a brief standardized screening questionnaire over the telephone to determine whether the job seeker and his or her family met eligibility criteria. These criteria are listed in Table 1. They include the requirement that the job seeker have a child living in the household who was between 9 and 14 years of age. If more than one child met this criterion, a random sampling procedure was used to select one of the eligible children as the focal child. For families meeting all eligibility criteria, the interviewer then described the study, answered questions, and solicited interest in participation. Job seekers interested in having their family participate were then assigned to a field interviewer.

Table 1.

Eligibility Criteria for Study.

1.	Job seeker laid off from work; did not quit.
2.	Job seeker laid off at least 4 weeks ago.
3.	Job seeker laid off less than 18 weeks ago.
4.	Job seeker not laid off from a seasonal job and expecting to return to work next season.
5.	Job seeker reports layoff is temporary, and s/he expects to be rehired in the same job.
6.	For two-parent families: job seeker and partner have a child between the ages of 9 and 14 living in their home, and are either both the biological parents of the child or, if one is not a biological parent, that person has been living with the child for at least 6 months and at least half of each week.
7.	For one-parent families: job-seeker has a child between the ages of 9 and 14 living in their home. Job seeker may be in a committed relationship with a partner living in the home, but that partner is not asked to participate if they have been living there less than six months.
8.	The job seeker reports that the child has the capacity to understand questions that the average 3 rd grader could understand.
9.	Eligible parents and target child can speak English well enough to understand interview and questionnaires.

Over the course of the study 2910 families either called or sent in postcards indicating interest. Table 2 summarizes the disposition of these cases. The screening interviewer was unable to contact 39% of these cases before they went out of scope because of time since job loss (based on date of application for unemployment insurance), or their contact information proved incomplete. Another 39% of the families did not meet eligibility criteria. Of the 572 cases that met eligibility criteria, 14% were

not interested in the study after hearing about it from the screening interviewer. The remaining 491 cases were assigned to field interviewer staff to complete recruitment and schedule interviews.

Table 2.

Breakdown of Dispositions of Cases Initially Indicating Interest

Recruitment Status	N	% of Total
Unable to contact within time limit	1120	38.5
Contacted, refused screening	80	2.7
Failed to meet eligibility criteria	1138	39.1
Eligible, not interested in study	81	2.8
Eligible, assigned to interviewer	491	16.9
Total	2910	

Determining parent participation. Field interviewers contacted eligible families by telephone and described the study and its procedures in greater detail. Field interviewers also determined whether one or two parents in a family were eligible to participate, using the criteria listed in Table 3.

Table 3.

Criteria for Determining Parent Participation in Project

Family Composition	Data Collection Procedures
Child ~ Job Seeker ~ Partner/Spouse (child living with JS & partner/spouse at least 1 year)	All 3 members must participate; regular data collection procedures
Child ~ Job Seeker ~ Partner/Spouse (child living with JS at least 1 year; child living with partner/spouse more than 6 months, but less than 1 year)	All 3 members are strongly encouraged to participate; will remain a case if Partner/Spouse decides not to participate; regular data collection procedures
Child ~ Job Seeker ~ Partner/Spouse (child living with JS at least 1 year; child living with partner/spouse less than 6 months)	Only Child & Job Seeker participate; modified data collection procedures (i.e., Session 2)
Child ~ Job Seeker (child living with JS at least 1 year)	Child & Job Seeker participate; modified data collection procedures (i.e., Session 2)

Rates of final participation. Table 4 describes the final status of all cases assigned to field interviewers. Field staff was unable to contact or interview almost 40% of the eligible cases before the time limit expired, and a small percentage was also found to be ineligible when interviewers reviewed eligibility criteria. Around 10% had a family

member who refused to participate, and another 8% agreed but decided not to continue after participating in the initial interviews. A total of 203 families completed all T1 procedures.

Table 4.

Final Status of Cases Assigned to Field Staff

Status	N	% of total
Unable to contact or interview before time limit	193	39.3
Ineligible on closer inspection	7	1.4
Contacted, refusal by one or more family members	47	9.6
Death or incapacity of member since screening	3	0.6
Agreed, but broke off during interview period	38	7.7
Completed T1 interviews	203	41.3

Description of T1 sample. This study focused on parent and child reports of data. For the current study, at Time 1 the sample consisted of 203 families with a mother or father and a focal child. The children ranged in age from 8.9 years to 14.9 years old, with 110 (54%) females and 93 (46%) males. The sample included 84 (41%) Caucasians, 93 (46%) African-Americans, and 26 (13%) of other ethnicities including Hispanics/Latinos, Asians/Pacific Islanders, and “other” ethnicity. Of the total sample, 88 (43%) were single-mother households, 12 (6%) were single-father households, and 103 (51%) were two-parent households.

I hypothesized a small to medium effect size (0.2 – 0.4) for the proposed hypotheses. A review of previous research indicates a range of effect sizes for the relationships that are components of the proposed model. Grant et al. (2003) conducted a meta-analysis of research investigating the association between stressors and anxiety/internalizing disorders, and found a range of effect sizes with a low of 0.22 and a high of 0.40. No literature was found reporting effect sizes for the association of anxiety with a stressor x temperament interaction term; thus, to be conservative, a small effect size according to Cohen's standards (0.2) was estimated. Using the NQuery Advisor 4.0 program, I calculated estimates of power based on the small and medium estimates of effect sizes reported in the literature, as well as average effect sizes, and the size of the sample at T1 (n=203). For calculations using average effect sizes and medium effect sizes, the T1 sample size yielded power ranging from 96 to 99 percent, indicating good power for detecting medium-sized effects. For calculations using smaller effect sizes, power begins to decrease, suggesting that this sample size may be somewhat underpowered for detecting a small-sized effect.

