

CHILDREN'S COGNITIVE RESPONSES TO THE SYMPTOMS OF PANIC

by

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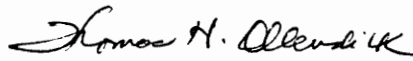
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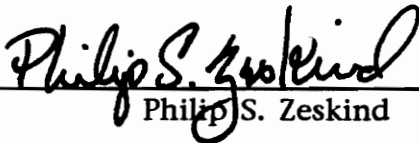
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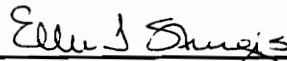
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(Abstract)

The purpose of this study was to examine children's cognitive interpretations of the physiological symptoms of panic. Children from grades 3, 6, and 9 imagined experiencing the physical symptoms of panic and reported their attributions for these symptoms. Conceptions of common illnesses and panic attacks were assessed. It was hypothesized that girls would make more internal, catastrophic (I/C) attributions to the symptoms of panic than would boys, and that older children would make more I/C attributions relative to younger children. These hypotheses were based on the suggestion that notions of external causality characterize the cognitions of younger children (Nelles & Barlow, 1988), and that girls tend to report higher levels of anxiety and fear relative to boys (Ollendick, King, & Frary, 1989; Ollendick, Yule, & Ollier, 1991). It was also suggested that older children would display more mature conceptions of illness than younger children, and that girls would be more advanced in their understanding of illness than would boys. No differences were predicted between children's level of understanding common illnesses and panic attacks (Nelles & Barlow, 1988). Finally, the contribution of several individual factors to children's cognitive interpretations was investigated. No significant grade or gender differences were found for tendency to make I/C attributions. While no gender differences were evident, a significant main effect for grade was found for conceptions of illness, and

understanding of panic attacks was more advanced relative to common illnesses. Finally, internal attributional style in response to negative outcomes and anxiety sensitivity were significant predictors of tendency to make I/C attributions. The relevance of these findings to understanding children's cognitive interpretations of panic symptomatology are discussed.

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This work is dedicated to my parents for their precious gift of a secure base from which to explore the world, and my sisters, with whom I shared my childhood.

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Introduction

Panic disorder is described by the American Psychiatric Association (APA) as a common disorder, with average onset occurring in the 20s. Recurrent panic attacks, defined as "discrete periods of intense fear or discomfort, with at least four characteristic associated symptoms," are identified as the primary features of this disorder (APA, 1987, p. 235). A second essential feature is the unexpected spontaneous nature of the panic attacks which, at least initially, are not triggered by specific anxiety-evoking stimuli. However, the association of particular situations with the occurrence of a panic attack, e.g., driving a car or being among a crowd, may develop as the disorder progresses. The following symptoms are identified by the Diagnostic and Statistical Manual of Mental Disorders--Third Edition-Revised (DSM-III-R) as the characteristic symptoms of panic: "shortness of breath (dyspnea) or smothering sensations; dizziness, unsteady feelings, or faintness; choking; palpitations or accelerated heart rate; trembling or shaking; sweating; nausea or abdominal distress; depersonalization or derealization; numbness or tingling sensations (paresthesias); flushes (hot flashes) or chills; chest pain or discomfort; fear of dying; and fear of going crazy or of doing something uncontrolled during the attack" (APA, 1987, p. 236). Attacks in which four or more symptoms are present are defined as panic attacks, while those characterized by fewer than four symptoms are described as limited symptom attacks. A diagnosis of panic disorder requires the occurrence of at least four panic attacks within a four-week period, or at least one attack followed by a minimum of one month during which the individual experiences persistent fear of having another attack. Furthermore, at least some of the attacks must be characterized by the sudden development of at least four associated symptoms which increase in intensity

within ten minutes of the beginning of the first symptom noticed. Organic factors (e.g., Amphetamine or Caffeine Intoxication, hyperthyroidism) must also be ruled out (APA, 1987).

The characteristic symptoms of panic as identified by DSM-III-R include several physiological components or bodily sensations (i.e., shortness of breath or smothering sensations; dizziness, unsteady feelings, or faintness; choking; palpitations or accelerated heart rate; trembling or shaking; sweating; nausea or abdominal distress; depersonalization or derealization; numbness or tingling sensations; flushes or chills; and chest pain or discomfort) as well as three distinct cognitive components (i.e., fear of dying; fear of going crazy; and fear of doing something uncontrolled during the attack). Based on this distinction between physiological and cognitive symptoms, a cognitive model of panic has been put forth in which panic attacks are described as resulting from the "catastrophic misinterpretation" of particular bodily sensations (Clark, 1986). Such catastrophic misinterpretation involves the perception of these sensations as far more dangerous than they actually are. For instance, palpitations may be interpreted as a sign of an impending heart attack, slight breathlessness may be perceived as evidence of cessation of breathing and resulting death, or shakiness may be interpreted as signaling loss of control and insanity (Clark, 1986, p. 462).

The cognitive model of panic proposes that such catastrophic misinterpretation plays a critical role in the vicious cycle which culminates in a panic attack. Specifically, this cycle begins with a perceived threat (e.g., external fear-evoking stimuli/situations or internal bodily sensations, thoughts, or images). The perception of threat results in a state of mild

apprehension which is accompanied by a broad range of bodily sensations. Subsequently, the catastrophic misinterpretation of these anxiety-produced sensations results in increased apprehension which then produces a further increase in bodily sensations. It is this vicious cycle, characterized by the interplay of bodily sensations and catastrophic cognitions, which ultimately culminates in a panic attack. The cognitive approach to understanding panic attacks has been embraced by several researchers studying the genesis, course, and associated components of panic (Barlow, 1988; Rapee, Mattick, & Murrell, 1986).

While the existence of panic attacks and panic disorder is well established in the adult population (Anderson, Noyes, & Crowe, 1984; Black & Robbins, 1990; Cox, Endler, & Swinson, 1991), much interest currently exists regarding the prevalence of this phenomenon in children. Recent retrospective reports, normative research, and clinical studies which indicate the presence of panic attacks in children and adolescents have led some researchers to conclude that "on the basis of this accumulating evidence there is little reason to doubt the occurrence of prepubertal panic disorder" (Black, Uhde, & Robbins, 1990, p. 835). However, other researchers and clinicians are less confident about the existence of this disorder during the earlier stages of development. As Nelles and Barlow (1988) query, "do children experience these physiological sensations, and have the cognitive 'ability' to misinterpret experiences and attribute them to internal causes?" (Nelles & Barlow, 1988, p. 362). The cognitive model of panic summarized above is central to this question. In their pursuit of an answer, Nelles and Barlow (1988) focus on the cognitive-developmental stages of childhood and adolescence, and conclude that the cognitive capacity to interpret physiological symptoms as internally based is a

necessary element in the experience of panic, yet is not usually attained prior to adolescence.

The available data presented in retrospective reports, normative research, and clinical studies are reviewed here, and developmental issues are discussed. It is argued that a more complete comprehension of children's cognitive-developmental progression in interpreting the physiological symptoms of panic is a necessary key to understanding this disorder as it may manifest itself prior to adulthood.

Retrospective Reports

An indication of the possible occurrence of panic attacks in both children and adolescents can be derived through the retrospective reports of adults. While the usefulness of these self-reports is limited by questions of reliability and validity, such data provide an initial framework for understanding the epidemiological aspects of panic disorder.

The National Institute of Mental Health Epidemiologic Catchment Area Program surveyed community samples of adults using the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) to obtain information on a series of mental disorders (Von Korff, Eaton, & Keyl, 1985). The prevalence rate of panic attacks in the prior six months was reported to be about 3% in each of three community sites, while prevalence of panic disorder ranged from 0.6 to 1.0%. Those identified as meeting the criteria for panic attacks or panic disorder reported the age at which their first panic attack occurred, revealing peak age of onset in the 15-19 year range. This peak age of onset was somewhat surprising in as much as diagnostic criteria in APA (1987) suggested average onset in the 20s. Furthermore, 18% of adults meeting the criteria for panic disorder reported experiencing their first panic attack

prior to 10 years of age. Von Korff and his colleagues regarded the reported prevalence of panic onset in the 15-19 year age range as a significant finding given the social challenges of establishing relationships beyond the family in the adolescent years. They suggested that this finding supported the concept that loss or threat of loss of important personal relationships may contribute to the development of panic attacks (Klein, 1980).

Using a clinical sample, Thyer and his colleagues derived results similar to those reported by Von Korff et al. (1985) in their community sample. Retrospective information obtained from the files of 423 anxiety disorder patients included 62 cases of panic disorder ranging from 5 to 51 years in reported age of onset. While the mean age of onset was 26.6 years, 39% experienced their first panic attack before age 20 and 13% were reportedly no older than 10 at age of onset (Thyer, Parrish, Curtis, Nesse, & Cameron, 1985).

However, a recent retrospective review by Klein and his colleagues provided less support for the existence of panic attacks in children, leading the authors to conclude that "prepubertal spontaneous panic attacks are rare" (Klein, Mannuzza, Chapman, & Fyer, 1992). Utilizing the Schedule for Affective Disorders and Schizophrenia-Lifetime Anxiety version (Fyer, Endicott, Mannuzza, & Klein, 1985), these researchers interviewed 343 consecutive admissions to an anxiety disorders clinic as well as 560 first-degree relatives of anxiety clinic patients. Only 9 (1%) of the 903 patients and relatives reported experiencing spontaneous panic attacks prior to the age of 13. Furthermore, a thorough review of the retrospective reports identified only three convincing accounts of full, spontaneous panic attacks occurring in childhood. The remaining six were either highly questionable, described limited symptom attacks, or were apparently triggered by phobic stimuli.

Difficulty obtaining convincing reports and correctly interpreting them led the authors to question the validity of retrospective research while rejecting the notion of panic attacks as a common childhood phenomenon (Klein et al., 1992).

Normative Research

Given the methodological difficulties of relying on retrospective data as a determinant of the prevalence of panic attacks and panic disorder in children, several recent studies have incorporated the direct assessment of children and adolescents. Normative research in this area focuses on the general population of youngsters in an effort to illuminate questions regarding the prevalence and nature of this phenomenon.

An initial normative study of panic attacks in children and adolescents was conducted by Warren and Zgourides (1988) through the administration of a Panic Attack Survey to 388 high school students aged 12 to 19 years. Based on the youngsters' reports, the researchers identified 60% of the sample as having experienced at least one panic attack, while 31.9% indicated having at least one panic attack which met the criteria of DSM-III. Moreover, 4.7% met the requirements of a DSM-III diagnosis of panic disorder. The most commonly experienced symptom was heart pounding or palpitations, endorsed by 58% of the respondents. Trembling or shaking, dizziness, sweating, and hot or cold flashes were other commonly experienced symptoms. Questions regarding onset identified 13 years as the modal age for a first panic attack, with initial attacks often occurring after stressful events such as interpersonal conflict, experiences of loss (e.g., parental divorce), and academic problems. While 24% of panickers feared experiencing another attack, 60% reported having forgotten about their first panic attack after it occurred. In general, although

60% of the high school students reported having at least one panic attack, the results did not implicate panic attacks as a severe or recurrent problem for the majority of these students.

Macaulay and Kleinknecht (1989) studied a sample of 660 adolescents, aged 13 to 18, with the purpose of examining the prevalence and nature of panic attacks while also assessing concurrent depression and psychosocial stresses in this age group. A modified version of the Panic Attack Questionnaire (PAQ; Norton, Dorward, & Cox, 1986; Norton, Harrison, Hauch, & Rhodes, 1985) was administered as was the Center for Epidemiologic Studies-Depression scale (CES-D; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). 400 (63.3%) of the respondents reported experiencing at least one panic attack in the past year based on the DSM-III criteria (APA, 1980) and described in the PAQ (Norton et al., 1986). The sample was then divided into four groups for subsequent analysis based on self-reported frequency, severity and distress: 1. No panic (35.7%); 2. Mild panic (47.5%); 3. Moderate panic (10.4%); 4. Severe panic (5.4%). The mild panic group was found to have experienced significantly fewer attacks in the past four weeks than either the moderate or severe group. It is interesting to note that the average frequency of 3.73 attacks in the severe group was only slightly less than the DSM-III-R specification of four attacks in four weeks as a requirement for the diagnosis of panic disorder.

Statistical analyses of demographic, psychosocial, and other descriptive variables were undertaken. Median and modal age at first panic attack was reported to be 13 years of age with a mean of 12.01 years. Age at first attack did not differ by either gender or panic category. Older subjects were marginally more likely to report experiencing an attack in the past year, and

significantly more females (76.4%) reported having a panic attack in the past year than did males (47.2%). Similarly, significantly more females than males reported severe levels of panic, with 7.3% of females compared with 3.2% of males classified in the severe group. The authors reported a clear association between panic and depression, with the moderate and severe groups differing from the nonpanic and mild panic groups which also differed from each other on the CES-D scale. The authors noted that subjects in the severe panic group scored at clinically significant levels on this instrument, with a mean score of 25. Finally, multiple regression on panic groups revealed that severity of panic as defined by panic group membership was significantly and positively predicted by self-reported depression scores, perceived stress from family, gender (with females showing greater severity than males), and school stresses, and negatively related to family support. Based on the overall findings of this study, the authors concluded that "panics can clearly begin during the adolescent years, and a significant number may have frank panic disorder" (Macaulay & Kleinknecht, 1989, p. 237).

Hayward, Killen, and Taylor (1989) interviewed a sample of 95 ninth graders in order to determine the prevalence of panic attacks and also to explore the relationship between panic and both depression and substance use in adolescents. Subjects were asked to complete a questionnaire consisting of items regarding ethnicity, parents' marital status, and substance use. The depression scale from the SCL-90-R (Derogatis, 1983) was also administered. Secondly, the adolescents were administered the panic disorder section of the Structured Clinical Interview for DSM-III-R Disorders (SCID; Spitzer, Williams, & Gibbon, 1987).

Of this sample, 11.6% reported experiencing at least one four-symptom panic attack, encompassing 17.4% of the girls and 6.1% of the boys. In addition, 3.2% of the sample, all boys, were identified as having experienced at least one symptom-limited attack. The incidence of divorced or separated parents was significantly higher among panickers than in the no panic attack group (61% vs. 29%), as was the tendency to have engaged in experimental or regular cigarette use (77% vs. 48%). No significant differences were found regarding marijuana and alcohol use. Finally, the panic attack group reported significantly higher levels of depression on the depression scale of the SCL-90-R than the non-panickers. The authors concluded that "the results of this study confirm that panic attacks are not confined to adults" (Hayward et al., 1989, p. 1062). They noted the probability of a relationship between panic attacks and depression in adolescents, and suggested that early loss or sensitivity to separation resulting from factors such as parental divorce may be a risk factor for the subsequent development of panic attacks.

A study of the prevalence of panic attacks in Australian adolescents was recently conducted by King and his colleagues (King, Gullone, Tonge, & Ollendick, 1993). The sample consisted of 246 13-15 year-olds (145 males and 101 females) and 288 16-18 year-olds (145 males and 143 females). A modified version of the Panic Attack Questionnaire (PAQ) was administered, and the relationship between panic attacks and anxiety was assessed via the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978, 1985).

This study indicated a lifetime prevalence rate for panic attacks of 42.9% within an Australian adolescent sample, with 47.1% of the females and 39.3% of the males reporting having experienced at least one panic attack. In contrast to American studies which have reported significant sex differences, with

more female than male adolescents indicating panic attacks (Last & Strauss, 1988; Macaulay & Kleinknecht, 1989), a significant gender effect was not found in this sample. There was also no significant difference between 13-15 year-olds (46.3%) and 16-18 year-olds (39.9%) in reported prevalence of panic attacks. Most of the panic subjects reported experiencing limited symptom attacks, consisting of only a few symptoms. The most commonly endorsed symptoms were identified as: pounding heart (70.8%), trembling or shaking (53.1%), sweating (38.1%), and nausea (33.6%). Furthermore, the majority did not perceive high levels of disruption, with only 6.8% endorsing "quite a bit" or "very much" life interference. Finally, panickers reported significantly higher levels of physiological anxiety, worry/oversensitivity, and overall anxiety than nonpanickers. The authors noted the theoretical importance of these findings regarding anxiety proneness. This concept identifies a tendency toward general anxiety and an apprehensive response style toward physical sensations as factors which may predispose an individual to develop panic attacks (Rapee, Ancis, & Barlow, 1988). While King et al. (1993) caution that the experience of a panic attack itself may result in higher levels of general anxiety and oversensitivity to physiological sensations, they conclude that high levels of anxiety may place adolescents and children at greater risk for the development of panic attacks. Furthermore, these authors note that heightened levels of both physiological and cognitive-based anxiety indicate that Australian adolescent panickers may meet the "requirements" for panic as hypothesized by Nelles and Barlow (1988), namely the experience of physiological characteristics of panic accompanied by cognitive "catastrophic misinterpretation" of the physical sensations (Nelles & Barlow, 1988, p. 362).

The above findings have been recently replicated and extended in a similar study with Australian youth (King, Mattis, Yang, & Ollendick, submitted). This sample consisted of 649 unselected adolescents between the ages of 12 and 17 attending rural and urban high schools in Victoria. All participants were administered the PAQ as well as the RCMAS, the Children's Depression Inventory (CDI; Kovacs & Beck, 1977), and the Fear Survey Schedule for Children - Revised (FSSC-R; Ollendick, 1983). Consistent with the earlier findings, 35.9% reported having had a panic attack at some point in their lives. Of these 233 youth, 171 reported full-blown attacks (four symptom criteria) and 62 reported limited symptom attacks (less than four symptoms). Specific symptoms endorsed and their severity levels paralleled those reported by King et al. (1993). Those individuals having full-blown attacks reported higher levels of anxiety, fear, and depression than those having limited symptom attacks and those having no attacks. In addition, path-analytic procedures revealed that panic frequency and severity were related directly to anxiety, fear, and depression. These new findings lend further support to Rapee et al.'s (1988) anxiety sensitivity model of panic.

While the preceding studies have focused specifically on the prevalence and nature of panic attacks, several normative studies have examined a broader range of disorders (including panic disorder) in children and adolescents. For example, Whitaker, Johnson, Shaffer, Rapoport, Kalikow, Walsh, Davies, Braiman, and Dolinsky (1990) examined the prevalence of selected DSM-III-defined psychiatric disorders in a secondary school population (N=5596) of American adolescents, aged 13-18 years. Lifetime prevalence estimates were reported for the following disorders: anorexia nervosa (0.2%), panic disorder (0.6%), obsessive-compulsive disorder (1.9%),

bulimia (2.5%), generalized anxiety disorder (3.7%), major depression (4.0%), and dysthymic disorder (4.9%). It is interesting to note that a 0.6% prevalence rate for panic disorder in adolescents is not extremely discrepant from the reported adult prevalence rate of 1.5% (Black & Robbins, 1990).

In contrast to the findings of Whitaker et al. (1990), four other normative studies of DSM-III disorders failed to report cases of panic disorder in children and adolescents. Kashani and Orvaschel (1988) explored the 6-month prevalence of anxiety disorders in a community sample of 150 adolescents, aged 14-16 years. No cases of panic disorder or panic attacks were noted among 13 identified anxiety cases. Similarly, three studies conducted outside of the United States identified no cases of panic disorder in their respective samples (Anderson, Williams, McGee, & Silva, 1987; Bird, Canino, Rubio-Stipec, Gould, Ribera, Sesman, Woodbury, Huertas-Goldman, Pagan, Sanchez-Lacay, Moscoso, 1988; Offord, Boyle, & Racine, 1989). Anderson et al. (1987) assessed 792 New Zealand preadolescents, aged 11 years, with the Diagnostic Interview Schedule for Children, Child Version (DISC-C; Costello, Edelbrock, Kalas, Kessler, & Klaric, 1982). Bird et al. (1988) conducted an epidemiologic community survey of 843 Puerto Rican children and adolescents, aged 4 through 16 years, utilizing the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1981) and the National Institute of Mental Health's Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Kalas, Kessler, & Klaric, 1982). Finally, the Ontario Child Health Study (Offord et al., 1989) documented no cases of panic disorder while investigating the prevalence of psychiatric disorders among Ontario children, aged 4-16, using an adaptation of the CBCL (Achenbach & Edelbrock, 1981).

Despite the failure of the previous four studies to identify cases of panic disorder in children and adolescents, this review of normative research has documented the existence of panic attacks and panic disorder within adolescent samples as reported by researchers focusing primarily on the identification and description of this phenomenon. However, no normative evidence exists which documents the occurrence of panic in prepubescent children. Of the epidemiological studies exploring the prevalence of DSM-III disorders in younger children (Anderson et al., 1987; Bird et al., 1988; Offord et al., 1989), none has focused primarily on the assessment of panic. It is conceivable that the diagnostic instruments used lack the sensitivity to assess panic disorder in a manner comparable to the panic assessment surveys and questionnaires incorporated in several more specific studies of panic in adolescents (King et al., 1993; Macaulay & Kleinknecht, 1989; Warren & Zgourides, 1988). Thus, panic may be present in children but underdiagnosed in these normative studies. In any case, it is useful to explore research incorporating clinical samples of both children and adolescents. Such a review will serve to further describe the nature of adolescent panic while probing deeper into the characteristics of childhood anxiety and addressing the possible manifestation of panic disorder in this younger population.

Clinical Studies

Recent clinical studies of panic disorder in children and adolescents have sought to identify and describe this phenomenon as it may manifest itself within clinic-referred samples of youngsters. Alessi, Robbins, and Dilsaver (1987) determined the diagnoses of 61 hospitalized adolescents in order to assess for the presence of panic disorder. The diagnostic instruments utilized were the Schedule for Affective Disorders and Schizophrenia (SADS; Spitzer &

Endicott, 1978), Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1977), and the Hamilton Rating Scale for Depression (HRSD). Ten adolescents (15%) received a SADS-derived diagnosis of panic disorder, while an additional 15 (24%) were identified as cases of possible panic disorder. In addition, 60-90% of these hospitalized adolescents reported having experienced some physiological symptoms of panic attacks (e.g., trembling, sweating, and palpitations). More females than males were diagnosed as definite or possible panic disorder cases (6:4 and 12:3, respectively), and age of onset for panic attacks ranged from 12 to 15 years. Concurrent depression was evident among many of the panickers, with the HRSD mean total score significantly higher among subjects with definite panic attacks compared to those identified with possible or no panic. Specifically, definite panic disordered patients evidenced significantly higher scores on the HRSD items of guilt, decreased work and interest, psychological and somatic anxiety, and weight loss.

A second study of panic disorder in psychiatrically hospitalized children consisted of a sample of 136 consecutive referrals who were interviewed upon admission to a child psychiatric unit (Alessi & Magen, 1988). Final diagnoses accounted for the child's psychiatric history as well as clinical assessment conducted during hospitalization, and panic disorder was diagnosed if a child met DSM-III criteria for panic attacks on a minimum of three occasions during the first two weeks of hospitalization. Four boys and three girls (5.15% of the 136 children) were diagnosed as having panic disorder. These children were all prepubertal, ranging in age from 7-12 years at the time of diagnosis. Their reported mean age of onset of panic attacks was 8.3 years (range of 3 to 12 years). While four of the seven children also had depressive disorders, six of the seven were diagnosed with comorbid separation anxiety disorder, a finding

which led the authors to suggest that children diagnosed with separation anxiety disorder may also have panic attacks.

Another report of panic disorder among prepubertal children is presented by Vitiello, Behar, Wolfson, and McLeer (1990). These clinicians identified six prepubertal cases of DSM-III-R panic disorder occurring in 5 boys and 1 girl, aged 8 to 13 years. Diagnosis was based on an unstructured psychiatric interview in addition to the Diagnostic Interview for Children and Adolescents (DICA), child and parent versions (Herjanic & Campbell, 1977) and the panic disorder section of the adult Diagnostic Interview Schedule (DIS; Robins, Croughan, Williams, & Spitzer, 1981).

Vitiello and colleagues reported age of onset for panic disorder ranging from 5 to 11 years in their six identified cases, with earlier onset indicative of greater severity. All six of the children experienced panic symptoms of weakness, pounding heart, trembling or shaking, and feelings of dying or going crazy. Five of the six reported shortness of breath, feeling light-headed or dizzy, and chest tightness or pain. While they do not see panic disorder as common among children, Vitiello and colleagues believe that "a higher prevalence of diagnosed panic disorder in children may encourage attempts to additionally unify (i.e., to see as a continuum) the adult and child anxiety disorders" (Vitiello et al., 1990, p. 784).

Moreau, Weissman, and Warner (1989) investigated panic disorder in 220 children, adolescents, and young adults, aged 6 to 23 years, who were identified as at high or low risk for depression based on parent's diagnosis. The Schedule for Affective Disorders and Schizophrenia for School-Age Children, Life-Time Version (Kiddie-SADS-L) as well as available school and psychiatric records served as the basis for DSM-III diagnoses. The researchers identified four

girls and three boys, ranging in age from 11 to 23 years, who showed panic symptoms. The mean number of symptoms was 6.1, with all seven children reporting shortness of breath, and the majority indicating palpitations. Symptoms experienced by half of the subjects included chest pain, choking, dizziness, sweating, trembling, fainting, fears of death, and feelings of unreality. Six of these seven children were diagnosed as having panic attacks with the frequency required to meet the criteria for panic disorder. Age of onset ranged from 5 to 18 years, with prepubertal onset occurring in four cases. All of the cases of panic disorder in this study were identified in children at high risk for depression, and all had other diagnoses, of which major depression and separation anxiety disorder were the most common, each occurring in five cases. The results of this study led the authors to suggest that panic disorder does occur in children and can occur prior to puberty.

Another clinical investigation of panic disorder in children and adolescents was conducted by Last and Strauss (1989). These authors identified 17 cases of panic disorder (incidence rate of 9.6%) among 177 consecutive referrals (aged 5 to 18 years) to an outpatient clinic for anxiety-disordered youngsters. Diagnoses were based on DSM-III-R criteria utilizing a modified version of the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS; Puig-Antich & Chambers, 1978). Of the 17 patients identified with panic disorder, all but one were adolescent and postpubertal at intake. Similarly, only one showed a pre-adolescent onset for panic attacks (mean age of onset=15.6). Most of the panic patients were female (nearly 2:1). The percentage of panic disordered patients evidencing each of the 13 DSM-III-R symptoms was reported as follows: 1. Dyspnea-82%; 2. Dizziness/faintness-76%; 3. Palpitations/tachycardia-94%; 4. Trembling-94%; 5. Sweating-82%; 6.

Choking-29%; 7. Nausea-53%; 8. Depersonalization/derealization-71%; 9. Paresthesias-65%; 10. Flushes or chills-94%; 11. Chest pain-47%; 12. Fear of dying-59%; 13. Fear of going crazy-65%. An additional anxiety disorder was the most frequent concurrent diagnosis, occurring in 35% of the panic disordered patients, while the most frequent past psychiatric illness was a depressive disorder, evidenced by 29% of these youngsters.

The available literature focusing on the presentation of panic disorder and/or symptomatology in children also includes several case reports indicating the presence of panic attacks in both adolescent and prepubertal children. Biederman (1987) identified two 11 year-old children (1 male and 1 female) and one 8 year-old male each of whom reported "discrete, spontaneous episodes of intense fear associated with anxiety symptoms of enough severity and rapidity of onset to permit the diagnosis of panic disorder" (Biederman, 1987, p. 40). Symptoms included school refusal, separation difficulties, fear of falling asleep, recurrent shaking, palpitations, sweating, and muscle tension. Van Winter and Stickler (1984) described 7 pediatric cases, aged 9 to 17 years, of "panic attack syndrome" characterized by "many peripheral manifestations of sudden, massive autonomic discharge, with fear of dying, of 'going crazy,' or of 'doing something uncontrolled during an attack'" (Van Winter & Stickler, 1984, p. 661). More recently, Ballenger, Carek, Steele, and Cornish-McTighe (1989) described three childhood cases (two girls, aged 8 and 11 years, and one boy, aged 13) meeting adult DSM-III-R criteria for panic disorder with agoraphobia. All three evidenced cognitive "catastrophic misinterpretation" of bodily sensations, with the 8 year-old reportedly feeling "out of control" during her panic attacks, the 11 year-old presenting with fear that she was going to die accompanied by trembling, sweaty hands, tingling in her legs,

and dizziness, and the 13 year-old boy reporting fear that he would faint or "lose control." Black and Robbins (1990) described five cases, aged 14 to 17 years, which also illustrated the onset of panic disorder during childhood or adolescence. Characteristic symptoms included shortness of breath, paresthesias, fears of "going crazy" or of "something terrible happening," flushing, palpitations, and dizziness. Age of onset ranged from 4 to 15 years, and a history of depression was evident in all of the cases.

In a paper on the neurological presentations of panic disorder in children, Herskowitz (1986) identified "discrete panic attacks" (Herskowitz, 1986, p. 618) in one 9 year-old girl, two 14 year-old children (1 boy and 1 girl), and one 16 year-old boy. All children, with the exception of the 16 year-old boy, evidenced fears of dying, going crazy, or losing control. Physical symptoms reported by at least half of the cases included palpitations, chest pain, choking/smothering, dizziness/unsteadiness, paresthesias, faintness, and trembling/shaking. The author concluded that the phenomenon of panic disorder in children and adolescents may be "an underdiagnosed and sometimes misdiagnosed clinical entity" (Herskowitz, 1986, p. 621).

Finally, Garland and Smith (1991) cited the presence of coexisting panic attacks and night terrors in two prepubertal children, aged 9 and 10. They described the 9 year-old as meeting DSM-III-R criteria for panic disorder as well as two parasomnias, namely night terrors and somnambulism. Panic attacks were characterized by significant anxiety, sweating, palpitations, shortness of breath, tremulousness, flushing, difficulty swallowing, and nausea.

Developmental Issues

The preceding review of the available literature has revealed that panic is prevalent among postpubescent samples, with 42.9% to 63.3% of adolescents reporting attacks (King et al., 1993; Macaulay & Kleinknecht, 1989), and 0.6% to 4.7% reporting past or present symptoms sufficient to meet DSM-III criteria for a diagnosis of panic disorder (Warren & Zgourides, 1988; Whitaker et al., 1990). Moreover, in a clinical sample of 61 hospitalized adolescents, 15% received a diagnosis of panic disorder (Alessi, Robbins, & Dilsaver, 1987), and several others have identified distinct cases of adolescent panic (Ballenger, Carek, Steele, & Cornish-McTighe, 1989; Biederman, 1987; Black & Robbins, 1990; Herskowitz, 1986; Last & Strauss, 1989; Moreau, Weissman, & Warner, 1989; Van Winter & Stickler, 1984). However, consideration of numerous methodological concerns suggests caution in interpreting such results prior to replication and the incorporation of improved strategies (Kearney & Silverman, 1992). Meanwhile, the issue of panic disorder as a phenomenon which may occur prior to adolescence is the focus of considerable controversy. Several clinical studies and case reports have identified instances of panic in prepubertal children (Alessi & Magen, 1988; Ballenger, Carek, Steele, & Cornish-McTighe, 1989; Biederman, 1987; Garland & Smith, 1991; Herskowitz, 1986; Last & Strauss, 1989; Moreau, Weissman, & Warner, 1989; Van Winter & Stickler, 1984; Vitiello, Behar, Wolfson, & McLeer, 1990). Alessi & Magen (1988) reported a 5.15% prevalence rate for prepubertal panic disorder in a sample of 136 child psychiatric referrals. Four other clinical reports (Ballenger, Carek, Steele, & Cornish-McTighe, 1989; Herskowitz, 1986; Van Winter & Stickler, 1984; Vitiello, Behar, Wolfson, & McLeer, 1990) have cited the occurrence of catastrophic cognitions in response to bodily sensations

(i.e., fears of dying, going crazy, or losing control) among pre-adolescents. However, none of the reviewed literature has explored the impact of cognitive development on children's interpretation of the physiological symptoms of panic. Indeed, the cognitive model of panic has become a focal point in the controversy over whether young children can and do manifest true panic disorder.

Nelles and Barlow (1988) have argued that spontaneous panic attacks are rare or nonexistent in children (versus adolescents). They cite two distinct components necessary for the occurrence of panic. The first is the presence of characteristic physiological symptoms including breathlessness, dizziness, palpitations, trembling, sweating, nausea, hot flashes, and chest pain. The second involves the cognitive "catastrophic misinterpretation" (Nelles & Barlow, 1988) of these symptoms (e.g., thoughts of losing control, going crazy, or dying). While childhood hyperventilation syndrome (Herman, Stickler, & Lucas, 1981) parallels the physiological sensations of panic, Nelles and Barlow hypothesize that the cognitive reactions of children are dominated by notions of external causation. Thus, they propose that it is not until adolescence that children are capable of making the internal attributions characteristic of spontaneous panic attacks.

Specifically, the hypothesis of Nelles and Barlow (1988) presumes a developmental shift from external to internal causality between childhood and adolescence. According to this model, a young child should associate panic symptoms with a directly proximal situation, person, or object ("My heart is beating fast because I'm cold"). An older child should assign a less proximal external cause to the experience of panic symptoms ("My heart beats fast every time I get on the bus"). The younger adolescent may be capable of

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reflecting on physiological aspects of panic and feel a loss of control, but should ultimately interpret the symptoms as externally caused. Indeed, Nelles and Barlow suggest that it is not until late adolescence that the individual has developed the cognitive capacity to make the internal attributions characteristic of true panic attacks (i.e., "My heart beats fast, and I feel strange when I have to go to school, even when I should be having fun - I must be going crazy or dying"). Thus, according to this hypothesis, the cognitive responses of older adolescents when confronted with the physiological symptoms of panic are both internal and catastrophic, while those of younger children may be described as external and non-catastrophic.

The view presented by Nelles and Barlow is based on the work of Bibace and Walsh (1977, 1979, 1980, 1981) who define the developmental progression of children's cognitive interpretations of illness. The major hypothesis of this research is that children's concepts of illness (i.e., their understanding of illness, its cause, and cure) develops in a systematic manner that is consistent with the cognitive development of causal reasoning as described by Piaget (1930) and Werner (1948), whose studies of conceptions of space, time, causality, and number have repeatedly demonstrated that children's logic is qualitatively different from that of adults. Bibace and Walsh maintain that the logic of children not only relies on different principles, but also progresses along a developmental sequence, the "cardinal dimension" of which is the degree of differentiation between self and other. They stress that "this variation in degree of differentiation between the self and the other will manifest itself in significant differences in children's conceptions of health and illness" (Bibace & Walsh, 1980, p. 912).

The purpose of the research of Bibace and Walsh is to apply the general stages of cognitive development derived from the theories of Piaget and Werner to the particular content area of children's conceptions of health and illness. Werner's (1948) organismic developmental perspective served as the framework from which the studies of Bibace and Walsh were generated. Specifically, while Werner approached a given phenomenon with the question, "How does it develop?", Bibace and Walsh queried, "How do children's conceptions of health and illness change as a function of changes in the developmental status of the organism?" (Bibace & Walsh, 1979, p. 288). Furthermore, both Piaget and Werner emphasized the importance of deriving systems of developmental classification from analysis of underlying cognitive processes. Bibace and Walsh thus incorporated the "clinical method" of this tradition into their protocol. This technique has the advantage of allowing the examiner to conduct a comprehensive inquiry into the child's understanding of a phenomenon by questioning the meaning of terminology used by the subject and following leads that the child might offer. It thus reflects underlying cognitive processes within the context of responses, lending a flexibility not offered by conventional, standardized assessment.

Utilizing an initial sample of 180 children, aged 3 to 13 years, Bibace and Walsh sampled a broad developmental range of explanations regarding the definitions and causes of various illnesses (e.g., colds, headaches, heart attacks) as well as strategies for preventing such illnesses (Bibace & Walsh, 1979). The data from this pilot study were classified according to Piaget's three broad stages of cognitive development which Bibace and Walsh (1977, 1979, 1980, 1981) refer to as the prelogical, concrete logical, and formal logical

stages.¹ Two subtypes were then distinguished within each of these categories. The adequacy of this classification system as well as the developmental ordering of children's responses were verified through a testing phase conducted with another sample consisting of 4, 7, and 11 year-olds (n=72). These three groups were chosen, on the basis of chronological age, to tap a range of responses typical of each of the three broad stages of cognitive development. Based on the results of this testing phase, Bibace and Walsh determined that their classification system was consistent within a cognitive developmental framework since explanations of illness varied as a function of the developmental status of their subjects. The following categories were thus described.

Prelogical explanations of illness reflect Piaget's concept of prelogical thinking in which children explain cause-effect relationships in terms of spatial and/or temporal cues immediately present in the external environment. "Phenomenism," the least sophisticated explanation of illness, identifies the cause of disease as an external concrete stimulus that may co-occur with the illness but is spatially and/or temporally removed (i.e., "How do people get colds?"..."From the sun;" Bibace & Walsh, 1981, p. 36). The child possesses no understanding of how such events cause the illness. More mature prelogical children offer explanations classified as "contagion." The cause of disease is explained by phenomena that are present in the immediate environment but with which the child has no physical contact. Proximity and magical thinking serve to explain the relationship between the cause and the

¹ The terms preoperational, concrete operational, and formal operational more accurately reflect Piagetian theory. However, the author will use the terminology incorporated by Bibace and Walsh for the purpose of consistency in describing their model.

illness (i.e., "People get colds when someone else is near them."..."How?"..."I don't know--by magic I think;" Bibace & Walsh, 1981, p. 36).

The Piagetian stage of concrete logical reasoning (approximately 7 to 10 years of age) is characterized by a developmental emphasis on differentiation between the self and other, facilitating clear distinction between what is internal to the self versus that which is external. The two explanations of illness incorporated in this group reflect this distinction. "Contamination" identifies the explanations of younger children in the concrete logical group. These children view the cause of illness as an external stimulus (a person, object, or action) which possesses a quality that is detrimental to the body. This cause then effects illness through contamination in which the child has physical contact with the stimulus or physically engages in a harmful action (i.e., "Your head would get cold, the cold would touch it, and then it would go all over your body;" Bibace & Walsh, 1981, p. 36). "Internalization," the more sophisticated concrete logical subgroup, defines illness as located within the body, although an external factor may be perceived as the ultimate cause. A process of internalization (e.g., swallowing or inhaling) relates the external stimulus to its internal effect on the body, although clarity regarding internal organs and bodily functions is lacking (i.e., "The bacteria gets in by breathing...the lungs get too soft, and it goes to the nose."..."How does it get better?"..."Hot fresh air, it gets in the nose and pushes the cold air back;" Bibace & Walsh, 1981, p. 37).

The final category of formal logical explanations characterizes Piaget's concept of formal logical thinking manifested by children of approximately 11 years of age and older. This stage reflects the greatest degree of differentiation between the internal world and the external environment.

Children describe the source of illness as located within the body, although an external entity may still be identified as the ultimate cause. Younger children in the formal-logical stage provide "physiological" explanations in which the source of illness is manifested within internal physiological structures, although external occurrences may serve to trigger malfunctioning of the internal organ or function. Such malfunctioning is described as a sequence of internal events which ultimately results in illness (i.e., "In the blood stream [platelets] are like white blood cells. They help kill germs."..."How did you get sick?"..."From germs outside. There were more germs than platelets. They killed the platelets off;" Bibace & Walsh, 1981, p. 37). The most sophisticated explanations of illness are classified as "psychophysiological." Like physiological explanations, internal bodily structures and processes are identified as the source of illness, but the child now recognizes the role of psychological factors. Specifically, the child understands that thoughts or feelings can impact on bodily functions (i.e., "How do people get a heart attack?"..."It can come from being all nerve-racked. You worry too much. The tension can affect your heart;" Bibace & Walsh, 1981, p. 38).

Subsequent to the pilot and initial validation studies, Bibace and Walsh presented the findings of a third sample of 72 children (4,7, and 11 year-olds, n=24 in each group) assessed with the "Concept of Illness Protocol," representing a further refinement of their scoring system (Bibace & Walsh, 1980). Modeled on the questionnaires of Piaget (1930) as well as Laurendeau and Pinard (1962), this protocol utilized the "clinical method" within 12 sets of questions, each of which probed the child's cognitive interpretations of a particular concept (e.g., colds, heart attacks, measles, headaches, and pain, as well as explanations of personal illness or illness of relatives or friends).

Following the approach of Piaget and Laurendeau and Pinard, explanations were assigned to categories based on the configuration of the whole response, rather than scoring each answer separately. Among the 4 year-olds, 4% were categorized under incomprehension, 54% gave contagion explanations, 38% contamination explanations, and 4% provided internalization explanations. Of the 7 year-olds, 63% gave contamination explanations, 29% internalization explanations, and 8% physiologic explanations. The explanations of 11 year-olds were classified as 4% contamination, 54% internalization, 34% physiologic, and 8% psychophysiologic. Bibace and Walsh regarded these findings as clearly consistent with the theoretical expectations of qualitative developmental differences in children's cognitive processes. They concluded that "the frequency distributions of normal children who vary in chronologic age are congruent with Piagetian theory and constitute empirical grounds for the value of these categories" (Bibace & Walsh, 1980, p. 915).

Drawing from the work of Bibace and Walsh, Nelles and Barlow hypothesize that children may not be capable of attributing an internal psychological cause to the symptoms of panic prior to reaching the psychophysiological stage of the latter period of adolescence. They conjecture that the cognitive ability to understand bodily symptoms as internally based is critical in order to experience full "spontaneous" panic. Such panic is described as comprising feelings of going crazy and/or losing control as a result of internal sensations that are not readily regarded as externally caused (Nelles & Barlow, 1988, p. 369). As younger children do not seem to distinguish between internal versus external causality, Nelles and Barlow suggest that they are not capable of making the necessary internal, catastrophic attributions characteristic of panic (i.e., "I must be going crazy/losing control, I'm going to die").

However, at the moment there is no direct evidence that the child's thinking about panic changes in this way. Indirect evidence drawn from research on stages of illness conception does not specifically investigate children's cognitive interpretations of panic symptomatology. The work of Bibace and Walsh is based on children's understanding of definitions, causes, and prevention strategies related to different illnesses. Its purpose is not to investigate cognitive attributions made in response to specific symptoms. Indeed, it is conceivable that children in the concrete logical stage of internalization may perceive the inhalation of external germs as the ultimate cause of panic symptoms, yet may interpret the meaning of such symptoms as signaling that they are dying, going crazy, or losing control. While such children may not identify internal, psychological factors as the cause of illness, children's interpretations of the meaning of panic symptomatology may serve as a key to understanding how panic disorder may be expressed in children from both a physiological and cognitive perspective.