Data Collection Procedures

Preliminary telephone interview. Interviewers conducted a preliminary telephone interview with the parents, including a review of household membership and a review of stressful events the child might have experienced in the past year, using the Contextual Assessment of Stressful Events in Childhood (CASEC) Events Checklist. In two-parent families, the Events Checklist was administered separately to both parents. This Events Checklist was used to select sections of the CASEC interview to be administered in the home, using procedures described below.

First in-home interview session. The field interviewer scheduled an in-home interview with the family. Two or three field interviewers traveled to the family's home to conduct this interview. At this time, the family members reviewed and signed informed consent forms. Parents and children were interviewed in separate rooms by different interviewers using the CASEC Interview. In two-parent families the CASEC was initially administered to both the mother and the father. However the logistical demands of this approach proved untenable, and after the initial cases the CASEC was conducted only with the mother. In single-parent families the CASEC was conducted with that parent, regardless of whether the single parent was a mother or father. After the parent had completed the CASEC interview, s/he was interviewed using the Depression section of the CIDI-short form and a structured Employment History Interview.

The child was first administered the CASEC Events Checklist. Responses from the child, and from the Checklists administered to the parents during the telephone interview, were used to select some of the sections of the CASEC interview, using procedures described below. Children were then administered the child version of the CASEC interview. When the CASEC was complete, the interviewer used a set of specific criteria to select one stressful event from those reported by the child. The interviewer then conducted a semi-structured interview, the Coping In Context Interview, concerning this life event. In a few cases the CASEC interview could not be completed in one session. In these situations interviewers scheduled more in-home sessions until the CASEC was complete.

Second in-home session. The interviewer reviewed the child's responses to the CASEC and used a structured set of criteria to select stressors to be used in the

videotaped Parent-Child Discussion Task. During this second in-home session, parents were administered a set of self-administered questionnaires assessing child functioning, child temperament, and other aspects of stress and coping. Both parents in two-parent families completed these questionnaires separately. The child was also administered a set of questionnaires in interview format by the interviewer in a separate room. Parents and children were each paid \$10 per hour for the time they spent in the in-home sessions. In addition, a set of self-administered questionnaires on child functioning and temperament were sent to all nominated teachers, with postage-paid envelopes to return completed questionnaires. Teachers were paid \$10 for completing the questionnaires.

Measures

Measures were chosen so that data would be obtained from multiple informants and through multiple methods, where possible. Also, researchers selected measures that have been used in previous studies at GWU and ASU in order to facilitate cross-study integration of findings. In addition, researchers chose child-report measures that have been tested on and are appropriate for children aged 8 to 14 years. Lastly, researchers selected measures that have empirical evidence of validity and internal consistency (alphas .70 or above). Information on specific measures is elaborated below.

Social Temperament

Data on temperament was collected from two sources: the parent and the focal child. The instruments used to obtain this data were questionnaires that for each source contained a measure of temperament created using items from the Early Adolescent Temperament Questionnaire – Revised (EATQ-R) (Capaldi & Rothbart, 1992; Ellis &

Rothbart, 2001) and the Revised Dimensions of Temperament Survey (DOTS-R) (Windle & Lerner, 1986), with all items using the EATQ-R response scale. The subscale measuring shyness is drawn from the EATQ-R, a 92-item scale with both parent-report and child self-report versions. For the parent-report version, this subscale is comprised of 5 items, including “Is not shy” and “Feels shy about meeting new people.” For the child-report version, this subscale is comprised of 4 items, including “I feel shy about meeting new people” and “I feel shy with kids of the opposite sex.” This subscale has been found to have acceptable internal consistency (coefficient alpha of at least 0.60), good test-retest reliability ($r = 0.84$) and good discriminant validity (coefficient alpha of 0.67) (Capaldi & Rothbart, 1992). These scales were found to have good convergent validity as evidenced by significant correlations with other measures of for similar constructs (alphas ranging from 0.52 – 0.85 across 9 measures) (Capaldi & Rothbart, 1992). In this study, Cronbach’s alpha for this subscale was 0.62.

The DOTS-R is a 54-item scale including the social approach/withdrawal subscale used in this study. This subscale was administered only to the parent and is comprised of 7 items, including “Takes him/her no time at all to get used to new people,” “On meeting a new person, s/he tends to move towards him or her,” “Can make him/herself at home anywhere,” and “Moves towards new situations.” The DOTS-R has good test-retest reliability, with correlation coefficients ranging from 0.59 – 0.75 (Windle, 1992). A Cronbach’s alpha of .80 has been reported for a sample of elementary school age children (Windle & Lerner, 1985). For the social approach/withdrawal subscale, a coefficient alpha of 0.85 has been reported (Windle, 1992). Stability of the measure has been established (Maziade, Cote, Boudreault, Thivierge, & Boutin, 1986). In

this study, Cronbach's alpha for this subscale was 0.69. The concurrent and predictive validity of the DOTS-R with measures of perceived competence, intellectual functioning, and psychosocial adjustment are summarized in Windle and Lerner (1986) and Windle (1992).

A preliminary analysis of data at time 1 indicates that shyness and social approach/withdrawal correlate highly. For parent report, shyness and social approach/withdrawal had a correlation of $r = 0.71$ ($p < 0.05$) (child report included only shyness). As a result, shyness and social approach/withdrawal were combined to form a single measure of social temperament.

Anxiety

Data on anxiety experienced by the focal child was obtained through the Revised Children's Manifest Anxiety Scale (RCMAS) (Reynolds & Richmond, 1978). The RCMAS is a 37-item self-report inventory in which children endorse items related to anxiety symptoms. In addition to yielding a total score of generalized anxiety symptoms (based on 28 items, excluding the 9 items of the Lie Scale), there are four subscales, including Physiological Anxiety, Worry/Oversensitivity, Social Concerns/Concentration, and the Lie Scale. Examples of items from the Physiological Anxiety scale are "Often I have trouble getting my breath" and "It is hard for me to get to sleep at night." The Worry/Oversensitivity subscale includes items such as "I worry a lot of the time" and "I worry about what other people think about me." Examples of items from the Social Concerns/Concentration subscale are "Others seem to do things easier than I can" and "I feel someone will tell me I do things the wrong way." The Lie scale's purpose is to detect

acquiescence, social desirability, or malingering, and is used to determine whether the child's responses are valid.

The RCMAS had moderate to good reliability and validity. Estimates of internal consistency for the measure of Total Anxiety ranges from 0.79 – 0.85 (Gresham & Stewart, n.d.). Test-retest reliability ranged from 0.68 (with a 9-month interval) to 0.98 (with a 3-week interval) (Gresham & Stewart, n.d.). In this study, Cronbach's alpha for this measure was 0.83. The RCMAS has low to high validity, depending on its comparison to measures of state anxiety ($r = 0.10$) versus trait anxiety ($r = 0.67$) (Gresham & Stewart, 2004; Reynolds, 1982).

Stressors

The CASEC (Howe, Weihs, Anderson, Matty, Litvinov, & Shellmer, 2004) is an interview and rating system with a number of components: Basic Principles Manual; Parent Version of the CASEC Life Events Checklist; Parent Version of the CASEC Structured Interview Protocol; Child Version of the CASEC Life Events Checklist; Child Version of the CASEC Structured Interview Protocol; CASEC Events Dictionary, and CASEC Rating software. This system is an outgrowth of several earlier systems designed for the contextual assessment of stressful events, all based on the work of Brown and Harris (1989). It incorporates materials from the adult Life Events and Difficulties Scales (LEDS), the adolescent version of the LEDS, and the Psychosocial Assessment of Childhood Experiences (PACE) (Brown & Harris, 1989; Glen, Simpson, Drinnan, & McGuinness, 1993).

In this study, the CASEC system was applied in the following way. Interviewers first administered the CASEC Life Events Checklist to both parents and target children.

The events in this checklist were designed to provide initial information about potentially stressful events to be covered by the more extensive CASEC interview. The interviewers then combined this information, and identified all events that were endorsed by at least one family member. These events were then used to select the module of the CASEC interview that covered this type of event. This system was used to streamline the CASEC interview by eliminating modules that were not relevant for a particular child. A number of modules were not “gated” in this way, but were always administered. These included modules relating to Employment events, and events involving Parent-Child issues.

Interviewers were trained extensively in the use of the CASEC system prior to beginning data collection. The CASEC integrates both structured and semi-structured interview formats, allowing the interviewer to determine whether a particular domain of events is relevant for a child prior to collecting information about the child’s unique circumstances surrounding events in that domain.

All CASEC interviews were audio recorded. After the interview was complete, interviewers reviewed these recordings and extracted information about each event described. This information was used to write a brief description of the essential elements of that event. Interviewers then used the CASEC Events Dictionary to rate these descriptions on a number of dimensions, including focus (to whom the event was occurring), type of threat, and level of threat both at the beginning of the event and across a two-week period following the initiation of the event.

Using the CASEC Events Dictionary, interviewers also coded each stressor by type across twelve domains including education, peer relations, activities, household, family, pets/death/losses, reproduction, financial, employment, neighborhood, health, and

criminal/legal domains. Within domain, each stressor was more specifically coded by prototype that matched the specific content of the stress. Interviewers then rated each identified stressful event for level of objective threat using a 4-point scale (4 – “minimal” to 1 – “severe”) at two time intervals – immediate (at the onset of the stressor) and at two weeks (following onset of stressor). For the purposes of this study, stressors were limited to those that have an immediate threat rating of at least “2” at two weeks. Interviewers had been instructed to extract events during the CASEC interview only if the event would likely be rated as “severe” (i.e., garnering an immediate threat rating of 1 or 2). Some events were later assigned an immediate threat rating of 3 or 4, but as we did not seek to extract all stressors of this severity level, they were not included. Researchers currently are working to establish validity and reliability of the CASEC, as the development of this measure is part of the larger, on-going study from which data is being drawn for this study.

Coding Stressors into Interpersonal and Non-Interpersonal Categories

There were a total of 205 prototype stressful life events described in the CASEC Events Dictionary. Prototype event descriptions also included a list of factors that impact the severity of the stressor. Each prototype event was coded as either interpersonal or non-interpersonal in nature, based on a criterion developed for the purposes of this study (see Appendix). Generally, interpersonal stressors are defined as transactions between two or more people (including the focal child) that involve at least one of the following: the actual experience of conflict, aversive treatment of the focal child, loss (including separation of the focal child from a significant other), negative evaluation of the focal child by another, or the threat of conflict, aversive treatment, loss, or negative evaluation.

In addition, since many life events include other people beside the focal child, it was necessary to define which people are considered a “significant other” in relation to the focal child. These included definitions for those categorized as “close ties,” “romantic relationships,” and “engaged non-confiding relationships” (see Appendix). In most cases, the descriptions of the prototype events and the factors associated with increasing or decreasing the severity of threat of each event provided adequate information for determining the nature of the relationships potentially involved in each stressor.

Prototype events were initially classified by two independent coders, with a third independent coder’s ratings used for purposes of resolving disagreements. Both coders received identical training and inter-rater reliability for ratings on the aforementioned criteria were good (Kappa = 0.68) (see Table 5). Of the 205 prototype life events, 112 were classified as interpersonal stressors and 93 as non-interpersonal stressors.

Table 5.