While Nelles and Barlow focus on the psychophysiological stage as the critical period signaling the ability to perceive bodily symptoms as internally based, the physiological stage is also characterized by a conceptualization of the source and nature of illness as manifested within internal physiological structures and processes. It seems that children in the physiological stage who are capable of identifying malfunctioning of an internal organ, such as the heart or the brain, as the source of illness may also fear death as the ultimate culmination of that malfunctioning. Finally, it is evident that such formal-logical conceptions of illness, while most typical of adolescent thinking, are not strictly limited to this age group. Bibace and Walsh categorized 8% of their 7 year-old subjects as falling within the physiological

stage of illness conception. Likewise, 8% of their 11 year-old subjects were classified within the psychophysiological group, thus demonstrating the most sophisticated level of illness conception, while 34% of this age group provided physiological explanations of illness. Such findings challenge the notion of ascribing only to adolescents the ability to differentiate between internal and external causality. A more complete understanding of the cognitive manifestation of panic disorder among children awaits further investigation.

It also seems necessary to further explore the extent to which individual psychological, cognitive, and emotional factors may affect the nature of children's attributions in response to panic symptomatology. Several studies have found a greater prevalence of anxiety, depression, and fear among children who report panic symptomatology relative to those who do not (Hayward et al., 1989; King et al., 1993; King et al., submitted; Macaulay & Kleinknecht, 1989). It is possible that the presence of such negative emotional states may enhance the likelihood that a child will experience a panic attack. The cognitive tendency to employ internal attributions in response to negative events may also facilitate the occurrence of a panic attack by making a child more likely to interpret the physiological symptoms of panic in an internal, catastrophic manner. Finally, the construct of anxiety sensitivity has been proposed as increasing the aversiveness of an anxiety experience (Reiss, Peterson, Gursky, & McNally, 1986), and may thus contribute to both the tendency to employ internal, catastrophic attributions in response to panic symptomatology and the likelihood of having a panic attack. Exploration of children's cognitive responses to specific panic symptomatology as well as the extent to which individual variables may contribute to childhood attributions

is particularly critical if we are to gain a comprehensive, empirical answer to the question "do children panic?"

Hypotheses of the present study were that girls would make more internal, catastrophic attributions when presented with the symptoms of panic than would boys, and that 9th graders would make more internal, catastrophic attributions than would 6th graders. Similarly, it was predicted that 6th grade children would make more internal, catastrophic attributions than 3rd graders. It was also suggested that older children would display more mature conceptions of illness than younger children, and that girls would be more advanced in their understanding of illness than would boys. Furthermore, it was hypothesized that children's level of understanding common illnesses would be equivalent to their understanding of panic attacks (Nelles & Barlow, 1988). Finally, it was proposed that one or more of several individual factors (namely, illness conception, anxiety sensitivity, anxiety frequency, physiological anxiety, worry/oversensitivity, concentration anxiety, internal attributional style in response to negative outcomes, fear, and depression) would explain a significant amount of the variance beyond that accounted for by grade and gender in predicting tendency to make internal, catastrophic attributions in response to the physical symptoms of panic.

Method

Subjects

Children from grades 3, 6, and 9 were recruited from the Montgomery and Pulaski County Public School Systems. These grades were chosen in order to include children likely to give a broad range of responses within the concrete and formal logical categories of the conceptions of illness model (Bibace & Walsh, 1980). More specifically, 3rd graders were chosen to represent the concrete logical category while it was thought that 9th graders would more closely approximate formal logical thinking in their conceptions of illness. The 6th graders were chosen to represent a transitional group between the concrete and formal logical categories. Four elementary schools, two middle schools, and two high schools received approval for inclusion in the study. A letter describing the purpose and procedures of the study (see Appendix A) was sent home with children in the designated grades, accompanied by a consent form (see Appendix B). Children who returned the consent form with the signature of a parent or guardian indicating permission to participate were included in the study (approximately 15-20% of the sample).

Ten additional children from Montgomery County were recruited over the summer via fliers and phone contact with parents, offering a \$30 raffle as an incentive for participation. A letter describing the study was sent to the parents of these children, and signed parental consent was obtained prior to participation.

The 3rd grade group consisted of 41 children (21 males and 20 females) with a mean age of 8.59 (S.D. = 0.63). The 6th grade group contained 42 children (20 males and 22 females) whose mean age was 11.17 (S.D. = 0.38). A total of 35

children (16 males and 19 females) comprised the 9th grade group which had a mean age of 14.34 (S.D. = 0.73).

The Four Factor Index of Social Status (Hollingshead, 1975) was utilized to code socioeconomic status information obtained from the children's parents via questions pertaining to parental education and occupation included on the consent form. This index includes a coding system ranging from 1 to 7 for level of completed education (i.e., "1"=less than seventh grade; "4"=high school graduate; "7"=graduate professional training) as well as a 9-point occupational scale (i.e., "1"=menial service workers; "4"=smaller business owners, skilled manual workers, craftsmen; "9"=higher executives, proprietors of large businesses, major professionals). Maternal occupation received a mean score of 2.85 (S.D. = 2.47), 3.67 (S.D. = 2.70), and 4.03 (S.D. = 2.63), while the mean score for maternal education was 3.83 (S.D. = 1.69), 4.19 (S.D. = 1.81), and 4.17 (S.D. = 1.77) for grades 3, 6, and 9, respectively. Paternal occupation received a mean score of 3.78 (S.D. = 2.80), 3.38 (S.D. = 2.38), and 4.34 (S.D. = 2.54), while the mean score for paternal education was 3.83 (S.D. = 1.84), 3.90 (S.D. = 2.02), and 4.00 (S.D. = 1.93) for grades 3, 6, and 9, respectively. A 3 (Grade: 3rd vs. 6th vs. 9th) X 2 (Gender: male vs. female) analysis of variance was conducted on each of these SES variables, revealing no significant grade, gender, or interaction effects.

Procedure

The present experiment was conducted in two sessions. The first, a group session, lasted approximately 30-40 minutes; the second, an individual session, was approximately 20-30 minutes in duration.

During the group session, each subject was asked to complete the following self-report instruments (see Appendix C): (1) the Childhood Anxiety

Sensitivity Index (CASI; Silverman, Fleisig, Rabian, & Peterson, 1991); (2) the Child Anxiety Frequency Checklist (CAFC; Silverman et al., 1991); (3) the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond; 1978, 1985); (4) the Fear Survey Schedule for Children-Revised (FSSC-R; Ollendick, 1983); and (5) the Children's Depression Inventory (CDI; Kovacs & Beck, 1977). Although this session was conducted in a group format, each child completed his or her own questionnaires and all responses remained confidential. The experimenter was available to answer questions that the children had.

The individual session was held at least one week after completion of the initial group session and was conducted by either the primary investigator or a trained undergraduate research assistant. At the beginning of this session, a child consent form describing the purpose and procedures of the study was read to each child and his or her signature was obtained (see Appendix D). The subject was told that he or she would be listening to two audiotapes describing certain feelings. The subject was also asked to imagine having the experience described on each tape and to think about how he or she would feel.

Approximately half of the males and half of the females in each age group were randomly assigned to first experience the panic condition, in which subjects were asked to imagine the physiological symptoms of panic, followed by the non-panic condition, in which subjects were asked to imagine a calm, relaxed state (Order 1). This order was reversed for the remaining subjects (Order 2).

The purpose of counter-balancing the two conditions was to control for the possibility of order effects. Subjects in Order 1 first listened to an audiotape which contained the experimenter's voice leading the child through a guided

imagery exercise in which the physiological symptoms of panic were presented (e.g., breathlessness, dizziness, trembling, sweating, tachycardia, nausea, hot flashes, and chest pain). After listening to the tape, subjects were interviewed using the Attributional Questions presented in Appendix E. These questions were designed to elicit a broad range of attributional cognitions reflecting children's thoughts, feelings, and responses to imagining themselves experiencing the physical symptoms of panic. The Attributional Questions were used as a descriptive measure, assessing children's spontaneous cognitive responses to imagining the physiological symptoms of panic. Following the Attributional Questions, the interviewer read a reprompt to the child (see Appendix F) in order to refresh his or her memory of the contents of the tape. The child was then asked to complete the Attributional Checklist (see Appendix C). Subjects in Order 1 then listened to a second audiotape containing the experimenter's voice leading the child through a guided imagery exercise in which an innocuous situation was described (i.e., sitting in one's bedroom, relaxed, reading a book). The child was then asked once again to complete the Attributional Checklist (see Appendix C). For subjects in Order 2, the order of presentation was reversed, with the panic tape following presentation of the non-panic tape. Guided imagery scripts of the audiotapes are presented in Appendices G (Panic condition) and H (Non-panic condition). After completion of both tapes, the interviewer orally administered the Conceptions of Illness Questionnaire (Bibace & Walsh, 1990) including questions pertaining to panic attacks designed specifically for this study (see Appendix C). Finally, the child was asked to complete the KASTAN-Revised Children's Attributional Style Questionnaire (KASTAN-R CASQ; Kaslow, Tanenbaum, & Seligman, 1978) (see Appendix C).

Upon completion of the individual session, subjects were debriefed by providing them with an objective description of panic attacks and explaining that, while such attacks are often scary, they do not result in physical harm. Finally, any questions that the subjects had regarding the study were answered.

Measures (see Appendix C)

The Conceptions of Illness Questionnaire

The Conceptions of Illness Questionnaire (Bibace & Walsh, 1990) was developed on the basis of extensive prepilot and pilot studies, and was designed to distinguish between six developmental categories of explanation of illness: I. Prelogical Explanations (1. Phenomenism, 2. Contagion); II. Concrete Logical Explanations (3. Contamination, 4. Internalization); and III. Formal Logical Explanations (5. Physiological, 6. Psychophysiological). These categories were derived from interviews conducted with an initial sample of 180 children aged 4 to 14 years and subsequently validated in two separate studies (Bibace & Walsh, 1977, 1979). The Conceptions of Illness Questionnaire is administered in an interview format and contains sets of questions probing children's cognitive notions about common illnesses (e.g., a cold, a heart attack). Queries are directed at definitions and causes of illnesses, as well as strategies for preventing illness. The protocol was modeled on the questionnaires of Piaget (1930) as well as Laurendeau and Pinard (1962) regarding causal thinking (e.g., concept of life, concept of dreams). Like these earlier questionnaires, the Conceptions of Illness Questionnaire was designed to elicit responses which reflect the quality of the child's reasoning as opposed to simple yes/no answers. In other words, the protocol is intended to tap the cognitive processes on which children rely for their responses.

Indeed, the asset of such an instrument is its incorporation of what Piaget termed the "clinical method," a form of inquiry which focuses on the acquisition of meaningful responses reflecting underlying cognitive processes within the context of the responses (Bibace & Walsh, 1980). In addition to standard queries regarding illness, colds, and heart attacks, questions pertaining to panic attacks were included on the Conceptions of Illness Questionnaire for the present study.

Subjects received a separate score for each of the three categories of illness represented (i.e., colds, heart attacks, panic attacks). Possible scores for each illness ranged from 1 to 6, corresponding to the six developmental categories of explanation of illness. The author and an undergraduate research assistant independently coded 30 protocols (25.42% of the present data set) for the purposes of assessing reliability. The observed proportion of agreement was 0.81 with a kappa of 0.73. The author and research assistant discussed discrepancies in their coding of the initial 30 protocols in order to reach agreement regarding which category best characterized the particular response. After reliability was assessed, the undergraduate research assistant coded the remaining protocols for entry into the data set.

The Attributional Checklist

This 16-item measure was designed by the author. Its purpose was to tap children's cognitive responses to the physical symptoms of panic as presented through guided imagery. The checklist presented a list of 12 negative or neutral thoughts that a child might have in response to the physical symptoms of panic in addition to four positive thoughts (items 2, 6, 10, and 14). This set of four positive items was included to provide alternative responses particularly during the non-panic condition (see Procedure). The 12 items representing

cognitive responses to panic were assessed for clarity through pilot interviews conducted with four children, aged 9, 10, 12, and 14 (see Appendix I). The three internal, catastrophic attributions (i.e., fear of dying, going crazy, or losing control) characteristic of true "spontaneous" panic as defined by Nelles and Barlow (1988) were included among these items.

Through guided imagery, the subject was asked to imagine actually experiencing the physical symptoms of panic (panic condition) or to imagine an innocuous situation (non-panic condition). He or she was then asked to indicate the extent to which each item characterized his/her own thoughts during such an experience by endorsing one of three possible responses (i.e., "none," "some," or "alot"). The 12 items representing cognitive responses to panic were divided into four categories representing different levels of cognitive attributions: external/non-catastrophic, external/catastrophic, internal/non-catastrophic, and internal/catastrophic. Subjects received a total score ranging from 3 to 9 in each of these categories based on the sum of their responses to the three items in that category ("none"=1, "some"=2, and "a lot"=3). The content validity of the category groupings was determined by asking nine graduate clinicians and one clinical child psychologist to independently categorize each item as internal or external and catastrophic or non-catastrophic based on the following definitions: 1) Internal: "within the body or self; initiating from a real or imagined source located within the organism"; 2) External: "outside the body or self; initiating from a real or imagined source located outside the organism"; 3) Catastrophic: "resulting in sudden and markedly disturbing change from the normal state of the organism; having severe consequences which would seriously impair normal functioning; beyond the realm of normal, everyday experience"; 4) Non-

Catastrophic: "not resulting in sudden and markedly disturbing change from the normal state of the organism; not having severe consequences which would seriously impair normal functioning; not beyond the realm of normal, everyday experience". Based on these definitions, three checklist items were assigned to each of the four categories identified above (external/non-catastrophic: items 7, 9, 15; external/catastrophic: items 4, 8, 16; internal/non-catastrophic: items 1, 5, 12; and internal/catastrophic: items 3, 11, 13). The extent to which the independent raters agreed with these category assignments was high. Agreement was 100% for items 3, 4, 5, 8, 9, and 13. Nine of the 10 raters (90%) agreed with the category assignments of the remaining 6 items (1, 7, 11, 12, 15, and 16).

The Childhood Anxiety Sensitivity Index (CASI)

The CASI is an 18-item scale modified by Silverman, Fleisig, Rabian, and Peterson (1991) from the Anxiety Sensitivity Index (Peterson & Reiss, 1987). Anxiety sensitivity is defined as the belief that anxiety or fear causes negative events such as illness, embarrassment, or additional anxiety (Reiss & McNally, 1985). A measure of anxiety sensitivity was incorporated in the present study since it has been suggested that this construct is causally related to the development of anxiety disorders (Reiss, Peterson, Gursky, & McNally, 1986) as it may increase the aversiveness of an anxiety experience. As Silverman et al. (1991) state, "anxiety would be a more dreadful thing for those who believe that it can lead to severe consequences (e.g., a heart attack) than for those who do not" (Silverman et al., 1991, p. 162). It was thus hypothesized that children who show higher levels of anxiety sensitivity would be more likely to make internal, catastrophic attributions in response to the physiological symptoms of panic and that anxiety sensitivity would be a significant predictor of the

tendency to make internal, catastrophic attributions in response to panic imagery.

The CASI measures anxiety sensitivity in children by asking them to state how aversively they view anxiety symptoms by endorsing "none" (1), "some" (2), or "a lot" (3) in response to each item. The total anxiety sensitivity score is defined as the sum of a child's endorsements. The CASI is reported to have sound psychometric properties based on examination in both nonclinical ($N=76$, ages ranging from 11.4 to 15.8 years) and clinical samples ($N=31$, emotionally disturbed children ranging in age from 8 to 15 years). Test-retest reliability was reported in the form of Pearson product-moment correlations calculated between scores from two testing sessions (conducted at a two-week interval for the nonclinical and a one-week interval for the clinical sample). A correlation of .76 for the nonclinical sample and .79 for the clinical sample suggested adequate test-retest reliability. Item-total correlations produced a standardized alpha of .87 for both samples, reflecting good interitem reliability and implying that a single trait was being measured. Finally, the authors reported that the CASI was measuring something other than merely the frequency with which anxiety symptoms were experienced, as there was a stronger correlation between anxiety sensitivity (measured by the CASI) and fearfulness/anxiety (measured by the Fear Survey Schedule for Children-Revised; Ollendick, 1983 and the State-Trait Anxiety Inventory for Children, A-Trait form; Spielberger, 1973) than there was between anxiety frequency (measured by the Child Anxiety Frequency Checklist (CAFC) described below) and the fear schedule. Furthermore, the CASI explained more variance on the Fear Survey Schedule for Children-Revised (FSSC-R) in both the normative and clinical samples than did the measure of anxiety frequency. Specifically,

in the normative sample the CASI explained 48% of the variance that the CAFC did not. In the clinical sample, the CAFC explained less than 1% of the variance on the FSSC-R while the CASI accounted for 35% of the variance on the fear measure after the variance explained by the CAFC was removed (Silverman et al., 1991).

The Child Anxiety Frequency Checklist (CAFC)

The CAFC is an 8-item checklist modified by Silverman et al. (1991) from the Anxiety Frequency Checklist (Reiss et al., 1986). Its purpose is to assess anxiety frequency, and, specifically, to evaluate the frequency of specific symptoms on the CASI (i.e., rapid heartbeat, shakiness, nervousness, feeling faint, having difficulty catching one's breath, unusual bodily sensations, trouble concentrating, and diarrhea). Subjects are asked to rate the extent to which each item characterizes themselves on a 4-point scale as follows: "don't know" (0), "never" (1), "sometimes" (2), and "a lot" (3). The total anxiety frequency score is the sum of endorsed points, with total scores ranging from 0 to 24.

The psychometric properties of the CAFC were tested along with the CASI, and were found to be adequate in the normative sample described above. Two-week test-retest reliability, reported only for the nonclinical sample, yielded a Pearson product-moment correlation of .58. This lower correlation relative to that obtained for the CASI supported the authors' assumption that anxiety symptom frequency is more subject to environmental factors than anxiety sensitivity, which is regarded as a relatively stable predisposition (Silverman et al., 1991). Item-total correlations were computed in the nonclinical sample as a measure of interitem reliability. Standardized alphas were .70 for the first testing session and .78 for the second session which was held two weeks later.

In both the clinical and nonclinical samples, the CASI was more highly correlated with the measures of fear and anxiety than with the CAFC.

The Fear Survey Schedule for Children-Revised (FSSC-R)

The FSSC-R is an 80-item self-report measure of children's fear originally developed by Scherer and Nakamura (1968) and revised by Ollendick (1983). This instrument asks children to rate their level of fear to different stimuli on a 3-point scale ('none', 'some', or 'a lot'). It thus provides information regarding the number, severity, and nature of children's fears. Acceptable internal consistency, test-retest reliability, and construct validity have been reported for the FSSC-R. Furthermore, it possesses a meaningful factor structure consisting of five clusters of fear which have been observed in American, Australian, and British children between 7 and 16 years of age (Ollendick, Yule, & Ollier, 1991).

Psychometric evaluation of the FSSC-R (Ollendick, 1983) yielded high internal consistency on two samples of children (coefficient alphas of .94 and .92). Test-retest reliability in this evaluation was reported as high over a 1-week interval, and the instrument was moderately reliable over a 3-month period. The validity of the FSSC-R has been determined through comparison with similar instruments, including the Trait Scale of the State-Trait Anxiety Inventory for Children (Spielberger, 1970), the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969), and the Nowicki-Strickland Locus-of-Control Scale (Nowicki & Strickland, 1973). A recent study of 327 British children, aged 8 to 10 years (Ollendick et al., 1991), examined the intercorrelations among the FSSC-R, the Revised Children's Manifest Anxiety Scale (RCMAS; Reynold's & Richmond, 1978) and the Children's Depression Inventory (CDI; Kovacs, 1981). All of the correlations were highly significant,

although the relationship between anxiety and fear ($r=.64$) and anxiety and depression ($r=.63$) were significantly greater than the relationship between fear and depression ($r=.31$). The FSSC-R has also discriminated between school-phobic children and matched controls regarding degree of fear. In addition, a five factor structure has been established, accounting for 77% of the variance (King, Ollier, Iacuone, Schuster, Bays, Gullone, & Ollendick, 1989). The factors are: Factor 1, "Fear of failure and criticism"; Factor 2, "Fear of the unknown"; Factor 3, "Fear of minor injury and small animals"; Factor 4, "Fear of danger and death"; and Factor 5, "Medical fears". Ollendick et al. (1991) found that all five factors on the FSSC-R were significantly related to total scores on the RCMAS (r 's ranged between .32 and .60) and on the CDI (r 's ranged between .16 and .32).

A study of reliability and generalizability across gender, age, and nationality included 594 American and 591 Australian youngsters, aged 7 to 16 years (Ollendick, King, & Frary, 1989). Prevalence of fear was found to be similar across countries, although girls reported significantly more fears ($M=18$) than boys ($M=10$), and younger children (aged 7 to 10) reported significantly more fears ($M=17$) than either the 11 to 13 year old group ($M=13$) or the 14 to 16 year olds ($M=12$). Similarly, girls reported greater intensity of fear ($M=143.91$) than did boys ($M=124.93$), and the younger 7 to 10 year old group reported higher levels of fear ($M=138.83$) than the 11 to 13 year olds ($M=133.44$) and the 14 to 16 year olds ($M=129.46$) who also differed significantly from each other. Finally, the 10 fears rated with the greatest intensity were found to be fairly consistent across gender, age, and country. Of these 10 most common fears, seven came from the Danger and Death factor, two from the

Minor Injury and Small Animal factor, and one from the Failure and Criticism factor.

The Revised Children's Manifest Anxiety Scale (RCMAS)

The RCMAS, also titled "What I Think and Feel," is a 37-item scale revised by Reynolds and Richmond (1978) from the Children's Manifest Anxiety Scale of Castaneda, McCandless, and Palermo (1956). It contains 28 anxiety and 9 "Lie Scale" items. Reynolds and Richmond (1978) have reported internal consistency estimates in the mid to upper .80s. Test-retest reliability has also been examined, with correlations over a 3-week period falling in the .90 range for both males and females. A test-retest correlation of .68 was reported over 9 months for a large sample of elementary school children (Reynolds, 1981). Validity studies (Reynolds, 1980, 1982) have revealed a correlation of .85 between the RCMAS total anxiety score and the A-Trait scale of the State-Trait Anxiety Inventory for Children (STAIC). The fact that the RCMAS did not correlate significantly with the STAIC State Scale supports its validity as an instrument which measures chronic as opposed to transient anxiety (Reynolds & Paget, 1983). Correlations between the RCMAS and teacher observations of classroom behavior problems have also been reported (Reynolds, 1982).

A national study of 4,972 American children between the ages of 6 and 19 years provided normative and reliability data for a large sample of both Caucasian and Afro-American children. Adequate internal consistency was reported, with coefficient alpha consistently larger than .80 in all groups except black females below 12 years of age. With the exception of this group, the authors concluded that the instrument seems appropriate for use with black and white children of both sexes across the age range of this normative sample (Reynolds & Paget, 1983). This sample was also used to conduct a factor

analysis of the RCMAS (Reynolds & Paget, 1981), resulting in a five-factor solution. The scale may thus be divided into three Anxiety factors (1. Physiological; 2. Worry/oversensitivity; and 3. Concentration) and two Lie factors. The factor structure is reported as essentially invariant with regard to both sex and race. Coefficients of congruence for the male/female comparisons were .99 for physiological, .99 for worry/oversensitivity, .96 for concentration, .99 for Lie 1 and .98 for Lie 2, with corresponding *s* indices of .79, .92, .92, 1.00, and 1.00 all highly significant ($p < .01$). Cross-race comparisons yielded coefficients of congruence of .94 for physiological, .94 for worry/oversensitivity, .91 for concentration, .99 for Lie 1 and .92 for Lie 2, with highly significant *s* values ($p < .01$) of .81, .75, .73, 1.00, and 1.00.

The KASTAN-Revised Children's Attributional Style Questionnaire (KASTAN-R CASQ)

The KASTAN-R CASQ (Kaslow, Tanenbaum, & Seligman, 1978) contains 48-items, each of which presents the respondent with a situation and asks him/her to choose between two possible attributions explaining why the event in question may have occurred. The KASTAN-R CASQ contains 6 basic subscales: 1) Good - Internal/External, 2) Good - Stable/Unstable, 3) Good - Global/Specific, 4) Bad - Internal/External, 5) Bad - Stable/Unstable, and 6) Bad - Global/Specific. 16 questions represent each attributional dimension (internality, stability, globality) and half of the events have good outcomes while the other half have bad outcomes. A good composite score, composed of the three good subscales, and a bad composite score, composed of the three bad subscales, is also obtained. An overall summary score is calculated by subtracting the bad composite score from the good composite score. Lower scores represent a more depressogenic attributional style. In normal

children, significant correlations have been found between CDI scores and the attribution of bad events to internal, stable, global causes (composite r 's range from .39 to .51). Similar correlations have been found between CDI scores and the attribution of good events to external, unstable, specific causes (composite r 's range from .44 to .54) (Kaslow, Rehm, & Siegel, 1984; Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). Internal consistency coefficients of .66 and .73 for composite positive attributions, and .50 and .54 for composite negative attributions have been reported by Seligman and Peterson (1986). Finally, scores on the KASTAN-R CASQ have been reported as stable over a 6-month interval (Seligman et al., 1984).

The Children's Depression Inventory (CDI)

The CDI (Kovacs & Beck, 1977) is a widely used self-report inventory derived from the adult Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and designed to measure depression in children and adolescents. It contains 27 items consisting of three statements which are graded in severity (0 to 2). The subject is asked to endorse the statement which best describes his/her thoughts and feelings during the past two weeks. A total score ranging from 0-54 is derived by summing the severity ratings of the endorsed statements. The CDI is included in the present study given the positive relationship between depression and panic symptomatology reported in the literature (Alessi, Robbins, & Dilsaver, 1987; Hayward, Killen, & Taylor, 1989; Macaulay & Kleinknecht, 1989; Moreau, Weissman, & Warner, 1989).

A large study of the psychometric properties of the CDI was conducted with three independent samples derived from public schools in central Pennsylvania (Smucker, Craighead, Craighead, & Green, 1986). The study included 594 males and 658 females ranging in age from 8 to 16 years.

Distribution statistics for the combined samples revealed an overall CDI mean of 9.09 (S.D.=7.04), and indicated a cutoff score of 19 for the upper 10% of the distribution. Grade by gender distribution statistics were also reported. Adequate reliability was reported through coefficient alpha, item-total score product-moment correlations, and test-retest coefficients, with 155 fifth-graders retested after 3 weeks and 107 seventh- and eighth-grade subjects retested after 1 year. Coefficient alpha was .84 for the elementary males, .87 for the elementary females, .83 for the Junior High males, .85 for the Junior High females, and .89 for both the Middle School males and females. Average item-total score product-moment correlations were reported as $r(302)=.42$, $p<.001$ for the elementary males, $r(309)=.47$, $p<.001$ for the elementary females, $r(167)=.40$, $p<.001$ for the Junior High males, $r(198)=.43$, $p<.001$ for the Junior High females, $r(119)=.49$, $p<.001$ for the Middle School males, and $r(145)=.49$, $p<.001$ for the Middle School females. Three-week test-retest correlation coefficients were: for fifth-grade males, $r(75)=.77$, $p<.0001$; and for fifth-grade females, $r(76)=.74$, $p<.0001$. One-year test-retest correlation coefficients were: for seventh- and eighth-grade males combined, $r(43)=.41$, $p<.01$; and for seventh- and eighth-grade females combined, $r(60)=.69$, $p<.0001$.

Hypotheses

H1: The 9th graders will show higher scores on the Conceptions of Illness Questionnaire than the 6th graders who will show higher scores than the 3rd graders.

H2: Girls will show higher scores on the Conceptions of Illness Questionnaire than will boys.

H3: Scores on the Conceptions of Illness Questionnaire will be equivalent across the three illnesses (cold, heart attack, panic attack).

H4: The Internal/Catastrophic (I/C) scores of the 9th graders will be higher than the I/C scores of the 6th graders which will be higher than the I/C scores of the 3rd graders in the panic condition; I/C scores will be equivalent across the three grade groups in the non-panic condition.

H5: Girls will show a higher I/C score than boys in the panic condition; I/C scores will be equivalent across the two gender groups in the non-panic condition.

H6: One or more individual factors (illness conception, anxiety sensitivity, anxiety frequency, physiological anxiety, worry/oversensitivity, concentration anxiety, internal attributional style in response to negative outcomes, fear, and depression) will explain a significant amount of the variance beyond that accounted for by grade and gender in predicting I/C score.

Results

A series of repeated measures analyses of variance as well as two stepwise multiple regression analyses were undertaken to investigate the hypotheses and conduct exploratory assessment of the data.

Conceptions of Illness

Hypotheses 1, 2, and 3 were tested via a 3 (Grade: 3rd vs. 6th vs. 9th) X 2 (Gender: male vs. female) X 3 (Illness: cold vs. heart attack vs. panic attack) repeated measures analysis of variance computed on the scores obtained from the Conceptions of Illness Questionnaire. Means and standard deviations for the illness categories within grade and gender are presented in Table 1. As expected, a significant main effect was found for grade, $F(2, 112) = 4.06, p < .05$. The mean Conceptions of Illness score was 4.26 (S.D. = 1.02) in the 3rd grade group, while 6th graders achieved a mean score of 4.61 (S.D. = 0.53) and 9th graders a mean score of 4.69 (S.D. = 0.41). However, Student Newman-Keuls analyses failed to substantiate differences between any of these means. A significant main effect was also found for type of illness, $F(2, 224) = 200.66, p < .0001$. The mean score for colds was 3.37 (S.D. = 0.91), whereas the mean score for heart attacks was 4.52 (S.D. = 1.04) and the mean score for panic attacks was 5.64 (S.D. = 1.11). Each of these means was significantly different from the others as determined through Student Newman-Keuls analyses.

Although a significant grade X type of illness interaction was not found, additional exploratory Student Newman-Keuls analyses were conducted to determine if grade differences existed among the three types of illness. These analyses indicated that 3rd graders received significantly lower scores on the panic category of illness ($M = 5.17, S.D. = 1.70$) relative to the 6th and 9th graders, who did not differ from each other ($M_s = 5.86$ and $5.94, S.D.s = 0.52$ and

0.34, respectively). Unexpectedly, no significant grade differences were found for the cold and heart attack categories.

Attributional Style in Response to Panic Vs. Non-Panic Imagery

A 3 (Grade: 3rd vs. 6th vs. 9th) X 2 (Gender: male vs. female) X 2 (Order: 1 vs. 2) X 2 (Condition: panic vs. non-panic) repeated measures analysis of variance was computed on the Internal/Catastrophic (I/C) score (the sum of each subject's responses to the three internal/catastrophic items on the Attributional Checklist) in order to test H4 and H5. This analysis revealed a significant main effect for condition, $F(1, 106) = 124.65, p < .0001$. As expected, the mean I/C score for the panic condition ($M = 4.88, S.D. = 1.63$) was higher than the mean I/C score for the non-panic condition ($M = 3.10, S.D. = 0.42$). None of the other main effects or interactions were significant at or below the .05 level.

For the purpose of further exploring the nature of children's cognitive responses to panic vs. non-panic imagery, identical 3 X 2 X 2 X 2 repeated measures analyses of variance were computed on the three remaining categories of the Attributional Checklist, as well as the sum of responses to the four positive items included on this measure (Positive score). While no specific hypotheses were made, these additional analyses were undertaken in order to explore whether any systematic differences were evident on the non-catastrophic, external, and positive attributional categories. Means and standard deviations for all of the Attributional Checklist categories within grade and gender are presented in Table 2. Table 3 presents means and standard deviations for this measure within panic and non-panic condition.

A significant condition effect was found for the Internal/Noncatastrophic (I/NC) score, $F(1, 106) = 436.83, p < .0001$. Mean I/NC score was 6.82 (S.D. = 1.42)

for the panic condition and 3.48 (S.D. = 0.94) for the non-panic condition. A significant condition X order interaction, $F(1, 106) = 7.44, p < .01$, was also found for the I/NC score as shown in Figure 1. Post hoc analyses utilizing the Student Newman-Keuls test indicated that the I/NC score was significantly higher in order 2 ($M = 3.76, S.D. = 1.02$) relative to order 1 ($M = 3.20, S.D. = 0.76$) in the non-panic condition. Such a significant difference was not found in the panic condition where the mean I/NC score for order 1 was 6.97 (S.D. = 1.16) and the mean score for order 2 was 6.68 (S.D. = 1.64). Thus, order of presentation was not specifically related to response to the panic condition.

A significant main effect for condition was found for the External/Catastrophic (E/C) score, $F(1, 106) = 28.55, p < .0001$. Mean E/C score was 4.04 (S.D. = 1.38) for the panic condition and 3.29 (S.D. = 0.86) for the non-panic condition. None of the other main effects or interactions were significant for this variable. Similarly, analyses revealed a significant main effect for condition for the External/Noncatastrophic (E/NC) score, $F(1, 106) = 27.98, p < .0001$. Mean E/NC score was 4.99 (S.D. = 1.28) for the panic condition and 4.32 (S.D. = 1.15) for the non-panic condition.

A significant main effect for condition was also found for the Positive score on the Attributional Checklist, $F(1, 106) = 287.55, p < .0001$. Mean Positive score was 5.58 (S.D. = 1.81) for the panic condition and 9.54 (S.D. = 1.53) for the non-panic condition. The condition X grade interaction was also significant for this variable, $F(2, 106) = 3.09, p < .05$, and is illustrated in Figure 2. Post hoc analyses utilizing the Student Newman-Keuls test indicated that, in the panic condition, the Positive score was significantly higher in Grade 3 ($M = 6.27, S.D. = 2.11$) relative to Grades 6 and 9, which did not differ from each other ($M_s = 5.29$ and $5.14, S.D.s = 1.69$ and 1.33 , respectively). Differences between the

grades were not found in the non-panic condition where the mean Positive score was 9.44 (S.D. = 1.80) for Grade 3, 9.52 (S.D. = 1.52) for Grade 6, and 9.69 (S.D. = 1.18) for Grade 9.

Finally, a variable consisting of the difference between the I/C and the E/C score was created in order to explore children's tendency to make internal catastrophic attributions relative to their tendency to employ external catastrophic explanations in response to panic symptomatology. A 3 (Grade) X 2 (Gender) X 2 (Order) X 2 (Condition) repeated measures analysis of variance computed on this difference score revealed a significant main effect for condition, $F(1, 106) = 54.18, p < .0001$, as well as a significant condition X grade X sex X order interaction, $F(2, 106) = 5.91, p < .005$. The mean Difference score was 0.84 (S.D. = 1.43) for the panic condition and -0.19 (S.D. = 0.90) for the non-panic condition. Exploration of the four-way interaction was not undertaken as it was unrelated to the hypotheses of the present study and the cell sizes for some of the interaction effects were low (e.g., for boys in the 9th grade, each order contained $n = 8$).

Regression Analysis

The contribution of several individual variables to the prediction of I/C score (H6) as well as Total Internal score (i.e., the sum of the six internal catastrophic and non-catastrophic items on the Attributional Checklist) in response to panic imagery was determined through two stepwise multiple regression analyses. Total Internal score was included in order to explore variables which might predict children's tendency to interpret the physiological symptoms of panic in an internal manner across the catastrophic and non-catastrophic categories. Individual variables included measures of illness conception (score on the Conceptions of Illness

Questionnaire, averaged across the illness conditions of cold and heart attack), anxiety sensitivity (CASI total score), anxiety frequency (CAFC total score), manifest anxiety (as assessed through the physiological, worry/oversensitivity, and concentration factors of the RCMAS), internal attributional style in response to negative outcomes (negative - internal/external subscale of the KASTAN), fear (FSSC-R total score), and depression (CDI total score). Grade and gender were forced into the model in order to determine which, if any, individual variables would explain a significant amount of the variance beyond that accounted for by grade and gender alone. Pearson product-moment correlations, means, and standard deviations for these analyses are presented in Table 4. The significant correlations found between several of these variables (e.g., anxiety sensitivity, physiological anxiety, fear, and depression) and both I/C and Total Internal score support their inclusion in the multiple regression analyses by suggesting that they may play a role in predicting children's attributional style in response to panic imagery.

Internal attributional style in response to negative outcomes (KASTAN) and anxiety sensitivity (CASI) were found to be significantly related to both I/C score and Total Internal score, while grade and gender were not. Tables 5 and 6 present the results of the multiple regression analyses. The respective models accounted for approximately 13% of the variance associated with I/C score and 12% of the variance associated with Total Internal score.

Discussion

Conceptions of Illness

The first three hypotheses of the present study were drawn from the work of Bibace and Walsh (1977, 1979, 1980, 1981) and were designed for the purpose of investigating the developmental nature of children's conceptions of illness explored across grade, gender, and category of illness. These hypotheses are relevant to the perspective of Nelles and Barlow (1988) which argues that the cognitive reactions of younger children are dominated by notions of external causation and that only in adolescence are children sufficiently capable of making the internal attributions characteristic of spontaneous panic (i.e., "I must be dying, losing control, or going crazy"). Based on the work of Bibace and Walsh (1977, 1979, 1980, 1981), who define the developmental progression of children's cognitive interpretations of illness, the hypothesis of Nelles and Barlow (1988) presumes a developmental shift from external to internal causality between childhood and adolescence. Children's responses to the Conceptions of Illness Questionnaire (Bibace & Walsh, 1990) were explored in the present study in order to determine (1) if older children would indeed evidence higher scores relative to younger children across different categories of illness; (2) if gender differences would be evident; and (3) if children's scores on this instrument would be consistent across different categories of illness.

Nelles and Barlow rely on the Bibace and Walsh model to suggest that, as younger children do not seem to distinguish between internal and external causality in their conceptions of illness, they are not capable of making the necessary internal, catastrophic cognitions characteristic of panic. Inherent in Nelles and Barlow's hypothesis is the assumption that children's

conceptions of illness at different ages may be qualitatively categorized in a manner consistent with the cognitive development of causal reasoning. Furthermore, the discrete category which describes a child's reasoning should characterize their explanations regardless of the category of illness being described. This notion is supported by the work of Bibace and Walsh who maintain that the logic of children is qualitatively different from that of adults and also progresses along a developmental sequence, the "cardinal dimension" of which is degree of differentiation between self and other. They have asserted that children's conceptions of illness will change as "a function of changes in the developmental status of the organism" (Bibace & Walsh, 1979, p. 288). Bibace and Walsh developed their classification system by sampling a broad developmental range of explanations regarding the definitions and causes of various illnesses (e.g., colds, headaches, heart attacks) and assigning responses to categories based on the configuration of the entire response, rather than considering each category of illness separately. This system thus assumes that a discrete developmental category describes a child's conceptions of illness regardless of the specific illness that is being defined. Bibace and Walsh (1977, 1979, 1980, 1981) have shown that children's conception of illness develops in a systematic manner beginning with prelogical explanations focusing on cues present in the external environment, then progressing through concrete-logical reasoning which facilitates clear distinction between what is internal to the self vs. that which is external, and finally achieving the formal-logical stage characterized by the greatest degree of differentiation between the internal world and the external environment.

The Bibace and Walsh model focuses on a six-point coding system which captures this developmental progression from external to internal notions of

causality. Prelogical explanations most typical of children below age 7 consist of the categories of (1) "Phenomenism," which identifies the cause of disease as an external concrete stimulus that may co-occur with the illness but is spatially and/or temporally remote; and (2) "Contagion," in which the cause of disease is explained by phenomena that are present in the immediate environment but with which the child has no physical contact. The category of concrete-logical reasoning (approximately 7 to 10 years of age) consists of (3) "Contamination," in which the cause of illness is defined as an external stimulus with which the individual has physical contact or, alternately, the individual may be described as engaging in a harmful action; and (4) "Internalization," which defines illness as located within the body and caused by an external stimulus which enters the body through a process of internalization (e.g., swallowing or inhaling). Finally, formal-logical explanations typically manifested by children of approximately 11 years of age and older comprise the categories of (5) "Physiological" explanations in which the source of illness is manifested in the malfunctioning of internal physiological structures, described as a sequence of internal events which results in illness; and (6) "Psychophysiological" explanations which identify internal bodily structures and processes as the source of illness while also recognizing the role of psychological factors. Nelles and Barlow (1988) argued that it is not until children have achieved this final category of illness conception that they are capable of making the internal, catastrophic attributions characteristic of true spontaneous panic attacks.

The first hypothesis (H1) tested in the present study was that, consistent with the developmental progression described by Bibace and Walsh, older children would achieve higher scores on the Conceptions of Illness

Questionnaire across illness category relative to younger children. This hypothesis was supported by the finding of a significant main effect for grade, although Student Newman Keuls analyses failed to substantiate differences between the means of the three grades. However, the significant linear trend of the data, with 9th graders having the highest and 3rd graders the lowest mean score, does reflect Bibace and Walsh's model illustrating a developmental progression from external to internal notions of causality. The mean Conceptions of Illness score for the 3rd graders was 4.26 (S.D. = 1.02), falling closest to the concrete-logical category of Internalization (score = 4). The mean scores of the 6th ($M = 4.61$, S.D. = 0.53) and the 9th ($M = 4.69$, S.D. = 0.41) graders more closely approached the formal-logical category of Physiological explanations (score = 5).

It was also hypothesized that girls would show higher scores than would boys on the Conceptions of Illness Questionnaire across both grade and category of illness (H2). The reasoning behind this hypothesis was that the questionnaire incorporates what Piaget termed the "clinical method" in its assessment of children's conceptions of illness. This method of questioning focuses on the acquisition of meaningful verbal responses reflecting underlying cognitive processes within the context of the responses (Bibace & Walsh, 1980). It was hypothesized that, as younger girls tend to evidence slightly more advanced verbal skills relative to boys (Sattler, 1990), scores on the Conceptions of Illness Questionnaire should, to the extent that they incorporate verbal reasoning and expressive language skills, be higher in girls. However, this hypothesis was not supported as a significant main effect was not found for gender, nor were any of the interactions involving gender found to be significant. These findings pose two possible suggestions. Either

the Conceptions of Illness Questionnaire may depend less on verbal skills than was previously thought, or the verbal skills of boys and girls in the current sample may be sufficiently equivalent to prevent gender differences due to this factor.