Rater Agreement

	Rater 2: Interpersonal	Rater 2: Non-interpersonal	Total
Rater 1: Interpersonal	100	18	118
Rater 1: Non-interpersonal	14	73	87
Total	114	91	205

Results

Descriptive preliminary analyses indicated that distributions for both independent variables, interpersonal stressors and non-interpersonal stressors, were highly skewed, where most variation occurred at the lower end of the distribution (see Figure 2). The majority of subjects experienced fewer than 10 stress events. A square-root transformation was performed on each of the independent variables to reduce the degree of skew (see Table 6). However, as the distribution of the square-root transformed independent variables remained relatively skewed, two sets of analyses were conducted (with and without truncating the data). While additional analyses were conducted with the variables of interpersonal and non-interpersonal stressors truncated in which cases with 10 or more stressors were collapsed into a single category, the results did not vary significantly from analyses conducted with the MLR estimator.

Figure 2.

Distribution of Stressors Prior to Square Root Transformation

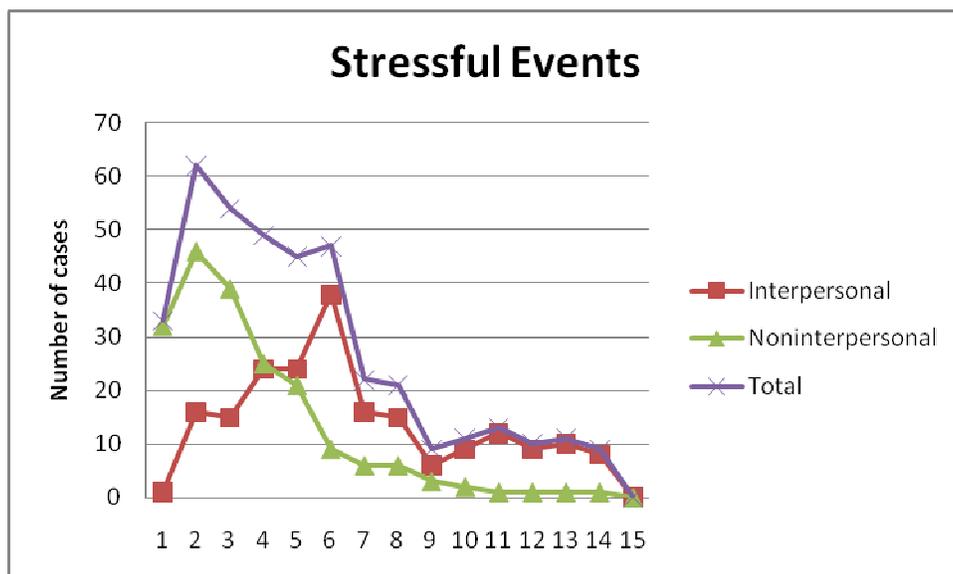


Table 6.

Stressors Distribution

	Interpersonal Stressors	Interpersonal Stressors (Sq. Rt. Transformed)	Non- Interpersonal Stressors	Non- Interpersonal Stressors (Sq. Rt. Transformed)
Skewness	1.049	0.178	1.595	-0.085
Kurtosis	1.052	-0.030	3.369	-0.085

The structural equation model (SEM) was estimated using *Mplus* version 5.21 (Muthén & Muthén, 2007). Within *Mplus*, the MLR estimator was employed to address non-normality in variables. This method produces maximum likelihood parameter estimates with standard errors that are robust to non-normality (Muthén & Muthén, 2007). The MLR standard errors are computed using a sandwich estimator. In this model, the dependent variable, anxiety, was regressed on the two stressor variables (interpersonal and non-interpersonal), the social temperament variable, and their interactions. There were 203 observations, three of which presented with missing data. *Mplus* by default provides estimation of models with missing data using Full Information Maximum Likelihood analysis assuming data are MAR (Muthén & Muthén, 2007).

In addition, the independent variables and interaction terms were centered around the grand mean in order to mitigate the effects of multicollinearity. Zero-order correlations were calculated to determine the relationships between the variables in this

model (see Table 7). Means and standard deviations for the variables are presented below (see Table 8).

Table 7.

Correlations of Variables

	1	2	3	4
1. Anxiety	-			
2. Interpersonal Stressors	0.245*	-		
3. Non-Interpersonal Stressors	0.107	0.321*	-	
4. Social Temperament	0.076	0.042	0.037	-

Note: * $p < 0.05$

Table 8.

Means and Standard Deviations of Variables

	Mean	Standard Deviation
IP Stressors	5.94	3.75
Non-IP Stressors	2.58	2.36
Social Temperament	5.03	1.37
Anxiety	36.13	6.19

The Wald Test of Parameter Constraints was conducted to test for a significant difference in the effects of the two interaction terms (interpersonal stressors x social temperament and non-interpersonal stressors x social temperament). Results of the Wald test were non-significant (p -value = 0.5581) indicating that the parameter estimates for the two interaction terms were not found to differ significantly from one another. To whatever extent that temperament moderates the effects of either interpersonal or non-interpersonal stressors on anxiety, no significant difference in those effects were indicated.

In order to test the hypotheses proposed in this study, the researcher used SEM to test for interaction effects. Using this model, no significant effects were found at the $p < 0.05$ alpha level nor tending towards significance at the $p < 0.10$ level (see Table 9). Therefore, the hypotheses of social temperament moderating the relationships between stressors (interpersonal and non-interpersonal) were not supported.

Table 9.

Results for Interaction Model, Unconstrained

Variable	Coefficient	Standard error	P-value
Interpersonal stressors	0.867	0.579	0.134
Non-interpersonal stressors	0.495	0.779	0.525
Social temperament	1.017	0.649	0.117
Interpersonal stressors x temperament	-0.094	0.106	0.376
Non-interpersonal stressors x temperament	-0.090	0.154	0.558

*Note: * $p < 0.05$*

The researcher also conducted regression analyses of a main effects models. In this analysis, higher levels of interpersonal stressors were significantly related to higher levels of anxiety (estimate = 0.233, p -value = 0.004). The relationship between non-interpersonal stressors and anxiety was non-significant (estimate = 0.030, p -value = 0.682) (see Table 10).

Table 10.

Results for Main Effects Model

Variable	Coefficient	Standard error	P-value
Interpersonal stressors	0.233	0.080	0.004*
Non-interpersonal stressors	0.030	0.073	0.682
Social temperament	0.065	0.067	0.332

*Note: * $p < 0.05$*

Discussion

The current study tested a model of interpersonal stressors, non-interpersonal stressors, social temperament, and anxiety. The researcher hypothesized that stressful events are related to a higher level of anxiety, and that social temperament has a moderating effect on this relationship. Furthermore, it was hypothesized that children who are shy and more likely to withdraw from novel social situations (social temperament) would have particular difficulty with stressors that have a higher impact on the interpersonal (interpersonal stressors), resulting in a stronger association to anxiety. Using structural equation modeling to examine these parent and child cross-reported variables, analyses did not yield significant results supporting these hypotheses. A regression analysis of the main effects model examining only the relationship between stressors and anxiety did indicate that interpersonal stressors were significantly related to anxiety. Interestingly, in this study, non-interpersonal stressors were not found to be

significantly related to anxiety, posing questions as to why the impact of one type of stressor differs from another.

Considering Sub-Categories of Shyness

While there is good evidence demonstrating the relationship between stressors and anxiety, and to some degree, between a shy and socially withdrawn temperament and anxiety, a search of the literature did not yield studies examining the model proposed in this study. It was hypothesized that a shy, socially withdrawn temperament moderated the relationship between different types of stressors and anxiety, but the results of this study did not support this model. One possibility is that temperament may play a significant role in moderating the relationship between stressors and anxiety, but perhaps not these particular aspects of temperament. Temperament is a complex, multi-faceted construct of which shyness and a tendency towards social withdrawal are just two components. There is evidence in the literature suggesting that other aspects of temperament may play a more significant part than the aspects of social temperament examined here.

The literature provides support for distinguishing shyness/social withdrawal from another aspect of social temperament – sociability (defined as “the preference for being with others rather than being alone”) (Cheek & Buss, 1981). Coplan et al. (2004) examined the motivation behind socially withdrawn behavior, and distinguished the concepts of “conflicted shyness” from “social disinterest” or low sociability, noting that conflicted shyness included the experience of elevated fear and anxiety while social disinterest may be more associated with less negative reactivity.

However, literature also indicates that shyness is associated with low emotion regulation and high negative emotionality (as well as low constructive coping), consistent with the hypotheses made in this study (Asendorff & Meier, 1993; Eisenberg, et al. 1995). Xu et al. (2009) examined a distinction between different types of shyness, including “anxious shyness” (characterized by social anxiety and avoidance, as well as an increased anxiety towards negative social evaluation) and “regulated shyness” (in part defined by tendency to “make their social encounters more manageable and less threatening by behaving in a low key, nonassertive, and unassuming fashion” and therefore minimizing the chances of negative social evaluation). Xu et al. (2009) found that children exhibiting regulated shyness were less likely to self-report social anxiety and exhibited lower physiological response when exposed to aversive treatment, negative evaluation, and encounters with unfamiliar social situations.

The current study did not distinguish between a fear-based social withdrawal versus a disinterested social withdrawal, and it may be that this distinction in motivation for shy behavior/social withdrawal is more crucial in playing a moderating role in the stressors –anxiety relationship more than just the tendency to withdraw from social situations. Furthermore, the association between low sociability and less negative reactivity provides another clue as to how sociability may act as a moderator of the stressor-anxiety relationship. The current study examined the behaviors characterized as shy and tending towards social withdrawal, but did not include measurements of reactivity and emotionality.

Attention to Affective Reactivity

In addition to examining sub-categories of shyness (i.e., anxious shyness vs. regulated shyness) or further distinguishing shyness in terms of sociability, one interesting possibility would be to examine if a shy, socially withdrawn social temperament may have a significant impact on the stressor-anxiety relationship if affective reactivity or negative emotionality is factored into the model. A number of studies have examined the relationship between affective reactivity and anxiety. For example, Goldin et al. (2009) found that anxious patients exhibited higher negative emotional reactivity in response to social threats. This parallels findings from a number of other studies that higher affective reactivity and greater negative emotionality are related to more severe anxiety in response to stressors (Lindhout et al., 2009; Naragon et al., 2009; Selboum et al., 2008; Suls & Martin, 2005; Nigg, 2006; Suls, 1998). Literature also shows that reactivity and emotionality are related to shyness and behavioral inhibition (Volbrecht & Goldsmith, 2010; Eisenberg et al., 1995.)

One possibility is that a shy social temperament, when paired with high affective reactivity or a tendency towards negative emotionality, may result in poor emotion regulation and higher levels of anxiety when exposed to stressors. While the literature indicates strong support for the role of affective reactivity and negative emotionality in impacting the relationship between stressors and mood disorders, it remains unclear as to how these factors relate to other potential moderators such as shyness, social withdrawal, sociability, or neuroticism. Further research is warranted to clarify if these elements are additive or interactive, and whether or not the impact of these elements varies across types of stressors. The current study did not include measurements of affective reactivity

and negative emotionality, which may in part account for the lack of significant findings in this study's model of shyness and social withdrawal alone.