The final hypothesis pertaining to children's conceptions of illness was that scores would be equivalent across the three categories of illness (i.e., cold, heart attack, and panic attack). This was based on the notion that, if a child's conceptions of illness progresses along a developmental sequence, the discrete category describing a child's reasoning should be independent of the type of illness described. In other words, similar qualitative, developmental features should characterize all of the child's responses, and the degree of differentiation between self and other should remain constant across different categories of illness. This hypothesis was not supported in the present study, however, as a significant main effect was found for type of illness with Student Newman Keuls analyses indicating significant differences between mean scores for all three illnesses (i.e., mean score for colds differed from the mean score for both heart attacks and panic attacks which also differed from each other).

Thus, rather than supporting the notion that children can be classified within a discrete stage of illness conception, characterized by a greater or lesser capability of utilizing internal explanations, it was found that children's classification may be dependent, at least in part, on the type of illness they are defining. The category of cold received the lowest mean score of 3.37 (S.D. = 0.91) which is closest to the concrete-logical category of contamination (score = 3). The mean score for heart attack was 4.52 (S.D. = 1.04), falling between the concrete-logical category of internalization (score = 4) and the formal logical

category of physiological explanations (score = 5). Finally, the panic attack category received the highest mean score of 5.64 (S.D. = 1.11) falling between the formal-logical categories of physiological (score = 5) and psychophysiological (score = 6) explanations, and indicating that children across the age groups were capable of employing internal notions in their explanations of panic attacks. Although 3rd graders did receive significantly lower scores on the panic category of illness relative to the 6th and 9th graders, it is important to recognize that their mean score for this category still fell within the formal-logical range, although closer to the physiological category relative to the other groups.

These data suggest that, when extended to incorporate illnesses with a clear psychological component (i.e., panic and, to a lesser extent, heart attacks), the Conceptions of Illness Questionnaire may tend to elicit internal responses from younger as well as older children, resulting in a developmentally higher level of categorization than would result from questions pertaining to colds. This finding challenges Nelles and Barlow's suggestion that children's developmental conceptions of illness may be directly applied to the understanding of their ability to make internal, catastrophic attributions characteristic of panic. Indeed, children's conceptions of illness and their attributional style in response to the physiological symptoms of panic may be qualitatively different entities.

Attributional Style in Response to Panic Vs. Non-Panic Imagery

The Attributional Checklist was designed to tap children's cognitive responses to the specific physical symptoms of panic as presented through guided imagery. The fourth hypothesis (H4) of the current study proposed that 9th graders would have higher Internal/Catastrophic (I/C) scores on this

instrument relative to 6th graders who would have higher I/C scores than 3rd graders when presented with panic imagery. It was also suggested that scores would not differ across the age groups when children were presented with non-panic imagery describing a normal, everyday situation (i.e., sitting in one's bedroom reading a book).

H4 was based on the cognitive model of panic (Clark, 1986) in which panic attacks are described as resulting from the "catastrophic misinterpretation" of particular bodily sensations. According to this model, the physiological symptoms of panic (e.g., shortness of breath; dizziness; trembling or shaking) are experienced and interpreted as signaling that one is dying, going crazy, or losing control. Such catastrophic misinterpretation of anxiety-produced sensations results in increased apprehension which then produces a further increase in bodily sensations. This vicious cycle, characterized by the interplay of bodily sensations and catastrophic cognitions, ultimately culminates in a panic attack. H4 was specifically designed to test Nelles and Barlow's (1988) proposal that spontaneous panic attacks are rare or nonexistent in children (versus adolescents) as children are incapable of making the internal, catastrophic attributions which are a necessary component of panic within the cognitive model.

Contrary to H4, no grade differences were evidenced in children's tendency to make internal, catastrophic attributions when presented, through guided imagery, with the physiological symptoms of panic. The absence of a significant grade X condition (panic vs. non-panic) interaction lies contrary to the reasoning of Nelles and Barlow (1988). The present results do not support the notion that older children and adolescents are more likely than their younger peers to interpret the physiological symptoms of panic as

signaling that they are dying, losing control, or going crazy. Indeed, examination of the Attributional Questions (see Appendix E), designed to elicit a broad range of children's spontaneous thoughts, feelings, and responses to imagining themselves experiencing the physical symptoms of panic, indicates that children at all three grade levels were capable of making internal, catastrophic attributions, particularly pertaining to thoughts of dying. For instance, one 3rd grade child, when asked "what would you be thinking" after listening to the panic tape, responded, "that I was dying or that I was going to get buried or have to go to the emergency room and get X-rayed." Similarly, a 6th grade child answered, "well, I would be thinking like I'm gonna die or I'm going to be sick in the hospital for lots of time." Finally, a 9th grader indicated thinking "that I'm hurting and I'm dying."

Hypothesis 5 (H5) was based on the commonly reported finding in literature pertaining to childhood anxiety and fear that girls tend to report higher levels of these constructs relative to boys (Ollendick et al., 1989; Ollendick et al., 1991). As the tendency to make internal, catastrophic attributions in response to the physical symptoms of panic is related, in the cognitive model, to heightened levels of anxiety, it was hypothesized that girls would show higher I/C scores in the panic condition relative to boys, while no gender differences would be evident in the non-panic condition. This hypothesis was not supported in the current study as the gender X condition interaction was non-significant. It can thus be concluded that the tendency to employ internal, catastrophic attributions when asked to imagine experiencing the physiological symptoms of panic is unrelated to gender in this sample.

Regardless of grade and gender, children were significantly more likely to make internal, catastrophic attributions (i.e., "I must be dying, losing control,

or going crazy") when asked to imagine experiencing the physiological symptoms of panic than when presented with innocuous imagery (i.e., imagining sitting calmly in one's bedroom reading a book). This significant main effect for condition (panic vs. non-panic) indicates that children from all three grades and each gender responded appropriately and differentially to the guided imagery tapes, indicating, as would be expected, more internal, catastrophic attributions in response to panic relative to non-panic imagery.

Exploratory analyses were conducted to investigate children's responses on the remaining three categories of the Attributional Checklist (i.e., Internal/Noncatastrophic (I/NC), External/Catastrophic (E/C), External/Noncatastrophic (E/NC) scores), as well as the sum of responses to the four positive items included on this measure. A variable consisting of the difference between the I/C and the E/C score was also created in order to explore children's tendency to make internal catastrophic attributions relative to their tendency to employ external catastrophic explanations in response to panic symptomatology.

Consistent with the findings for I/C score, a significant main effect for condition (panic vs. non-panic) was found for I/NC, E/C, and E/NC scores. Regardless of grade and gender, children were significantly more likely to make attributions representative of each of these categories when asked to imagine experiencing the physiological symptoms of panic than when presented with innocuous imagery (i.e., imagining sitting calmly in one's bedroom reading a book). It should be recalled that items included on the Attributional Checklist were categorized as internal or external and catastrophic or non-catastrophic based on the following definitions: 1) Internal: "within the body or self; initiating from a real or imagined source

located within the organism;" 2) External: "outside the body or self; initiating from a real or imagined source located outside the organism;" 3) Catastrophic: "resulting in sudden and markedly disturbing change from the normal state of the organism; having severe consequences which would seriously impair normal functioning; beyond the realm of normal, everyday experience;" and 4) Non-catastrophic: "not resulting in sudden and markedly disturbing change from the normal state of the organism; not having severe consequences which would seriously impair normal functioning; not beyond the realm of normal, everyday experience." Examples of items from each of the four categories on the Attributional Checklist are: 1) I/C: "I'd think that I must be dying;" 2) I/NC: "I'd think I was worried about something;" 3) E/C: "I'd think something or someone was trying to kill me;" and 4) E/NC: "I'd think I was feeling that way because of the temperature or the weather."

The significant main effect for condition for the four categories of the Attributional Checklist indicates that, across grade and gender, children responded differentially to the two guided imagery tapes. It further suggests that children made more attributions in general and evidenced a greater number of cognitive interpretations when asked to imagine panic symptomatology compared to imagining a normal, everyday situation. Indeed, one would expect an individual to put more energy into seeking explanations, and thus develop more attributions, for an unusual experience that is outside the realm of normal, everyday life relative to an innocuous situation with which one is familiar.

It is informative, in exploring the nature of children's attributions in response to panic and non-panic imagery, to order the means for the different categories in order to investigate which of the four categories were employed

with greater or lesser frequency across the two conditions. In the panic condition, mean I/NC score was 6.82 (S.D. = 1.42), mean E/NC score was 4.99 (S.D. = 1.28), mean I/C score was 4.88 (S.D. = 1.63), and mean E/C score was 4.04 (S.D. = 1.38). In the non-panic condition, mean E/NC was 4.32 (S.D. = 1.15), mean I/NC score was 3.48 (S.D. = 0.94), mean E/C score was 3.29 (S.D. = 0.86), and mean I/C score was 3.10 (S.D. = 0.42). It thus appears that children are substantially more likely to employ internal, non-catastrophic attributions (i.e., thoughts like "I'd think I was worried, scared, nervous, or sick") relative to the other categories when interpreting possible meanings/causes of the physiological symptoms of panic. Interestingly, the two non-catastrophic categories have the highest mean scores, suggesting that children do not interpret these symptoms as signaling "sudden and markedly disturbing change" or "severe consequences which would seriously impair normal functioning." Finally, most of the mean scores in response to the non-panic tape are very close to 3, which is the lowest possible score on the Attributional Checklist. This suggests that children were making far fewer attributions in general within the categories defined by this measure when presented with non-panic imagery. Children were most likely to employ external/non-catastrophic attributions within this condition, interpreting these normal feelings as resulting from germs they had been exposed to, the temperature or the weather, or "something in the book I was reading."

In addition to the significant main effects for condition, a significant condition X order interaction was found for I/NC score (see Figure 1). Specifically, children were significantly more likely to employ internal, non-catastrophic attributions (i.e., thoughts like "I'd think I was worried, scared, nervous, or sick") in response to non-panic imagery when the non-panic tape

was presented first (Order 2) as opposed to when it was played after the panic tape (Order 1). Such a significant difference was not evident in the panic condition. This finding supports the notion of a priming effect in which children who were initially asked to imagine the physiological symptoms of panic assessed internal, non-catastrophic attributions as less appropriate descriptors for the non-panic imagery relative to the panic tape. As children tend to make internal, non-catastrophic attributions in response to panic imagery, they may, after imagining experiencing the physical symptoms of panic and attributing such feelings to thoughts of being worried or scared, feel that such attributions are far less relevant to the description of an everyday situation. Indeed, the everyday situation may seem more pleasant and "normal," and may trigger less cognitive attributions of being worried, scared, nervous, or sick when it is perceived in contrast to the panic tape as opposed to when it is presented as the first imagery exercise.

Exploratory analysis of the sum of responses to the four positive items included on the Attributional Checklist (Positive score) was also conducted. This set of four items was included to provide children with alternate responses outside of the four primary categories represented on the checklist. This positive category allowed children to endorse thoughts of being relaxed, being OK, thinking that "something or someone was trying to make me relaxed," and thinking that "I was feeling that way because my room was calm and peaceful." As this category consists of four items, the Positive score ranges from 4 to 12.

A significant main effect for condition was found for the Positive score, with the mean being lower in the panic condition ($M = 5.58$, $S.D. = 1.81$) relative to the non-panic condition ($M = 9.54$, $S.D. = 1.53$). Thus, as would be expected,

children tended to make more positive attributions (i.e., they were more likely to think they were OK, relaxed, and "feeling that way because my room was calm and peaceful") when asked to imagine an innocuous situation than when presented with panic imagery.

A significant condition X grade interaction was also found for the Positive score (see Figure 2). Specifically, in the panic condition alone, 3rd graders evidenced significantly higher Positive scores ($M = 6.27$, $S.D. = 2.11$) relative to 6th and 9th graders, who did not differ from each other ($M_s = 5.29$ and 5.14 , $S.D.s = 1.69$ and 1.33 , respectively). This finding lends support to the notion that younger children may be less susceptible to experiencing panic compared to older children and adolescents. However, rather than making *less* internal, catastrophic attributions, a hypothesis that was not supported by the present data, younger children may make *more* positive attributions which may serve the protective function of interfering with the establishment of the "vicious cycle" described in the cognitive model of panic (Clark, 1986). Specifically, this model describes panic attacks as resulting from the catastrophic misinterpretation of anxiety-produced sensations which results in increased apprehension, producing a further increase in bodily sensations. The present data suggest that younger children are more likely to make positive attributions to panic symptomatology (e.g., thoughts of being OK and relaxed) which may serve to terminate the vicious cycle by reducing the state of apprehension rather than increasing bodily sensations.

Finally, exploratory analysis of the difference between the I/C and the E/C scores on the Attributional Checklist (Difference score) revealed a significant main effect for condition, with the mean Difference score being higher in the panic ($M = 0.84$, $S.D. = 1.43$) relative to the non-panic ($M = -0.19$, $S.D. = 0.90$)

condition. Thus, across grade and gender, children made significantly more internal/catastrophic attributions relative to external/catastrophic attributions in response to panic symptomatology. However, this tendency was reversed in response to imagining a normal, everyday situation (i.e., children tended to make more external/catastrophic relative to internal/catastrophic attributions). The absence of a significant grade X condition interaction contradicts Nelles and Barlow's hypothesis that older children are more likely to employ internal, catastrophic attributions in response to panic symptomatology while the thinking of younger children is characterized by notions of external causality. Rather, the present data suggest that, when employing catastrophic cognitions, *all* children, regardless of grade and gender, tend to perceive the physiological symptoms of panic as internal (i.e., "within the body or self; initiating from a real or imagined source located within the organism") more often than external (i.e., "outside the body or self; initiating from a real or imagined source located outside the organism"). Furthermore, this is not merely attributable to a global cognitive tendency toward internal attributions as children incorporate more external/catastrophic relative to internal/catastrophic explanations in their thoughts regarding an innocuous situation. There must, therefore, be some specificity in children's tendency to employ more internal explanations when making catastrophic attributions for the symptoms of panic.

Individual Variables as Predictors of Panic Attributions

Stepwise multiple regression analyses were undertaken in order to determine which individual variables, assessed through self-report measures, would predict children's tendency to make internal, catastrophic attributions as well as total internal attributions (i.e., summed across the catastrophic and

non-catastrophic categories) in response to panic imagery. Grade and gender were forced into the models, using a dummy variable to represent gender, as it was originally thought that these variables would account for a significant amount of the variance, and the author wished to explore the degree to which other individual factors (i.e., conceptions of illness, anxiety sensitivity, anxiety frequency, physiological anxiety, worry/oversensitivity, concentration anxiety, internal attributional style in response to negative outcomes, fear, and depression) would contribute significantly to the prediction of I/C and Total Internal score.

Consistent with the findings reported previously in which no grade or gender differences were evident in children's tendency to make internal, catastrophic attributions when presented with panic imagery, neither grade nor gender contributed significantly to the regression models. However, two individual factors were entered into the models as significant predictors of both I/C and Total Internal scores. In the multiple regression analysis on I/C score, internal attributional style in response to negative outcomes, assessed via the KASTAN, was entered after grade and gender were forced into the model, followed by anxiety sensitivity, assessed via the CASI. This four-variable model accounted for approximately 13% of the variance associated with I/C score (see Table 5). The model for Total Internal score was reversed, with anxiety sensitivity entered before internal attributional style in response to negative outcomes. The resulting four-factor model accounted for approximately 12% of the variance associated with Total Internal score (see Table 6).

These results indicate that, of all the individual variables considered as possible contributors to the tendency to make internal and internal,

catastrophic attributions in response to panic symptomatology, tendency to employ an internal attributional style in response to negative outcomes and anxiety sensitivity were the most relevant and significant predictors.

Tendency to make internal attributions in response to negative outcomes was derived from one of the six basic subscales of the KASTAN. A high score on this subscale was obtained by children who chose internal rather than external attributions when presented with a negative outcome. For instance, when presented with the situation "your pet gets run over by a car," a child with a tendency to make internal attributions in response to negative outcomes would choose "I don't take good care of my pets" as opposed to "drivers are not cautious enough." As the physiological symptoms of panic are generally regarded as negative, uncomfortable feelings, it seems consistent that children with a cognitive tendency to employ internal attributions in response to negative outcomes would tend to employ more internal explanations when confronted with the physiological symptoms of panic. From the perspective of the cognitive model of panic, such children may also be at risk for the development of panic attacks as they are more likely to perceive anxiety-produced sensations as internally caused and based. The above results also indicate that the tendency to employ internal attributions in response to negative outcomes is predictive of a tendency to make internal, catastrophic attributions for the physiological symptoms of panic. These children would be more likely than children who employ external attributions for negative events to make catastrophic misinterpretations of panic symptomatology, triggering the vicious cycle between bodily sensations and internal, catastrophic cognitions which results in a panic attack.

Anxiety sensitivity was derived from the Childhood Anxiety Sensitivity Index (CASI) and is defined as the belief that anxiety or fear causes negative events such as illness, embarrassment, or additional anxiety (Reiss & McNally, 1985). It has been suggested that this construct is causally related to the development of anxiety disorders (Reiss et al., 1986) as it may increase the aversiveness of an anxiety experience. As Silverman et al. (1991) state, "anxiety would be a more dreadful thing for those who believe that it can lead to severe consequences (e.g., a heart attack) than for those who do not" (p. 162). Indeed, the finding that anxiety sensitivity is a significant predictor of children's tendency to employ internal and internal, catastrophic attributions in response to the physical symptoms of panic supports this notion that children with high levels of anxiety sensitivity are more likely to perceive anxiety as "a more dreadful thing" than are their peers who are low on this construct. Children with high levels of anxiety sensitivity would appear to be at risk for perceiving panic symptomatology as leading to "severe consequences," thus making internal and catastrophic misinterpretations of the physical symptoms of panic.

Conclusions

Nelles and Barlow (1988) have argued that panic attacks may not be evident in younger children (vs. adolescents) as younger children are incapable of making the necessary internal, catastrophic cognitions characteristic of panic according to the cognitive model (Clark, 1986). This hypothesis is based on the work of Bibace and Walsh (1977, 1979, 1980, 1981) who have described the developmental progression of children's conceptions of illness in which the explanations of younger children are dominated by notions of external causality while older children employ more internal explanations. The

current findings challenge Nelles and Barlow's (1988) hypothesis as well as the application of the Bibace and Walsh model to understanding children's attributional responses to the physiological symptoms of panic.

The present study suggests that, while older children do achieve higher scores on the Conceptions of Illness Questionnaire across illness category, relative to younger children, the classification of children's responses on this measure may be dependent, at least in part, on the type of illness they are defining. In particular, all children, regardless of grade and gender, tended to employ formal-logical, internal notions in their explanations of panic attacks compared to explanations of colds, which were characterized by more concrete-logical, external notions. Thus, when extended to incorporate illnesses with a clear psychological component (i.e., panic and, to a lesser extent, heart attacks), the Conceptions of Illness Questionnaire may tend to elicit internal responses from younger as well as older children. This suggests that Nelles and Barlow's (1988) extension of the conceptions of illness model to the understanding of children's attributions in response to panic is not feasible. Indeed, children's conceptions of illnesses with less of a clear psychological component (e.g., colds) and their attributional style in response to the physiological symptoms of panic may be qualitatively different entities, the latter characterized by more internal notions.

Children's attributional responses to the physiological symptoms of panic, assessed via panic imagery, were unaffected by grade and gender differences, with the exception of positive attributions which were more prevalent among the 3rd graders relative to the other two groups. Regardless of grade and gender, children were significantly more likely to make internal/catastrophic, internal/noncatastrophic, external/catastrophic, and

external/noncatastrophic attributions when asked to imagine experiencing the physiological symptoms of panic than when presented with innocuous imagery. As would be expected, children tended to make more positive attributions when asked to imagine an innocuous situation than when presented with panic imagery.

It appears that children in grades 3, 6, and 9 are more likely to employ internal, non-catastrophic attributions (i.e., thoughts like "I'd think I was worried, scared, nervous, or sick") when interpreting possible meanings/causes of the physiological symptoms of panic, and that they are less likely to interpret these symptoms as signaling "sudden and markedly disturbing change" or "severe consequences which would seriously impair normal functioning." The finding that such catastrophic interpretations are not commonly reported among children supports the notion that panic attacks are a rare phenomenon in children, as internal, catastrophic cognitions (i.e., "I must be dying, going crazy, or losing control") are infrequently reported in response to panic symptomatology relative to internal, non-catastrophic cognitions. According to the cognitive model of panic (Clark, 1986) catastrophic misinterpretation of bodily sensations is a critical component in the development of a panic attack. Third graders may be particularly immune to the experience of a panic attack as they tend to make more positive attributions in response to panic symptomatology which may serve the protective function of interfering with the establishment of the "vicious cycle" described in the cognitive model of panic. Finally, these data suggest that children who report internal attributions in response to negative outcomes and/or high levels of anxiety sensitivity may be more at risk for the development of panic attacks, as these individual variables significantly

predict the tendency to make internal and internal, catastrophic attributions in response to the physiological symptoms of panic.

Finally, limitations inherent in the current study and directions for future research should be noted. First, children's attributions in response to panic and non-panic imagery as well as individual variables (i.e., anxiety sensitivity, anxiety frequency, manifest anxiety, depression, fear, and attributional style) were assessed via self-report measures. While the measures used to assess these latter individual variables have been found to be reliable and valid for their intended purposes, it would be useful to corroborate this data with other methods, including diagnostic interviews, behavioral observations, and parent/teacher reports. The Attributional Checklist should also be validated with children who have been diagnosed as experiencing panic attacks relative to a control group in order to assess clinical and non-clinical norms on this instrument.