Inclusion of Coping

The many directions that research has taken indicate the complexity of the process between exposure to stressors and resulting pathology. The model tested in this study examined only one small part of a process that is understood to have many elements. Literature indicates that coping strategies are a significant factor in moderating the consequences of exposures to stressors. While the elements of social temperament examined in this study did not yield significant findings, the model was in part hypothesized based on the possibility that a shy temperament may in some way affect the use and effectiveness of support-seeking coping strategies. In a study with adult medical students, Bolger (1990) posited that "coping is personality in action under stress," and found that the personality trait of neuroticism influenced coping efforts and moderated daily anxiety in the face of stressors. Nolen-Hoeksema and Davis (1999) found that adults who are prone to dwell on intrusive stressor-related thoughts ("ruminators") are more likely to seek support from others, and are more likely to benefit from social support, but are less likely to report receiving adequate support. For a sample of college students, Aspinwall and Taylor (1992) found that the beneficial effects of individual differences in optimism, control, and self-esteem on well-being were mediated by the greater support seeking (and less avoidance coping). These studies suggest that other individual differences, such as social temperament, may influence support seeking. Eisenberg et al. (1998) found that shyness was positively related to "coping by doing nothing" and in children was negatively related to seeking support from their teachers.

Findlay et al. (2009) reported similar findings, that children rated high in shyness were over-reliant on internalizing coping strategies and therefore more likely to experience internalizing difficulties, such as anxiety. However, despite the number of studies that have examined the relationship between social temperament, social competence, and social supports, it is still unclear as to the mechanisms that underlie these relationships.

As previously discussed, one study found that shy children are generally less talkative with poorer communicative competence than their peers (Evans, 1993, as cited in Fordham & Stevenson-Hinde, 1999). Shy children may be less likely to clearly communicate their needs and problems and therefore their social support network may be less aware of the children's issues, and less likely to encourage support seeking by the child. Shyness and social withdrawal may also decrease access to available interpersonal resources (e.g., fewer supportive relationships). Hymel et al. (1990) found that shy, withdrawn children have more interpersonal problems and are generally perceived in a more negative light by their peers as well as their teachers. For example, shy children are often perceived as less approachable and less desirable friends (Evans, 1993, as cited in Fordham & Stevenson-Hinde, 1999). These findings suggest that shy, socially withdrawn children may have more limited social support networks. In addition, one can hypothesize that children with shy/socially withdrawn temperaments may be less effective in garnering support, may be more likely to reject support, or may not perceive offered support in a positive manner. These findings highlight the importance of investigating the potentially interactive effects of these particular dimensions of social temperament and coping. This study did not include coping as a variable in its model. One possible reason for the lack of significant findings in the current model is that

shyness alone may not be sufficient to account for differences in response to stressors, but that the interaction between shyness and how effectively children are able to access and utilize social supports has a more significant impact on the association between stressors and anxiety.

Interpersonal vs. Non-Interpersonal Stressors

Although most of the hypotheses proposed were not supported in this study, the analysis of main effects yielded one significant finding. Results indicated higher levels of interpersonal stressors were significantly related to higher levels of anxiety, while the association between non-interpersonal stressors and anxiety was non-significant. This is consistent with findings in the literature indicating that interpersonal stressors are more highly associated with internalizing disorders, whereas exposure to non-interpersonal stressors are more highly associated with externalizing disorders (Rudolph et al. 2000). In addition, there is evidence in the literature that interpersonal stressors have a more detrimental impact on developmental processes for children and adolescents than non-interpersonal stressors (Hammen & Goodman-Brown, 1990; Renouf & Harter, 1990). As featured in this study's model, literature indicates increasing evidence for distinguishing between interpersonal and non-interpersonal domains of stressors and their association with psychopathology. However, there remains a scarcity of studies that explain the processes contributing to differences in the impact of stressor types and in addition, few studies that have thoroughly examined the impact of temperament on these differences.

Limitations

There were a number of limitations associated with this study. This study was conducted with data drawn from a larger study examining child and family adaptation to

stressors within the context of a parent's job loss. As a result, the measurement of anxiety and the experience of stressful life events may have been affected as they were assessed within the context of a significant family stressor. The presence of job loss as a family stressor may have impacted this study on a number of levels, such as the report and perception of other stressors, as well as affecting a family's responses to the occurrence of other stressors. For example, children may have underreported stressors that are perceived to be less significant in the context of a major family stressor such as job loss and its consequences. In addition, stressors were in part evaluated based on the occurrence of aversive treatment or conflict, both of which could be exacerbated when parents are highly stressed for other reasons such as job loss.

Another limitation is that the researcher was limited to the measurement tools used for the larger study, and while the tools used were valid and reliable, there was no opportunity to introduce additional assessment measures. For example, the addition of measures distinguishing different types of shy behavior (e.g., sociability, anxious vs. regulated shyness, as discussed above) and measures of affective reactivity may have provided greater clarity as to the impact of social temperament on the stressor-anxiety relationship. Another significant limitation was the reliance on self-report measures. However, this limitation is partially mitigated by the use of cross-reporter information. Lastly, the system used to classify stressors into interpersonal vs. non-interpersonal categories presents another limitation. While there was good interrater reliability demonstrated, it was a system created for the purposes of the current study and has not yet been tested further.

Clinical Implications

One purpose of this study was to uncover any possible implications for clinical practice. There is a dearth of literature about whether there are differences in therapists' approach to treatment for children who are reported to be or perceived as shy. Most of the literature examining treatment focuses on pathological manifestations of social withdrawal, such as social phobia or avoidant personality, rather than on the temperamental characteristics of shyness and social withdrawal. However, one may hypothesize that clinicians significantly vary their approach to treatment based on individual differences, including perceptions of temperament, personality, and patterns of social interaction. Do therapists perceive shy children as more vulnerable to interpersonal stressors than socially extroverted patients? Do therapists perceive shy children as more vulnerable to anxiety than children who appear more socially confident? If so, are these perceptions based on evidence that shy temperament significantly impacts children's development of anxiety in response to different types of stressors?

The interaction model in this study was not supported, which suggests that children who are shy with a tendency towards social withdrawal are not significantly more vulnerable to higher levels of anxiety in response to stressors in either the interpersonal or non-interpersonal domains. This suggests that clinicians may need to challenge how their perceptions of individual differences in social temperament impact treatment. However, the finding that higher levels of interpersonal stressors were significantly associated with higher levels of anxiety indicates a possible focus in the treatment of anxiety in children and adolescents who experience stressors in both interpersonal and non-interpersonal domains. While cognitive-behavioral therapy is

empirically validated and viewed as the treatment of choice for most anxiety disorders, this finding suggests that other empirically-supported therapies that focus on dealing with interpersonal stressors (such as interpersonal therapy) may hold particular promise and should be further tested for their efficacy in helping children effectively cope with interpersonal stressors.

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Appendix

Coding Instructions

Objective: Code life events described in the PACE Dictionary as either interpersonal or non-interpersonal stressors.

The PACE Dictionary

Format of the PACE Dictionary

The dictionary features a number of categories and subcategories. Life events are divided into twelve general categories, referred to as “domains.” Within each domain is a list of stressful life events, classified into “subdomains.” Within these subdomains are specific life events, each identified with a unique code number (e.g. 00.01, 00.02, etc.). Under each life event is a “prototype event” description that provides a brief prototypical example of that life event. In addition, there is a list of factors that may increase or decrease the level of threat associated with the life event. See Table 1 for an example of the PACE Dictionary format.

The PACE Dictionary lists and describes stressful life events classified into twelve domains:

- Education
- Work
- Reproduction
- Housing, Residence, Neighborhood
- Finances and Possessions
- Crime/Legal
- Health
- Romantic Relationships
- Parents
- Friends, Peers, and Leisure
- Other Relationships
- Pets, Death, Miscellaneous

There are a total of 205 life events listed in the PACE Dictionary. The goal of this assignment is to classify these life events as either interpersonal or non-interpersonal stressors. For the purposes of this study, we will code each prototype event as well as the factors that may increase or decrease the threat above baseline.

Table A1.
Example of PACE Dictionary format

00-08. EDUCATION <- DOMAIN

OVERVIEW OF DOMAIN <- DESCRIPTION OF DOMAIN

The Education domain includes events concerned with a child's school routine, interactions at school, exams/schoolwork and academic performance.

00. SELECTION INTERVIEWS <- SUBDOMAIN

00.01 Child's selection interview <- CODE NUMBER AND LIFE EVENT

Prototype event <- DESCRIPTION OF EVENT

Subject attends a formal interview which is designed to determine whether or not he/she will be offered a training or educational opportunity. Child hears within 2 weeks that s/he has been offered a place. Interviews for slots previously offered to the subject but where he/she has to go to her new educational or training facility in order to settle dates, paperwork and etc. are not included.

Factors increasing threat above baseline <- FACTORS THAT IMPACT SEVERITY OR TYPE OF THREAT OF THE EVENT POSES TO THE FOCAL CHILD

1. S history of school related difficulties (learning disabilities, academic failure, behavior problems, etc...) that might limit present educational opportunities.
2. Major implications for the S and/ or family if the result of the selection interview is favorable. For example: if S. is offered admission to a private school that would facilitate her later acceptance into the college/ university of her choice but knows that her family cannot afford the tuition.
3. Not learning the result within 2 weeks.
4. Learning of rejection within 2 weeks.

Coding Life Events as Interpersonal or Non-Interpersonal Stressors

Life Events as “Stressors”

According to Brown and Harris (1989), life events are defined as stressors when the event involves changes (in activities, roles, persons, or ideas) that are likely to produce strong emotions because of the disruption or potential of disruption to an individual’s goals. In other words, a stressor is an event which produces a “threat” to the individual. The PACE Dictionary lists a number of life events that present a threat to the focal child (referred to in the PACE Dictionary as “S” or “Subject”).

The types of threat posed can vary widely. The goal of this project is to identify life events that pose an *interpersonal* threat to the focal child.

When a Life Event is Considered an Interpersonal Stressor

While most life events potentially have some social component associated with them, the goal of this assignment is to determine which life events are in part stressful *because* of their interpersonal components. For the purposes of this study, a life event is considered an interpersonal stressor if and only if it involves at least one of the following: conflict, aversive treatment, loss, negative evaluation, or credible information that conflict, aversive treatment, loss, or negative evaluation is very likely to soon occur.

- **Conflict** refers to conflict between the focal child and a significant other (e.g. arguments, fights, etc.).
- **Aversive Treatment** refers to the focal child treated in a very aversive way by another person (e.g. bullying, teasing, physical attacks, severe social ostracism, or extreme/unusual disciplinary actions).
- **Loss** can involves loss of a cherished person or relationship (including significantly decreased contact or separation of the focal child from a significant other, termination of a significant relationship, and rejection by a significant other). Note: separation from a significant other that is likely to be of temporary duration (e.g. a hospital visit, a trip away from home) does not qualify as loss, although events or factors that include information that the separation will be permanent (e.g. parent permanently moving out of the household) does qualify as loss.
- **Negative Evaluation** refers to such things as severe verbal criticism expressed to the focal child by someone of importance to the focal child (i.e. a significant other).

As noted above, in addition to events in which one of the above criterion are met, interpersonal stressors may also include *forecast events* in which the child *receives information* from a *reliable* source that conflict, loss, aversive treatment, or negative evaluation will soon occur.

Example: Child is told by mother that the parents are separating and the father will be moving out to his own apartment in three weeks.