Secondly, the generalizability of these results may be limited by the low participation rate within the schools included in this study. Only 15-20% of children invited to participate returned the consent form, suggesting the possibility of a biased subject pool. Specifically, it is likely that children who returned the form came from families supportive of research and academic endeavors. These families may have been more psychologically minded relative to families who did not return the consent form, and/or they may have had a specific interest in anxiety per se. The possibility of such subject biases suggests caution in extending the results of this study to children whose families are less likely to grant them permission to participate in a project of this nature.

Finally, although children responded differentially and in the expected manner when asked to imagine experiencing panic symptomatology relative to an innocuous situation, some limitations are posed by the use of guided imagery. For instance, it is likely that some children possess greater ability to imagine experiencing the symptoms of panic and report attributions consistent with what their actual thoughts would be if they were to experience such symptoms in everyday life. Other children may be less able to report such accurate and valid attributions in response to guided imagery.

The present study suggests that, while the tendency to make internal, catastrophic attributions in response to panic imagery may not be a common childhood phenomenon, certain individual factors (i.e., internal attributional style in response to negative events, anxiety sensitivity) may predispose children to experience internal, catastrophic attributions in response to panic symptomatology, thus facilitating the likelihood of having a panic attack. It would be useful to identify children, via self-report, clinical interview, parent/teacher reports, and/or behavioral observations, who possess these individual factors and examine their attributional responses to panic imagery relative to the current sample. It also seems critical to explore children's cognitive responses to the physiological symptoms of panic *as they are actually being experienced*. This could be accomplished through observation of asthmatic children or children diagnosed with hyperventilation syndrome. Such children experience many physical symptoms similar to those characteristic of a panic attack, and an examination of their cognitive attributions in response to the actual experience of such symptoms would be extremely informative in the search for cognitive correlates of panic symptomatology in children.

The current study has shown that the tendency to make internal attributions in response to panic symptomatology is prevalent in children, and that certain individual factors contribute to this tendency, as well as the tendency for these internal attributions to be catastrophic, thus predisposing the child to develop a panic attack. Further exploration of such individual factors, with particular focus on internal attributional style in response to negative outcomes and anxiety sensitivity in relation to children's cognitive responses to the symptoms of panic, is critical if we are to gain further understanding of the nature of panic in childhood.

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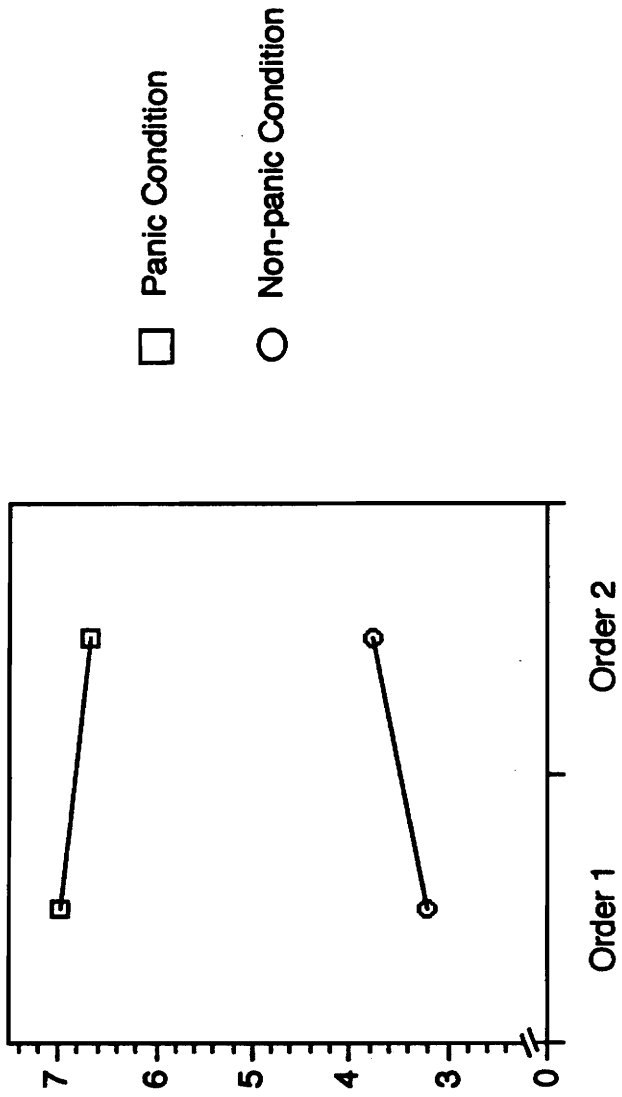


Figure 1: Condition X Order Interaction for I/NC Score

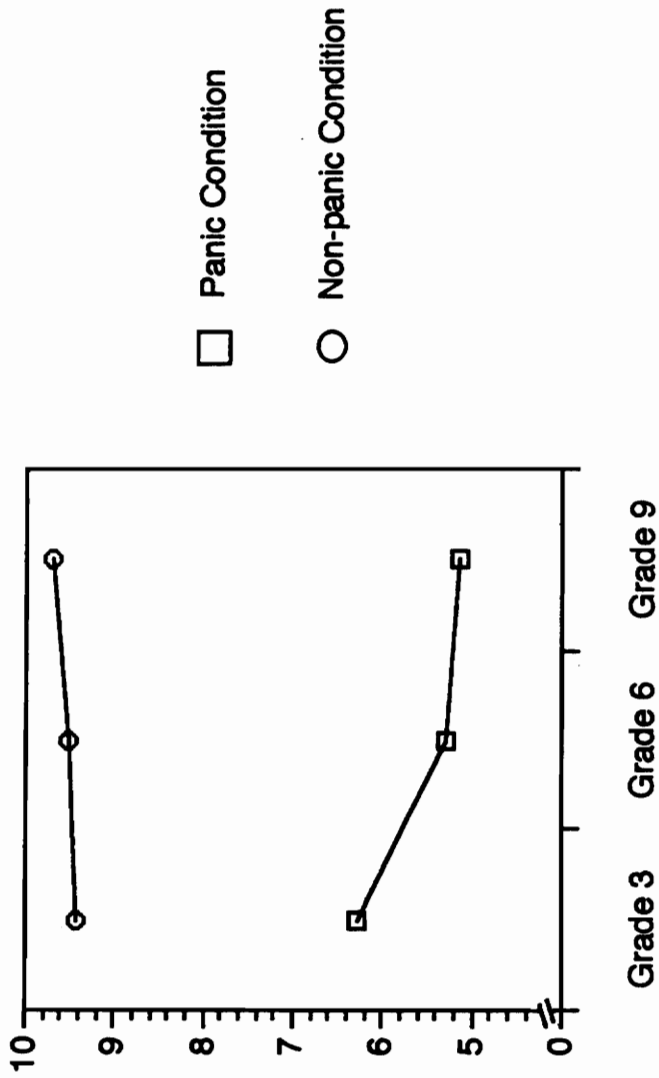


Figure 2: Condition X Grade Interaction for Positive Score

Table 1
Means and Standard Deviations for Illness Categories
Within Grade and Gender

	Grade 3		Grade 6		Grade 9	
	Male	Female	Male	Female	Male	Female
<u>Illness</u>						
Cold						
<u>M</u>	3.14	3.30	3.20	3.64	3.56	3.42
(S.D.)	(1.06)	(1.03)	(0.83)	(0.90)	(0.81)	(0.77)
Heart Attack						
<u>M</u>	4.76	4.00	4.55	4.55	4.56	4.68
(S.D.)	(0.94)	(1.41)	(1.23)	(0.80)	(0.73)	(0.89)
Panic Attack						
<u>M</u>	5.52	4.80	5.80	5.91	5.87	6.00
(S.D.)	(1.21)	(2.07)	(0.62)	(0.43)	(0.50)	(0.00)

Table 2

Means and Standard Deviations for the Attributional Checklist Categories Within Grade and Gender in Response to Panic Vs. Non-Panic Imagery

Category	Grade 3		Grade 6		Grade 9	
	Male	Female	Male	Female	Male	Female
I/C-Panic						
<u>M</u>	4.81	5.20	5.15	4.91	4.56	4.58
(S.D.)	(1.60)	(1.85)	(1.69)	(1.57)	(1.79)	(1.35)
I/C-Non-panic						
<u>M</u>	3.05	3.15	3.05	3.14	3.00	3.21
(S.D.)	(0.22)	(0.67)	(0.22)	(0.47)	(0.00)	(0.54)
I/NC-Panic						
<u>M</u>	6.43	6.90	7.00	7.27	6.25	6.95
(S.D.)	(1.54)	(1.45)	(1.45)	(1.42)	(1.61)	(0.91)
I/NC-Non-panic						
<u>M</u>	3.81	3.55	3.45	3.50	3.25	3.26
(S.D.)	(1.12)	(1.10)	(0.83)	(1.19)	(0.58)	(0.45)
E/C-Panic						
<u>M</u>	4.24	4.45	3.80	3.95	3.81	3.95
(S.D.)	(1.51)	(1.61)	(1.36)	(1.13)	(1.60)	(1.08)
E/C-Non-panic						
<u>M</u>	3.52	3.50	3.05	3.14	3.38	3.16
(S.D.)	(1.36)	(1.24)	(0.22)	(0.35)	(0.81)	(0.37)
E/NC-Panic						
<u>M</u>	4.95	5.30	4.95	4.81	4.94	5.05
(S.D.)	(1.47)	(1.38)	(0.83)	(1.36)	(1.39)	(1.31)
E/NC-Non-panic						
<u>M</u>	4.24	4.60	4.55	4.24	3.88	4.32
(S.D.)	(1.48)	(1.05)	(0.89)	(1.04)	(1.15)	(1.20)
Positive-Panic						
<u>M</u>	6.67	5.85	5.30	5.27	5.12	5.16
(S.D.)	(2.11)	(2.08)	(1.53)	(1.86)	(1.45)	(1.26)
Positive-Non-panic						
<u>M</u>	8.95	9.95	9.65	9.41	9.69	9.68
(S.D.)	(1.75)	(1.76)	(1.50)	(1.56)	(1.45)	(0.95)

Table 3

Means and Standard Deviations for the Attributional Checklist Categories
Within Panic and Non-Panic Condition

	Category				
	I/C	I/NC	E/C	E/NC	Positive
<u>Condition</u>					
Panic					
<u>M</u>	4.88	6.82	4.04	4.99	5.58
(S.D.)	(1.63)	(1.42)	(1.38)	(1.28)	(1.81)
Non-panic					
<u>M</u>	3.10	3.48	3.29	4.32	9.54
(S.D.)	(0.42)	(0.94)	(0.86)	(1.15)	(1.53)

Table 4

Means, Standard Deviations, and Correlation Matrix for Regression Variables

	<u>Variables</u>										
	Grade	Gender	COIQ	CASI	CAFC	Phys	RCMAS Worry	Con	KASTAN	FSSC-R	CDI
Gender	.044										
COIQ	.137	-.015									
CASI	-.422***	.178	.011								
CAFC	-.062	.071	.086	.495***							
Phys	-.305***	.035	-.047	.544***	.419***						
Worry	-.003	.169	.004	.559***	.371***	.612***					
Con	-.070	.061	.005	.550***	.375***	.605***	.619***				
KASTAN	.408***	-.007	.170	-.034	.048	.041	.098	.134			
FSSC-R	-.289**	.357***	-.027	.663***	.324***	.527***	.535***	.470***	-.025		
CDI	-.022	-.053	.146	.379***	.265**	.487***	.481***	.605***	.367***	.285**	
I/C Score	-.103	.013	.093	.268**	.126	.231*	.175	.162	.204*	.222*	.257**
Total I	-.061	.094	.075	.296**	.155	.225*	.232*	.140	.173	.250**	.191*
<u>M</u>			3.94	30.78	13.64	4.64	4.54	2.53	3.13	127.67	8.92
S.D.			0.75	6.17	2.95	2.55	3.01	2.09	1.77	26.98	7.46

Gender (0 = male, 1 = female)

*p < .05

**p < .01

***p < .001

Table 5
Multiple Regression Analysis on I/C Score

Variable	Partial R ²	Model R ²	F	p
Grade	.0106		1.24	.2682
Gender	.0003	.0108	0.04	.8505
KASTAN-Internal/Neg	.0730	.0838	9.08	.0032
CASI	.0421	.1259	5.44	.0214

$F(4, 113) = 4.07, p < .01$

Table 6
Multiple Regression Analysis on Total Internal Score

Variable	Partial R ²	Model R ²	F	p
Grade	.0043		0.50	.4825
Gender	.0093	.0130	1.08	.3002
CASI	.0803	.0934	10.10	.0019
KASTAN-Internal/Neg	.0298	.1231	3.84	.0526

F(4, 113) = 3.97, p < .01

Appendix A Letter to Parent

Dear Parent or Guardian,

I am a graduate student in the Psychology Department at Virginia Tech who is conducting a project on childhood anxiety and its effects on school children. Many children experience physical anxiety in the form of breathlessness, dizziness, sweating, trembling, etc. We would like to talk with children about how they deal with these feelings, and would greatly appreciate your child's participation.

To participate in this project, your child will be asked to complete five questionnaires in a classroom with other children. These questionnaires deal with your child's experience of anxiety (the Childhood Anxiety Sensitivity Index) and fear (the Fear Survey Schedule for Children-Revised), as well as his/her style of interpreting situations. It will take about 30-40 minutes to complete the questionnaires. Your son/daughter will also be interviewed in school by a member of the project staff. This interview will take about 20-30 minutes. He/she will be asked to listen to two 3-minute audiotapes. One will describe the physical symptoms of anxiety (e.g., breathlessness, dizziness, sweating, rapid heartbeat), while the other will describe an everyday situation (sitting at home reading a book). We will talk with your child about his/her thoughts, feelings, and responses to the tapes. We will also ask your child questions about colds, heart attacks, and panic.

We wish to assure you that the well-being of your child will be our foremost consideration. All information will be confidential unless we have reason to believe that your child is at risk of hurting him or herself. In this case, we would contact you and provide information on treatment services. Your child is free to discontinue participation in the study at any time. This project will teach your child about anxiety and will help us provide treatment to children who have problems with anxiety. At the end of the interview, we will explain that, while panic attacks are often scary, they do not cause physical harm. If it appears that your child may have problems with anxiety, the interviewer will notify you and provide information on treatment services if desired.

This project has been approved by the Human Subjects Research Committee and the Institutional Review Board at Virginia Tech. If you have any questions, please feel free to call Sara Mattis (951-8311), principal investigator; Dr. Thomas Ollendick (231-6451), faculty advisor; Joseph J. Franchina (231-5664), Human Subjects Committee Chair; Janet Johnson (231-6077), Institutional Review Board Chairperson.

Please sign and return the attached permission form to school by Friday of this week. We would greatly appreciate your child's participation, as it will help us to better understand childhood anxiety and treat children who have problems with anxiety. Thank you.

Sincerely,

Sara G. Mattis
Graduate Clinician

Thomas H. Ollendick, Ph.D.
Supervisor

Appendix B
Consent Form

Please check yes or no and return to school by Friday of this week.

_____ Yes, I give my child permission to participate in this project on children and anxiety, with the understanding that he/she can discontinue participation at any time.

_____ No, I do not give my child permission to participate in this project.

Parent's or Guardian's Signature

Child's Name and Date of Birth

We also ask that you please answer the following questions. This information will be kept confidential and will be used for the purpose of describing the group of children who participate in our project.

1. What is the occupation or job title of the child's mother?
2. What level of education has the child's mother completed?
3. What is the occupation or job title of the child's father?
4. What level of education has the child's father completed?

Appendix C

Measures

- I. The Childhood Anxiety Sensitivity Index (CASI)
- II. The Child Anxiety Frequency Checklist (CAFC)
- III. The Revised Children's Manifest Anxiety Scale (RCMAS)
- IV. The Fear Survey Schedule for Children-Revised (FSSC-R)
- V. The Children's Depression Inventory (CDI)
- VI. The Attributional Checklist
- VII. The Conceptions of Illness Questionnaire
- VIII. The KASTAN-Revised Children's Attributional Style Questionnaire (KASTAN-R CASQ)

CASI

Name: _____ Age: _____ Date: _____

Directions: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and put an X in the space in front of the words that describe you. There are no right or wrong answers. Remember, find the words that best describe you.

1. I don't want other people to know when I feel afraid. _____None _____Some _____A lot
2. When I cannot keep my mind on my schoolwork I worry that I might be going crazy. _____None _____Some _____A lot
3. It scares me when I feel "shaky". _____None _____Some _____A lot
4. It scares me when I feel like I am going to faint. _____None _____Some _____A lot
5. It is important for me to stay in control of my feelings. _____None _____Some _____A lot
6. It scares me when my heart beats fast. _____None _____Some _____A lot
7. It embarrasses me when my stomach growls (makes noise). _____None _____Some _____A lot
8. It scares me when I feel like I am going to throw up. _____None _____Some _____A lot
9. When I notice that my heart is beating fast, I worry that there might be something wrong with me. _____None _____Some _____A lot
10. It scares me when I have trouble getting my breath. _____None _____Some _____A lot
11. When my stomach hurts, I worry that I might be really sick. _____None _____Some _____A lot
12. It scares me when I can't keep my mind on my schoolwork. _____None _____Some _____A lot
13. Other kids can tell when I feel shaky. _____None _____Some _____A lot
14. Unusual feelings in my body scare me. _____None _____Some _____A lot
15. When I am afraid, I worry that I might be crazy. _____None _____Some _____A lot
16. It scares me when I feel nervous. _____None _____Some _____A lot
17. I don't like to let my feelings show. _____None _____Some _____A lot
18. Funny feelings in my body scare me. _____None _____Some _____A lot

CAFC

Name: _____ Age: _____ Date: _____

Directions: Below is a list of feelings that some children may feel in their body. Read each one carefully and put an X in the box in front of the words that describe you. There are no right or wrong answers.

1. My heart beats fast. Never Sometimes A lot Don't know
2. I feel shaky. Never Sometimes A lot Don't know
3. I feel nervous. Never Sometimes A lot Don't know
4. I feel faint. Never Sometimes A lot Don't know
5. I have trouble getting
my breath. Never Sometimes A lot Don't know
6. I get unusual feelings
in my body. Never Sometimes A lot Don't know
7. I have trouble keeping
my mind on my
schoolwork. Never Sometimes A lot Don't know
8. I get diarrhea. Never Sometimes A lot Don't know

WHAT I THINK AND FEEL

Directions: Read each question carefully. Put a circle around the word **YES** if you think it is true about you. Put a circle around the word **NO** if you think it is not true about you.

- | | | |
|-----|----|--|
| YES | NO | 1. I have trouble making up my mind. |
| YES | NO | 2. I get nervous when things do not go the right way for me. |
| YES | NO | 3. Others seem to do things easier than I can. |
| YES | NO | 4. I like everyone I know. |
| YES | NO | 5. Often I have trouble getting my breath. |
| YES | NO | 6. I worry a lot of the time. |
| YES | NO | 7. I am afraid of a lot of things. |
| YES | NO | 8. I am always kind. |
| YES | NO | 9. I get mad easily. |
| YES | NO | 10. I worry about what my parents will say to me. |
| YES | NO | 11. I feel that others do not like the way I do things. |
| YES | NO | 12. I always have good manners. |
| YES | NO | 13. It is hard for me to get to sleep at night. |
| YES | NO | 14. I worry about what other people think about me. |
| YES | NO | 15. I feel alone even when there are people with me. |
| YES | NO | 16. I am always good. |
| YES | NO | 17. Often I feel sick in my stomach. |
| YES | NO | 18. My feelings get hurt easily. |
| YES | NO | 19. My hands feel sweaty. |
| YES | NO | 20. I am always nice to everyone. |
| YES | NO | 21. I am tired a lot. |
| YES | NO | 22. I worry about what is going to happen. |
| YES | NO | 23. Other children are happier than I. |
| YES | NO | 24. I tell the truth every single time. |
| YES | NO | 25. I have bad dreams. |
| YES | NO | 26. My feelings get hurt easily when I am fussed at. |
| YES | NO | 27. I feel someone will tell me I do things the wrong way. |
| YES | NO | 28. I never get angry. |
| YES | NO | 29. I wake up scared some of the time. |
| YES | NO | 30. I worry when I go to bed at night. |
| YES | NO | 31. It is hard for me to keep my mind on my school work. |
| YES | NO | 32. I never say things I shouldn't. |
| YES | NO | 33. I wiggle in my seat a lot. |
| YES | NO | 34. I am nervous. |
| YES | NO | 35. A lot of people are against me. |
| YES | NO | 36. I never lie. |
| YES | NO | 37. I often worry about something bad happening to me. |

SELF-RATING QUESTIONNAIRE (FSSC-R)

Thomas H. Ollendick

Name: _____ Age: _____ Date: _____

DIRECTIONS: A number of statements which boys and girls use to describe the fears they have are given below. Read each fear carefully and put an X in the box in front of the words that best describe your fear. There are no right or wrong answers. Remember, find the words which best describe how much fear you have.