In the above example, the child directly receives information from a reliable source (the mother) that loss will soon occur. Thus, this example is considered an interpersonal stressor. Note that the above example does not include speculation. Note that events that do not meet the above criteria will be coded as non-interpersonal events.

Definition of a “Significant Other”

Many life events in some way include other people besides the focal child. However, for the purposes of this study, events featuring **loss** or **negative evaluation** will only be coded as interpersonal if they in some way involve both the focal child and a “significant other.” The PACE Dictionary uses several terms that refer to different types of “significant others”: 1) close ties, 2) romantic relationships, and 3) engaged non-confiding relationships (ENCRs).

Close Ties: refers to person who has a “close tie” to the focal child and is likely to be of highly significant importance to the child. Examples of “close tie” include 1st-degree family members (e.g. parents, step-parents, and siblings), household members, confidants, and main friends.

Romantic Relationships: A boyfriend or girlfriend of the focal child.

Engaged Non-Confiding Relationships (ENCR): A person who does not meet criteria for close ties and is not a romantic partner, but does play a significant role in the child’s world because of the amount of contact and engagement on an ongoing basis. Examples of possible ENCRs are teachers, a regular babysitter, or family friends or relatives that regularly visit and interact with the focal child.

The PACE Dictionary also refers to wider kin, casual acquaintances, and strangers. For the purposes of this study, these people are *not* considered significant others.

Note that events featuring **conflict** or **aversive treatment** may involve the focal child and any other persons, regardless of whether or not they are significant others.

Note that some prototype events and factors only refer to “other” without specifying if that “other” qualifies as a “significant other.” In these cases, the prototype event typically does not qualify as interpersonal. However, factors may describe clear interpersonal consequences that will qualify as interpersonal.

Factors That Increase/Decrease Threat

Under each prototype is a list of Factors that increase or decrease threat. This is a list of conditions that may impact the level or type of threat that a prototype event poses to the focal child. In addition to coding the prototype event, you will also code these factors. Note that these factors should be coded *separately* from the prototype event. For example, you may determine that the prototype event is “non-interpersonal” but that one or more of the factors are “interpersonal.” These codes will be recorded separately on the Coding Record Form (see below).

Procedure for Coding Events

Important Notes for the Coding Process

1. When evaluating a prototype event or factor, it is essential that you take the description at face value. **Do not speculate** about context, scenarios, history, or possible consequences that are not included in the actual descriptions of the prototype events or factors.
2. You will be coding both prototype events and factors that increase/decrease threat. In the Coding Record Form, there are columns for recording the codes for prototype events and columns for recording the codes for factors that increase/decrease threat. Note that it is not necessary to record a separate code for each individual factor - you will enter a single code for interpersonal or non-interpersonal if *any* of the factors associated with the prototype event meet criteria.
3. It is recommended that you regularly consult this manual to determine if either the prototype events or factors meet criteria for being coded as an interpersonal stressor. It is recommended that you regularly review the definitions for each criterion and that you consult the decision tree when making your decisions about coding.
4. Remember that in order for a life event to meet criteria for **loss** or **negative evaluation**, the prototype event or its associated factors must in some way include a “significant other” of the focal child. A significant other is someone who is a Close Tie, Romantic Relationship, or ENCR.
5. When entering your codes on the Coding Records Form, be sure that you are entering your data in the correct row and column. It is recommended that you review your data entry after completing each row. If you do not do this, you may find several rows later that your data entry is off and it will be more difficult and time consuming to go back and discover where the data entry went off track.

Recording Your Coding on the Coding Record Form

The Coding Record Form is a Microsoft Excel worksheet. As you evaluate and code each prototype event and its group of factors, you will record your decisions on this worksheet. For each column, record the following codes:

Y = Interpersonal

N = Non-Interpersonal

Thus, if the prototype event or any of the factors meet criteria, code it as interpersonal and enter “Y”. If the prototype event and its associated factors do not meet criteria, by default code these as non-interpersonal and enter “N”. Note that the Coding Record Form will only accept input of Y or N (in capital letters).

The Coding Records Form contains several columns.

Column 1: Lists the code number for the prototype event.

Column 2: Criterion one (Conflict) for classification of the *prototype event* as an interpersonal stressor. Enter “Y” if the event meets this criterion, or enter “N” if it does not.

Column 3: Criterion two (Aversive Treatment) for classification of the *prototype event* as an interpersonal stressor. Enter “Y” if the event meets this criterion, or enter “N” if it does not.

Column 4: Criterion three (Loss) for classification of the *prototype event* as an interpersonal stressor. Enter “Y” if the event meets this criterion, or enter “N” if it does not.

Column 6: Criterion four (Negative Evaluation) for classification of the *prototype event* as an interpersonal stressor. Enter “Y” if the event meets this criterion, or enter “N” if it does not.

Column 5: Criterion five (Conflict) for classification of any of the *factors* as an interpersonal stressor. Enter “Y” if ANY of the factors meet this criterion, or enter “N” if it does not.

Column 6: Criterion six (Aversive Treatment) for classification any of the *factors* as an interpersonal stressor. Enter “Y” if ANY of the factors meet this criterion, or enter “N” if it does not.

Column 6: Criterion seven (Loss) for classification any of the *factors* as an interpersonal stressor. Enter “Y” if ANY of the factors meet this criterion, or enter “N” if it does not.

Column 7: Criterion eight (Negative Evaluation) for classification any of the *factors* as an interpersonal stressor. Enter “Y” if ANY of the factors meet this criterion, or enter “N” if it does not.

Column 8: If any of the above criteria are met (that is, if any of the previous columns include a code of “Y”), then enter “Y.” If none of the above criteria are met (that is, all of the previous columns are coded “N”), then enter “N.”

Figure A 1. **CODING DECISION TREE**