- | | | | |
|---|-------------------------------|-------------------------------|--------------------------------|
| 1. Giving an oral report | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 2. Riding in the car or bus. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 3. Getting punished by mother | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 4. Lizards | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 5. Looking foolish. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 6. Ghosts or spooky things | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 7. Sharp objects | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 8. Having to go to the hospital | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 9. Death or dead people | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 10. Getting lost in a strange place | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 11. Snakes | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 12. Talking on the telephone | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 13. Roller coaster or carnival rides. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 14. Getting sick at school | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 15. Being sent to the principal | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 16. Riding on the train | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 17. Being left at home with a sitter. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 18. Bears or wolves | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 19. Meeting someone for the first time. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 20. Bombing attacks -- being invaded | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 21. Getting a shot from the nurse or doctor | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 22. Going to the dentist | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |

23. High places like mountains None Some A lot
24. Being teased None Some A lot
25. Spiders. None Some A lot
26. A burglar breaking into our house None Some A lot
27. Flying in a plane None Some A lot
28. Being called on by the teacher None Some A lot
29. Getting poor grades None Some A lot
30. Bats or birds None Some A lot
31. My parents criticizing me None Some A lot
32. Guns None Some A lot
33. Being in a fight. None Some A lot
34. Fire -- getting burned None Some A lot
35. Getting a cut or injury None Some A lot
36. Being in a big crowd None Some A lot
37. Thunderstorms. None Some A lot
38. Having to eat some food I don't like None Some A lot
39. Cats None Some A lot
40. Failing a test None Some A lot
41. Being hit by a car or truck None Some A lot
42. Having to go to school. None Some A lot
43. Playing rough games during recess None Some A lot
44. Having my parents argue None Some A lot
45. Dark rooms or closets None Some A lot
46. Having to put on a recital None Some A lot
47. Ants or beetles None Some A lot
48. Being criticized by others None Some A lot
49. Strange looking people. None Some A lot
50. The sight of blood None Some A lot
51. Going to the doctor None Some A lot
52. Strange or mean looking dogs None Some A lot

- | | | | |
|--|-------------------------------|-------------------------------|--------------------------------|
| 53. Cemeteries | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 54. Getting a report card | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 55. Getting a haircut | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 56. Deep water or the ocean | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 57. Nightmares. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 58. Falling from high places | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 59. Getting a shock from electricity | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 60. Going to bed in the dark | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 61. Getting car sick | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 62. Being alone. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 63. Having to wear clothes different from others | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 64. Getting punished by my father. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 65. Having to stay after school | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 66. Making mistakes | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 67. Mystery movies | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 68. Loud sirens. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 69. Doing something new | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 70. Germs or getting a serious illness | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 71. Closed spaces | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 72. Earthquakes | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 73. Russia | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 74. Elevators | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 75. Dark places | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 76. Not being able to breathe | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 77. Getting a bee sting | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 78. Worms or snails | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 79. Rats or mice | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 80. Taking a test | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |

CD INVENTORY

M. Kovacs

Name _____ Age _____ Date _____

DIRECTIONS: Kids sometimes have different feelings and ideas. This form lists the feelings and ideas in groups. From each group, pick one sentence that describes you best for the past two weeks. After you pick a sentence from the first group, go on to the next group. There is no right or wrong answer. Just pick the sentences that best describe the way you have been recently. Put a mark like this - X - next to your answer. Put the X on the line next to the sentence that you pick.

Here is an example of how this form works. Try it. Put a mark next to the sentence that describes you best:

- I read books all the time
- I read books once in a while
- I never read books

Remember, pick out the sentence that describes your feelings and ideas in the past two weeks.

1. I am sad once in a while
 I am sad many times
 I am sad all the time
2. Nothing will ever work out for me
 I am not sure if things will work out for me
 Things will work out for me O.K.
3. I do most things O.K.
 I do many things wrong
 I do everything wrong
4. I have fun in many things
 I have fun in some things
 Nothing is fun at all
5. I am bad all the time
 I am bad many times
 I am bad once in a while
6. I think about bad things happening to me once in a while
 I worry that bad things will happen to me
 I am sure that terrible things will happen to me
7. I hate myself
 I do not like myself
 I like myself
8. All bad things are my fault
 Many bad things are my fault
 Bad things are not usually my fault

9. ___ I do not think about killing myself
 ___ I think about killing myself but I would not do it
 ___ I want to kill myself
10. ___ I feel like crying everyday
 ___ I feel like crying many days
 ___ I feel like crying once in a while
11. ___ Things bother me all the time
 ___ Things bother me many times
 ___ Things bother me once in a while
12. ___ I like being with people
 ___ I do not like being with people many times
 ___ I do not want to be with people at all
13. ___ I cannot make up my mind about things
 ___ It is hard to make up my mind about things
 ___ I make up my mind about things easily
14. ___ I look O.K.
 ___ There are some bad things about my looks
 ___ I look ugly
15. ___ I have to push myself all the time to do my schoolwork
 ___ I have to push myself many times to do my schoolwork
 ___ Doing schoolwork is not a big problem
16. ___ I have trouble sleeping every night
 ___ I have trouble sleeping many nights
 ___ I sleep pretty well
17. ___ I am tired once in a while
 ___ I am tired many days
 ___ I am tired all the time
18. ___ Most days I do not feel like eating
 ___ Many days I do not feel like eating
 ___ I eat pretty well
19. ___ I do not worry about aches and pains
 ___ I worry about aches and pains many times
 ___ I worry about aches and pains all the time
20. ___ I do not feel alone
 ___ I feel alone many times
 ___ I feel alone all the time
21. ___ I never have fun at school
 ___ I have fun at school only once in a while
 ___ I have fun at school many times

22. ___ I have plenty of friends
___ I have some friends but I wish I had more
___ I do not have any friends
23. ___ My school work is all right
___ My school work is not as good as before
___ I do very badly in subjects I used to be good in
24. ___ I can never be as good as other kids
___ I can be as good as other kids if I want to
___ I am just as good as other kids
25. ___ Nobody really loves me
___ I am not sure if anybody loves me
___ I am sure that somebody loves me
26. ___ I usually do what I am told
___ I do not do what I am told most times
___ I never do what I am told
27. ___ I get along with people
___ I get into fights many times
___ I get into fights all the time

Attributional Checklist

Directions: Imagine that you are having the feelings described on the tape. Here is a list of thoughts you might have along with these feelings. Read each statement carefully and put an X in front of the words that best describe how much you would think each of these things if you were having the feelings described on the tape. There are no right or wrong answers, just pick the words that best describe your thoughts.

1. I'd think I was worried about something. None Some A lot
2. I'd think I was relaxed. None Some A lot
3. I'd think that I must be dying. None Some A lot
4. I'd think something or someone was trying to kill me. None Some A lot
5. I'd think I was scared or nervous. None Some A lot
6. I'd think that I must be OK. None Some A lot
7. I'd think there were germs around that I had been exposed to. None Some A lot
8. I'd think something or someone was trying to take control of my body. None Some A lot
9. I'd think I was feeling that way because of the temperature or the weather. None Some A lot
10. I'd think something or someone was trying to make me relaxed. None Some A lot
11. I'd think I must be losing control. None Some A lot
12. I'd think I was sick. None Some A lot
13. I'd think I must be going crazy. None Some A lot
14. I'd think I was feeling that way because my room was calm and peaceful. None Some A lot
15. I'd think I was feeling that way because of something in the book I was reading. None Some A lot
16. I'd think that something or someone was trying to make me go crazy. None Some A lot

Conceptions of Illness Questionnaire

[If child mentions words like germs, bacteria, virus, cholesterol, stress, contagious, etc., during interview, ask the following questions:]

What is _____ ? or What does _____ mean?
Where does it (or where do they) come from?

1. How do people get sick?
2. What is a cold? (if "I don't know" ask: Have you ever had a cold?)
 - a. (if no symptoms given by child, ask) What happens to someone when they get a cold?
 - b. How do you get a cold? (if "I don't know" ask: Where does a cold come from?)
 - c. How does (the cause) lead to (the symptoms)?
 - d. How else do you get a cold?
 - e. How does (the cause) lead to (the symptoms)?
 - f. (if getting it from others not mentioned, ask) Can you get a cold from someone else who has a cold?
 1. (if yes) How does it get from one person to another?
 2. Do you have to touch the other person or just be near them?
 - g. Can people do something so they won't get a cold?
3. What is a heart attack? (if "I don't know" ask: Have you ever known anyone who had a heart attack?)
 - a. (if no symptoms given by child, ask) What happens to someone when they get a heart attack?
 - b. How do you get a heart attack? (if "I don't know" ask: Where does a heart attack come from?)
 - c. How does (the cause) lead to (the symptoms)?
 - d. How else do you get a heart attack?
 - e. How does (the cause) lead to (the symptoms)?
 - f. (if getting it from others not mentioned, ask) Can you get a heart attack from someone else who has a heart attack?
 1. (if yes) How does it get from one person to another?
 2. Do you have to touch the other person or just be near them?
 - g. Can people do something so they won't get a heart attack?
4. What is a panic attack? (if "I don't know" ask: Have you ever known anyone who had a panic attack?)
 - a. (if no symptoms given by child, ask) What happens to someone when they get a panic attack?
 - b. How do you get a panic attack? (if "I don't know" ask: Where does a panic attack come from?)
 - c. How does (the cause) lead to (the symptoms)?
 - d. How else do you get a panic attack?
 - e. How does (the cause) lead to (the symptoms)?
 - f. (if getting it from others not mentioned, ask) Can you get a panic attack from someone else who has a panic attack?
 1. (if yes) How does it get from one person to another?
 2. Do you have to touch the other person or just be near them?
 - g. Can people do something so they won't get a panic attack?

KASTAN-REVISED ATTRIBUTIONAL STYLE QUESTIONNAIRE (KASTAN-R ASQ)

1. YOU GET AN "A" ON A TEST.
A. I AM SMART.
B. I AM GOOD IN THE SUBJECT THAT THE TEST WAS IN.
2. YOU PLAY A GAME WITH SOME FRIENDS AND YOU WIN.
A. NO ONE I KNOW PLAYS THAT GAME WELL.
B. I PLAY THAT GAME WELL.
3. YOU SPEND A NIGHT AT A FRIEND'S HOUSE AND YOU HAVE A GOOD TIME.
A. MY FRIEND WAS IN A FRIENDLY MOOD THAT NIGHT.
B. EVERYONE IN MY FRIEND'S FAMILY WAS IN A FRIENDLY MOOD THAT NIGHT.
4. YOU GO ON A VACATION WITH A GROUP OF PEOPLE AND YOU HAVE FUN.
A. I WAS IN A GOOD MOOD.
B. THE PEOPLE I WAS WITH WERE IN GOOD MOODS.
5. ALL OF YOUR FRIENDS CATCH A COLD EXCEPT YOU.
A. I HAVE BEEN HEALTHY LATELY.
B. I AM A HEALTHY PERSON.
6. YOUR PET GETS RUN OVER BY A CAR.
A. I DON'T TAKE GOOD CARE OF MY PETS.
B. DRIVERS ARE NOT CAUTIOUS ENOUGH.
7. SOME KIDS THAT YOU KNOW SAY THAT THEY DO NOT LIKE YOU.
A. ONCE IN A WHILE PEOPLE ARE MEAN TO ME.
B. ONCE IN A WHILE I AM MEAN TO OTHER PEOPLE.
8. YOU GET VERY GOOD GRADES.
A. SCHOOL WORK IS SIMPLE.
B. I AM A HARD WORKER.
9. YOUR FRIEND TELLS YOU THAT YOU LOOK NICE.
A. MY FRIEND LIKED THE WAY I LOOKED THAT DAY.
B. MY FRIEND LIKES THE WAY I LOOK.
10. A GOOD FRIEND TELLS YOU THAT HE HATES YOU.
A. MY FRIEND WAS IN A BAD MOOD THAT DAY.
B. I WASN'T NICE TO MY FRIEND THAT DAY.
11. YOU TELL A JOKE AND NO ONE LAUGHS.
A. I DO NOT TELL JOKES WELL.
B. THE JOKE IS SO WELL-KNOWN THAT IT IS NO LONGER FUNNY.
12. YOUR TEACHER GIVES A LESSON AND YOU DO NOT UNDERSTAND IT.
A. I DIDN'T PAY ATTENTION TO ANYTHING THAT DAY.
B. I DIDN'T PAY ATTENTION WHEN MY TEACHER WAS TALKING.

13. YOU FAIL A TEST.
 - A. TEACHERS MAKE HARD TESTS.
 - B. SOMETIMES TEACHERS MAKE HARD TESTS.
14. YOU GAIN A LOT OF WEIGHT AND START TO LOOK FAT.
 - A. THE FOOD THAT I HAVE TO EAT IS FATTENING.
 - B. I LIKE FATTENING FOODS.
15. A PERSON STEALS MONEY FROM YOU.
 - A. THAT PERSON IS DISHONEST.
 - B. PEOPLE ARE DISHONEST.
16. YOUR PARENTS PRAISE SOMETHING THAT YOU MAKE.
 - A. I AM GOOD AT MAKING SOME THINGS.
 - B. MY PARENTS LIKE SOME THINGS I MAKE.
17. YOU PLAY A GAME AND YOU WIN MONEY.
 - A. I AM A LUCKY PERSON.
 - B. I AM LUCKY WHEN I PLAY GAMES.
18. YOU BREAK A GLASS.
 - A. I AM NOT CAREFUL ENOUGH.
 - B. SOMETIMES I AM NOT CAREFUL ENOUGH.
19. YOU ARE INVITED TO A LOT OF PARTIES.
 - A. A LOT OF PEOPLE HAVE BEEN ACTING FRIENDLY TOWARD ME LATELY.
 - B. I HAVE BEEN ACTING FRIENDLY TOWARD A LOT OF PEOPLE LATELY.
20. A GROWNUP YELLS AT YOU.
 - A. THAT PERSON YELLED AT THE FIRST PERSON HE SAW.
 - B. THAT PERSON YELLED AT A LOT OF PEOPLE HE SAW THAT DAY.
21. YOU DO A PROJECT WITH A GROUP OF KIDS AND IT TURNS OUT BADLY.
 - A. I DON'T WORK WELL WITH THE PEOPLE IN THE GROUP.
 - B. I NEVER WORK WELL WITH A GROUP.
22. YOU MAKE A NEW FRIEND.
 - A. I AM A NICE PERSON.
 - B. THE PEOPLE THAT I MEET ARE NICE.
23. YOU HAVE BEEN GETTING ALONG WELL WITH YOUR FAMILY.
 - A. I AM EASY TO GET ALONG WITH WHEN I AM WITH MY FAMILY.
 - B. ONCE IN A WHILE I AM EASY TO GET ALONG WITH WHEN I AM WITH MY FAMILY.
24. YOU TRY TO SELL CANDY BUT NO ONE WILL BUY ANY.
 - A. LATELY A LOT OF CHILDREN ARE SELLING THINGS, SO PEOPLE DON'T WANT TO BUY ANYTHING ELSE FROM CHILDREN.
 - B. PEOPLE DON'T LIKE TO BUY THINGS FROM CHILDREN.

25. YOU PUT A HARD PUZZLE TOGETHER.
 - A. SOMETIMES I AM GOOD AT PUTTING PUZZLES TOGETHER.
 - B. SOMETIMES I AM GOOD AT PUTTING THINGS TOGETHER.
26. YOU GET A BAD GRADE IN SCHOOL.
 - A. I AM STUPID
 - B. TEACHERS ARE UNFAIR GRADERS.
27. YOU WALK INTO A DOOR AND YOU GET A BLOODY NOSE.
 - A. I WASN'T LOOKING WHERE I WAS GOING.
 - B. I HAVE BEEN CARELESS LATELY.
28. YOU HAVE A MESSY ROOM.
 - A. I DID NOT CLEAN MY ROOM THAT DAY.
 - B. I USUALLY DO NOT CLEAN MY ROOM.
29. YOU TWIST YOUR ANKLE IN GYM CLASS.
 - A. THE PAST FEW WEEKS THE SPORTS WE PLAYED IN GYM CLASS HAVE BEEN DANGEROUS.
 - B. THE PAST FEW WEEKS I HAVE BEEN CLUMSY IN GYM CLASS.
30. YOUR PARENTS TAKE YOU TO THE BEACH AND YOU HAVE A GOOD TIME.
 - A. EVERYTHING AT THE BEACH WAS NICE THAT DAY.
 - B. THE WEATHER AT THE BEACH WAS NICE THAT DAY.
31. YOU TAKE A BUS WHICH ARRIVES SO LATE THAT YOU MISS A MOVIE.
 - A. THE PAST FEW DAYS THERE HAVE BEEN PROBLEMS WITH THE BUS BEING ON TIME.
 - B. THE BUSES ARE ALMOST NEVER ON TIME.
32. YOUR MOTHER MAKES YOU YOUR FAVORITE DINNER.
 - A. THERE ARE A FEW THINGS THAT MY MOTHER WILL DO TO PLEASE ME.
 - B. MY MOTHER LIKES TO PLEASE ME.
33. A TEAM THAT YOU ARE ON LOSES A GAME.
 - A. THE TEAM MEMBERS DON'T PLAY WELL TOGETHER.
 - B. THAT DAY THE TEAM MEMBERS DIDN'T PLAY WELL TOGETHER.
34. YOU FINISH YOUR HOMEWORK QUICKLY.
 - A. LATELY I HAVE BEEN DOING EVERYTHING QUICKLY.
 - B. LATELY I HAVE BEEN DOING SCHOOLWORK QUICKLY.
35. YOUR TEACHER ASKS YOU A QUESTION AND YOU GIVE THE WRONG ANSWER.
 - A. I GET NERVOUS WHEN I HAVE TO ANSWER QUESTIONS.
 - B. THAT DAY I GOT NERVOUS WHEN I HAD TO ANSWER QUESTIONS.
36. YOU DO NOT GET YOUR CHORES DONE AT HOME.
 - A. I WAS LAZY THAT DAY.
 - B. MANY DAYS I AM LAZY.

37. YOU GO TO AN AMUSEMENT PARK AND YOU HAVE A GOOD TIME.
 - A. I USUALLY ENJOY MYSELF AT AMUSEMENT PARKS.
 - B. I USUALLY ENJOY MYSELF.
38. YOU HAVE A FIGHT WITH A FRIEND.
 - A. I WAS IN A BAD MOOD THAT DAY.
 - B. MY FRIEND WAS IN A BAD MOOD THAT DAY.
39. YOU GET ALL THE TOYS YOU WANT ON YOUR BIRTHDAY.
 - A. PEOPLE ALWAYS GUESS WHAT TOYS TO BUY ME FOR MY BIRTHDAY.
 - B. THIS BIRTHDAY PEOPLE GUESSED RIGHT AS TO WHAT TOYS I WANTED.
40. YOU GO TO A FRIEND'S PARTY AND YOU HAVE FUN.
 - A. YOUR FRIEND GIVES GOOD PARTIES.
 - B. YOUR FRIEND GAVE A GOOD PARTY THAT DAY.
41. YOUR NEIGHBORS ASK YOU OVER FOR DINNER.
 - A. SOMETIMES PEOPLE ARE IN KIND MOODS.
 - B. PEOPLE ARE KIND.
42. YOU HAVE A SUBSTITUTE TEACHER AND SHE LIKES YOU.
 - A. I WAS WELL-BEHAVED DURING CLASS THAT DAY.
 - B. I AM ALMOST ALWAYS WELL-BEHAVED DURING CLASS.
43. YOU MAKE YOUR FRIENDS HAPPY.
 - A. I AM A FUN PERSON TO BE WITH.
 - B. SOMETIMES I AM A FUN PERSON TO BE WITH.
44. YOU GET A FREE ICE CREAM CONE.
 - A. I WAS FRIENDLY TO THE ICE CREAM MAN THAT DAY.
 - B. THE ICE CREAM MAN WAS FEELING FRIENDLY THAT DAY.
45. AT YOUR FRIEND'S PARTY THE MAGICIAN ASKS YOU TO HELP HIM OUT.
 - A. IT WAS JUST LUCK THAT I GOT PICKED.
 - B. I LOOKED REALLY INTERESTED IN WHAT WAS GOING ON.
46. YOU TRY TO CONVINCING A KID TO GO TO THE MOVIES WITH YOU, BUT HE WON'T GO.
 - A. THAT DAY HE DID NOT FEEL LIKE DOING ANYTHING.
 - B. THAT DAY HE DID NOT FEEL LIKE GOING TO THE MOVIES.
47. YOUR PARENTS HAVE A BIG FIGHT.
 - A. IT IS HARD FOR PEOPLE TO GET ALONG WELL.
 - B. IT IS HARD FOR PEOPLE WHO ARE MARRIED TO GET ALONG WELL.
48. YOU HAVE BEEN TRYING TO GET INTO A CLUB AND YOU DO NOT GET IN.
 - A. THERE ARE A LOT OF THINGS THAT I AM NOT GOOD AT.
 - B. I AM NOT GOOD AT THE THINGS THAT PEOPLE IN THE CLUB DO.

Appendix D
Child Consent Form

You have been chosen to take part in a study about how children understand different feelings. If you agree to be in the study, you will listen to two 3-minute tapes describing different feelings. You will be asked to imagine that you are having the experiences described on the tapes, and you will be asked questions about what you would feel in those situations. You will also be asked some questions about different kinds of sickness. This first set of questions should take about 20-30 minutes. Finally, you will be asked to complete some questionnaires in a classroom with other children. These questionnaires are about your fears and other feelings, and will take about 45 minutes to answer. All of your answers will be kept confidential and will only be told to the people working on the study unless we think you are at risk of hurting yourself. In this case, we would talk with your parents.

If anything in the tapes or if any of the questions upset you, you may talk with me and I will answer any questions you have. If you have any questions after the study is finished, you may call Sara Mattis (951-8311). It is up to you whether or not you want to be in the study. If you decide to be in the study, you may stop at any time. By choosing to be in the study, you will help us understand different feelings that children have.

Do you have any questions? If you want to be in the study, please sign this form to let us know that you understand what the study is about, you know who to ask if you have any questions, and that you understand that you can stop at any time.

"I agree to be in the study."

Name Date

Witness Date

Appendix E
Attributional Questions

1. Describe in your own words what is happening.
2. Why is this happening?
3. How would you be feeling?
4. Why might you feel this way?
5. What might these feelings mean?
6. What is causing these feelings?
7. What would you be thinking?
8. Why would you be thinking that?
9. What would you do?
10. Why would you do that?

Appendix F Reprompt

The purpose of this script is to refresh the child's memory regarding the feelings presented on the tape in the panic condition. The interviewer will read this to the child after he/she has completed the Attributional Questions and before administering the Attributional Checklist.

"Now I want you to remember the feelings described on the tape. You're sitting in your bedroom reading a book when all of a sudden you start to have difficulty catching your breath, you feel dizzy and unsteady, your heart is beating very fast, and you can feel some pain in your chest. There's a feeling of tightness in your throat, you feel sick to your stomach, your hands are tingling, and you feel hot. You notice that you are shaking and sweating. It's a strange feeling."

[administer the Attributional Checklist, reading the directions to the child]

Appendix G
Guided Imagery
(Panic Condition)

Close your eyes and take a deep breath in for the count of three (1...2...3) and out for the count of three (1...2...3). Good. Try your best to relax and clear any thoughts from your mind. Breathe in (1...2...3) and out (1...2...3). Just concentrate on my voice. Good. Now I want you to imagine that you are sitting in your bedroom at home. Try to picture your bedroom in your mind as best you can. Imagine that you're sitting on your bed reading a book. All of a sudden, out of the blue, you start to breathe very fast. You're having difficulty catching your breath and you feel short of breath, as if you've just been running. At the same time, you feel dizzy and unsteady, as if you might faint. Your heart is beating very fast and you can feel some pain in your chest. There's a feeling of tightness in your throat, and, at the same time, you feel sick to your stomach. Your hands are tingling and you feel hot. You notice that you are shaking and sweating. It's a strange feeling...OK. Now I want you to continue imagining that you are having the feelings I just described. We are going to turn off the tape and ask you to answer some questions about these feelings.

Appendix H
Guided Imagery
(Non-panic Condition)

Close your eyes and take a deep breath in for the count of three (1...2...3) and out for the count of three (1...2...3). Good. Try your best to relax and clear any thoughts from your mind. Breathe in (1...2...3) and out (1...2...3). Just concentrate on my voice. Good. Now I want you to imagine that you are sitting in your bedroom at home. Try to picture your bedroom in your mind as best you can. Imagine that you're sitting on your bed reading a book. You notice that you're breathing normally. You feel calm. You're breathing just the way you usually do. You feel steady and relaxed. Your heart is beating the way it always does, and your chest feels relaxed. Your throat and stomach are fine, too. Your hands are relaxed and you feel comfortable all over. You notice that you are feeling good inside. It's a nice feeling...OK. Now I want you to continue imagining that you are having the feelings I just described. We are going to turn off the tape and ask you to answer some questions about these feelings.

Appendix I
Pilot Subjects

Pilot #1

Age: 14
Sex: Male

Pilot #2

Age: 9
Sex: Female

Pilot #3

Age: 12
Sex: Male

Pilot #4

Age: 10
Sex: Male

Pilot #1
Date: 4/15/92
Age: 14
Date of Birth: 12/28/77

Attributional Checklist

1. I'd think I was worried about something. ___ None X Some ___ A lot
2. I'd think that I must be dying. ___ None X Some ___ A lot
3. I'd think something or someone was trying to kill me. ___ None X Some ___ A lot
4. I'd think I was scared or nervous. ___ None ___ Some X A lot
5. I'd think there were germs around that I had been exposed to. ___ None X Some ___ A lot
6. I'd think something or someone was trying to take control of my body. X None ___ Some ___ A lot
7. I'd think I was feeling that way because of the temperature or the weather. X None ___ Some ___ A lot
8. I'd think I must be losing control. ___ None X Some ___ A lot
9. I'd think I was sick. ___ None ___ Some X A lot
10. I'd think I must be going crazy. X None ___ Some ___ A lot
11. I'd think I was feeling that way because of something in the book I was reading. ___ None X Some ___ A lot
12. I'd think that something or someone was trying to make me go crazy. X None ___ Some ___ A lot

Pilot #2
Date: 4/15/92
Age: 9
Date of Birth: 8/29/82

Attributional Checklist

1. I'd think I was worried about something. ___ None ___ Some X A lot
2. I'd think that I must be dying. ___ None ___ Some X A lot
3. I'd think something or someone was trying to kill me. X None ___ Some ___ A lot
4. I'd think I was scared or nervous. ___ None ___ Some X A lot
5. I'd think there were germs around that I had been exposed to. X None ___ Some ___ A lot
6. I'd think something or someone was trying to take control of my body. ___ None X Some ___ A lot
7. I'd think I was feeling that way because of the temperature or the weather. ___ None X Some ___ A lot
8. I'd think I must be losing control. ___ None X Some ___ A lot
9. I'd think I was sick. ___ None ___ Some X A lot
10. I'd think I must be going crazy. ___ None X Some ___ A lot
11. I'd think I was feeling that way because of something in the book I was reading. ___ None ___ Some X A lot
12. I'd think that something or someone was trying to make me go crazy. X None ___ Some ___ A lot

Pilot #3
Date: 4/19/92
Age: 12
Date of Birth: 10/03/79

Attributional Checklist

- 1. I'd think I was worried about something. ___ None ___ Some X A lot
- 2. I'd think that I must be dying. ___ None ___ Some X A lot
- 3. I'd think something or someone was trying to kill me. X None ___ Some ___ A lot
- 4. I'd think I was scared or nervous. ___ None ___ Some X A lot
- 5. I'd think there were germs around that I had been exposed to. ___ None X Some ___ A lot
- 6. I'd think something or someone was trying to take control of my body. X None ___ Some ___ A lot
- 7. I'd think I was feeling that way because of the temperature or the weather. X None ___ Some ___ A lot
- 8. I'd think I must be losing control. X None ___ Some ___ A lot
- 9. I'd think I was sick. ___ None ___ Some X A lot
- 10. I'd think I must be going crazy. X None ___ Some ___ A lot
- 11. I'd think I was feeling that way because of something in the book I was reading. X None ___ Some ___ A lot
- 12. I'd think that something or someone was trying to make me go crazy. X None ___ Some ___ A lot

Pilot #4
Date: 4/19/92
Age: 10
Date of Birth: 6/30/81

Attributional Checklist

- | | | | |
|--|--|--|---|
| 1. I'd think I was worried about something. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 2. I'd think that I must be dying. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 3. I'd think something or someone was trying to kill me. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 4. I'd think I was scared or nervous. | <input type="checkbox"/> None | <input checked="" type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 5. I'd think there were germs around that I had been exposed to. | <input type="checkbox"/> None | <input checked="" type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 6. I'd think something or someone was trying to take control of my body. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 7. I'd think I was feeling that way because of the temperature or the weather. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 8. I'd think I must be losing control. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input checked="" type="checkbox"/> A lot |
| 9. I'd think I was sick. | <input type="checkbox"/> None | <input type="checkbox"/> Some | <input checked="" type="checkbox"/> A lot |
| 10. I'd think I must be going crazy. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 11. I'd think I was feeling that way because of something in the book I was reading. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |
| 12. I'd think that something or someone was trying to make me go crazy. | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some | <input type="checkbox"/> A lot |

Pilot Interviews
Attributional Questions

1. Describe in your own words what is happening.
2. Why is this happening?
3. How would you be feeling?
4. Why might you feel this way?
5. What might these feelings mean?
6. What is causing these feelings?
7. What would you be thinking?
8. Why would you be thinking that?
9. What would you do?
10. Why would you do that?

Pilot #1

Date: 4-15-92

Age: 14

DOB: 12-28-77

Attributional Questions

1. I was sitting; I feel dizzy, sick, everything you said
2. I don't know--it came out of the blue; I was supposed to be relaxed; maybe asthma
3. insecure, lonely, nobody helping me, nobody around to holler for
4. maybe the book had something in it that shocked me; I might have been thinking something bad
5. nervousness; maybe I was startled at something
6. it was just the air or something; it was such a nice day--it was hot; the heat made me hyperventilate or something
7. that I might be dying of some kind of disease
8. cause nothing like that's ever happened before and if it did you'd think something was wrong
9. go call 9-1-1
10. if there was no one around to help you you'd have to solve the problem before it got worse or you might just lay there and die

Pilot #2
Date: 4-15-92
Age: 9
DOB: 8/29/82

Attributional Questions

1. I feel sick and nauseous, dizzy; I know how that feels--when I go biking sometimes I do feel dizzy
2. maybe because the book is so interesting I take myself in that book
3. scared; maybe I'm just having so much to think about that I don't think about how I'm feeling
4. maybe the book is so interesting that I put myself in that situation
5. maybe that it may happen to me, maybe sometime soon; (Q) that it may happen to me again
6. maybe I have so many problems at school that it sort of takes me to a different world
7. I'd be thinking like what is happening to me; like am I going to like die
8. maybe cause I'm like breathing really fast trying to like catch air
9. when I caught my breath I would tell my mom and maybe she could give me ideas like why it happened
10. because she could give me ideas why it may be happening and ideas about what I can do about it to stop this happening again

Pilot #3
Date: 4-19-92
Age: 12
DOB: 10/03/79

Attributional Questions

1. you're fainting; you could be having a heart attack
2. because there's something wrong with your heart
3. scared, nervous, worried
4. because you're afraid you're going to die
5. that you are going to die
6. don't know; something's wrong with your body
7. nothing; that you were going to die
8. because of all the things that were happening to you
9. don't know; there's nothing you really can do; call your parents
10. so they could help you or call an ambulance

Pilot #4
Date: 4-19-92
Age: 10
DOB: 06/30/81

Attributional Questions

1. I feel like about the hotness like I'm having a stroke...or I'm drunk; seems like something that would happen in a dream; I'd feel confused like I don't know what to do
2. I think that's why it makes it scary because you don't know why; I might be nervous; I could be having a heart attack or a nervous breakdown
3. very confused, scared, worried; don't know what's going on; it would be surprising...no reason...all of a sudden you start to feel these things
4. it's never happened before...if it happened before you would know what to do
5. stroke, nervous breakdown, heart attack, high blood pressure, high cholesterol; you ate something wrong that has some disease in it
6. heart attack, stroke
7. very concerned about my health; confused, very scared; it might happen again like once a week; I'd always have to be prepared for it
8. because it wouldn't just do this once for no reason; there must be something wrong
9. tell my mom...she'd call the doctor; I'd be worried and concerned and eager to find out
10. it needs help; if something really bad happens to you you want to get it changed and fixed; don't want to be this way every day for the rest of your life

Pilot Interviews
Conceptions of Illness Questionnaire
(Bibace & Walsh, 1990)

1. How do people get sick?
2. What is a cold?
 - 2a. How does a person get a cold?
 - 2b. Can people do something so they won't get a cold?
3. What is a heart attack?
 - 3a. How does a person get a heart attack?
 - 3b. Can people do something so they won't get a heart attack?
4. What is a panic attack?
 - 4a. How does a person get a panic attack?
 - 4b. Can people do something so they won't get a panic attack?

Standard Probes:

(Ask these if child's response is unclear or ambiguous)

What is _____?

Probe: When a person has _____, what is it like?

How does a person get _____?

Probe: How does (the cause) lead to (the symptoms)?

Pilot #1
Date: 4-15-92
Age: 14
DOB: 12-28-77

Conceptions of Illness Questionnaire

1. germs and diseases in the air
2. when the white blood cells can't fight off disease or there is not enough of them to fight off disease
 - a. exposed to cold air or they eat something that made them have an allergic reaction
 - b. take medicines
3. when a blood clot gets in one of your arteries and blood can't get to your heart and it makes you have a heart attack; makes your heart pump too fast trying to get blood to your body
 - a. eating too many fatty foods and not exercising enough
 - b. exercise more and cut back on fatty foods; if you already eat fatty foods, try not to strain yourself or push yourself to the point where it triggers it
4. when a murderer's chasing you and you're struggling to get the right key to get in the door
 - a. when they're in a stressful situation
 - b. not really, cause any stressful situation can trigger it

Pilot #2

Date: 4-15-92

Age: 9

DOB: 8-29-82

Conceptions of Illness Questionnaire

1. maybe because a virus goes around or maybe you're born with like a germ thing
2. when you go outdoors and when it's really cold you get a virus which you sneeze
 - a. maybe he/she gets it from one of his/her friends which they hang out alot together or they go out in the cold
 - b. they can wear alot of layers or just don't go out in the cold at all
3. when your heart stops beating or when you don't get enough oxygen which makes your heart not beat
 - a. maybe because they don't get enough exercise or they're real, real fat or if they get too much exercise or too much to eat you can get a heart attack
 - b. they can exercise if they don't exercise enough or they could just eat enough food and try not to eat alot of fats
4. when you panic too much you start like sweating
 - a. by panicking too much; (Q) it leads to you panic so much you just don't know what to do and your body sort of explodes; makes you sweat
 - b. not that I can think of; they could try to tell themselves whenever they know they're going to panic (like over a big test) you just say to yourself like "you'll do good" and that will stop most of it

Pilot #3
Date: 4-19-92
Age: 12
DOB: 10-03-79

Conceptions of Illness Questionnaire

1. from germs
2. a disease; you have a headache and a stuffy nose and a fever sometimes
 - a. from germs
 - b. try to stay away from other people who have the illness and can be contagious
3. when your heart doesn't get enough oxygen and it just dies
 - a. from eating too many fatty foods or if there's something wrong with their heart
 - b. sometimes...they can choose what foods they eat or if they think there's something wrong with their heart they can ask a doctor
4. when you're worried and really scared about something and you don't know what to do
 - a. if something scary or different happens to them and they get really afraid
 - b. they can try to stay calm by thinking that everything's going to be OK

Pilot #4
Date: 4-19-92
Age: 10
DOB: 06-30-81

Conceptions of Illness Questionnaire

1. germs; if someone comes from another country sometimes they're not exposed to things; don't take care of themselves; not being careful, getting germs from someone else
2. nose gets clogged up with mucous; sinus headache; mouth, nose, and ears get infected
 - a. catch it from someone; go out in too cold weather without a hat or warm clothes
 - b. be careful not to be around people who are coughing; dress warmly in cold weather
3. you eat too much fat and your arteries get clogged; you're too fat...hard for blood to go through veins; you're too tired...heart stops for some time
 - a. eat too much fat; sometimes can't control it...high cholesterol, some people can't help it
 - b. some can; watch what they eat; exercise to make the heart go stronger; some people are just that way and will always have high cholesterol
4. when you have too much stress and you can't stand the stress; a little like a nervous breakdown; body can't take it; worry and panicky; you can't take it so you break down
 - a. if they have to do something very bold and they're nervous about it; ex: members of family had heart attacks...if you thought you were going to die any day; could be any situation
 - b. go to psychologists and think positive that it might not happen to them; not think about it; take it easy, give yourself a break; if you have to do something wait until you're ready; think positive

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(703) 552-9238

EDUCATION

Candidate, Master of Science
Clinical Psychology
Virginia Polytechnic Institute and State University

Bachelor of Arts, June 1990
Major: Music with Psychology
Dartmouth College
Magna cum Laude

EXPERIENCE

Clinical

Youth Services Intern - August 1993 - Present
New River Valley Community Services Board
Mental Health Services - Pulaski Clinic
302 North Washington Avenue
Pulaski, VA 24301
(703) 980-0660
Supervisor: Cheri Warburton

Work with outpatient youth, aged 2 through 17 years.
Duties include counseling, assessment, case management,
and weekly supervision.

Graduate Clinician - August 1991 - August 1993
Psychological Services Center and Child Study Center
Virginia Polytechnic Institute and State University
3110 Prices Fork Road
Blacksburg, VA 24060
(703) 231-6914
Supervisor:

June 1993-August 1993 Dr. Richard Eisler

Supervisors: Dr. George A. Clum
August 1992-May 1993 Dr. Russell T. Jones

Supervisors: Dr. Thomas H. Ollendick
August 1991-May 1992 Dr. Ellie T. Sturgis

Duties included outpatient counseling and assessment,
psychological testing, participation on a practicum team,
and weekly supervision.

School Counselor - September 1991 - May 1993

Montgomery County Public School System

Supervisor: Dr. Thomas H. Ollendick

Provided weekly individual counseling for emotionally disturbed students as specified on IEP's. Attended bi-weekly group supervision meetings and monthly staff meetings.

Activities Therapy Volunteer - September 1989 - June 1990

Dartmouth-Hitchcock Mental Health Center

Hanover, NH 03755

Supervised recreational and therapeutic activities for psychosocially dysfunctional adolescents and adults. Coordinated entertainment programs and assisted in volunteer training, supervision, and recruitment.

Assistant Special Education Teacher - Summer 1987

Bi-County Collaborative

North Attleboro, MA 02760

Supervised classroom and recreational activities at a summer camp for children with learning, emotional, and behavioral disorders. Managed a group of six children, ages 6-12.

Assistant Special Ed. Teacher - November 1985 - March 1986

Aiken School

Seekonk, MA 02771

Supervised academic and recreational activities. Worked closely with a group of children, ages 7-10, with various behavioral, learning, emotional, and genetic disorders.

Teaching

Graduate Teaching Assistant - August - December 1993

Dr. Richard A. Winett

Department of Psychology

Virginia Polytechnic Institute and State University

Blacksburg, VA 24061

(703) 231-6581

Duties involved grading assignments for an undergraduate behavior modification course.

Graduate Teaching Assistant - January - May 1993

Dr. Joseph Germana
Phillippe Cunningham, M.S.
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(703) 231-6581

Duties involved grading course exams and guest lecturing for two sections of an undergraduate psychology of learning course.

Graduate Teaching Assistant - August - December 1992

Denise Martz-Ludwig, M.S.
Jennifer Wertz, M.S.
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(703) 231-6581

Duties involved grading course papers, guest lecturing, and providing individual assistance to students for two sections of an undergraduate social psychology course.

Research

Thesis Research - January 1992 - December 1993

Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(703) 231-6581

Chairperson: Dr. Thomas H. Ollendick

Designed and conducted a study investigating children's cognitive responses to the physical symptoms of panic.

Summer Intern - June - August 1992

Women & Infants' Hospital
Providence, RI 02905
(401) 453-7640

Supervisor: Dr. Barry Lester

Conducted data analyses for a study investigating psychosocial risk and protective factors among low-SES infants.

Intern - August 1991 - May 1992

National Institute of Mental Health Training Grant
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(703) 231-6581

Supervisor: Dr. Thomas H. Ollendick

Data management and supervision of undergraduate research assistants for a cross-cultural study of children's fears. Administered the Diagnostic Interview for Children and Adolescents as part of a research project aimed at examining the comorbidity of conduct disorder and depression in adolescent subjects.

Research Assistant - June 1990 - June 1991

Women & Infants' Hospital
Providence, RI 02905
(401) 274-1100

Supervisor: Dr. Cynthia Garcia-Coll

Conducted follow-up assessments with infant subjects, ages 4-18 months, for a study of behavioral intervention with IUGR infants. Administered the Bayley Scales of Infant Development, the Sequenced Inventory of Communication Development, the Home Observation for Measurement of the Environment, and a behavioral assessment of infant temperament. Managed data collection and recruitment for a study aimed at examining the relationship between infant behavior and parenting stress.

PROFESSIONAL ORGANIZATIONS AND ACTIVITIES

Student Affiliate, American Psychological Association
Student Member, Association for Advancement of Behavior Therapy
Member, Phi Beta Kappa

PRESENTATIONS / POSTERS

Mattis, S. G., Ollendick, T. H., King, N. J., & Gullone, E. (November, 1992). Self-reports of panic attacks and negative affectivity in Australian youth. Poster presented at the Association for Advancement of Behavior Therapy Annual Convention in Boston, MA.

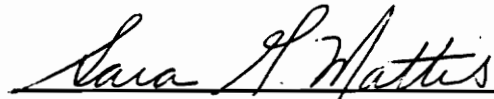
Jaquess, D., Weist, M., Hamilton, D., Ollendick, T. H., Warren, M., Lease, C., & Mattis, S. G. (March, 1992). Depression in adolescents: A time course analysis. Poster presented at the Southeastern Psychological Association Annual Meeting in Knoxville, TN.

PUBLICATIONS

King, N. J., Mattis, S. G., Yang, B., & Ollendick, T. H. (submitted). Nonclinical panic attacks in adolescents: Prevalence, symptomatology, and associated features.

Ollendick, T. H., Mattis, S. G., & King, N. J. (in press). Panic in children and adolescents: A review. Journal of Child Psychology and Psychiatry.

REFERENCES Available upon request.


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