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Youth at risk for anxiety: Evaluation of a brief panic prevention program

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YOUTH AT RISK FOR ANXIETY: EVALUATION

OF A BRIEF PANIC PREVENTION PROGRAM

by

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A dissertation submitted in partial fulfillment
of the requirements for the

**Doctor of Philosophy Degree in Psychology
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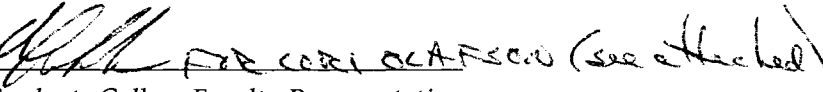Kelly Lynn Drake

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ABSTRACT

**Youth at Risk for Anxiety: Evaluation
of a Brief Panic Prevention Program**

by

Kelly Lynn Drake

Dr. Christopher A. Kearney, Examination Committee Chair
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This was the first pilot study to examine the effectiveness of a single-session panic prevention workshop for youth. Participants were recruited using various forms of mass media, advertisements, flyer distribution, and personal contacts. Following a brief screening, participants were assigned to a single-session panic prevention workshop (n = 9) or a waitlist control condition (n = 10). Youth in the workshop group completed pre-workshop assessments including self-report measures of anxiety sensitivity, general anxiety, panic attack symptomatology, and depression. In addition, a semi-structured diagnostic interview was used to assess panic attacks, panic disorder, and agoraphobia. Also, during pre-workshop assessment, parents completed measures of anxiety sensitivity, psychopathology, and depression. Following assessment, child-parent dyads participated in the panic prevention workshop. The workshop consisted of approximately five hours of psychoeducation, breathing retraining, cognitive restructuring, and interoceptive exposure. Three months following the workshop, youth completed measures of anxiety sensitivity, general anxiety, and panic attack symptomatology. Youth

in the waitlist control group completed measures of anxiety sensitivity, general anxiety, and panic attack symptomatology upon enrollment in the study. Waitlist participants were contacted three months following initial assessment and completed the same measures. Compared to youth in the waitlist group, youth who participated in the prevention workshop were expected to evince greater reductions in anxiety sensitivity, general anxiety, and panic attack symptomatology by three-month follow-up. Youth in the waitlist group were expected to remain the same or worsen with respect to these measures. Overall, workshop participants did not experience a significant reduction in anxiety-related symptomatology. However, trends for the workshop group to report less anxiety sensitivity, clinically significant anxiety, and panic following the workshop were found. Definitive conclusions regarding workshop effectiveness and feasibility cannot be made given methodological and statistical limitations. However, lessons learned from the present study will serve as a foundation for improving the design and execution of future efforts to provide anxiety prevention for youth.

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CHAPTER 1

INTRODUCTION

Anxiety disorders are among the most common psychiatric disorders of childhood, occurring in approximately 5-15% of youth (Costello & Angold, 1995). These disorders are associated with significant impairment in social, familial, academic, and personal functioning and are highly comorbid with depression and substance abuse (Clark, Smith, Neighbors, Skerlec, & Randall, 1994; Kashani and Orvaschel, 1988). Furthermore, individuals with anxiety are more likely to overutilize medical services compared to non-anxious individuals (Michelson, Marchione, Greenwald, & Glanz, 1990). Given the prevalence as well as the emotional and financial distress associated with anxiety disorders, researchers need to develop and evaluate prevention programs.

To date, only two studies have empirically evaluated single-session programs to reduce or prevent panic. Swinson, Soulios, Cox, and Kuch (1992) examined the efficacy of early intervention for adults who presented at an emergency room for panic attacks. Participants in an exposure group met with a therapist for one session in which they were instructed to engage in self-directed exposure until anxiety subsided. Participants in the control group were reassured that they had experienced a panic attack and evinced no emotional or physical disorder; no other treatment occurred. Results indicated that the exposure condition was superior to the reassurance-only condition in reducing agoraphobic avoidance, fear, depression, and frequency of panic attacks at six-month

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follow-up. Furthermore, participants in the reassurance-only condition reported an increase in agoraphobic avoidance, fear, and panic attack frequency over six months. The authors concluded that early exposure-based intervention was successful in reducing panic frequency, thereby preventing the development of panic disorder over a short duration.

More recently, Gardenswartz and Craske (2001) tested the effectiveness of a single session prevention program for adults at risk for developing panic disorder. Participants were assigned to a treatment or waitlist control condition. Treatment consisted of a single, five-hour session focusing on psychoeducation, breathing retraining, cognitive restructuring, and interoceptive exposure. Significantly fewer individuals in the treatment condition (1.8%), compared to those in the waitlist condition (13.6%), developed panic disorder at six-month follow up. These studies provide initial evidence that preventative strategies may be effective in reducing the incidence of panic attacks and panic disorder in adults. Whether these results would be found with children and adolescents is not yet known.

No single-session prevention strategies to reduce panic have been employed with at-risk youth. Ost, Svensson, Hellstrom, and Lindwall (2001) conducted a single-session, three-hour session to treat youth aged 7-17 years diagnosed with specific phobias. Youth completed a structured diagnostic interview, behavioral assessment tests, and questionnaires assessing anxiety, anxiety sensitivity, fearfulness, and depression. Participants were randomly assigned to one of three conditions: 1) one-session exposure treatment alone, 2) one-session exposure treatment with a parent, or 3) wait-list control. One-week and 12 months after treatment, significant improvement was found on dependent measures for the two treatment groups. Most (57-95%) of those in the active

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conditions demonstrated clinically significant improvement compared to only 15% in the waitlist condition. This study was not preventative because youth were diagnosed with an anxiety disorder. However, the brevity of the intervention is consistent with an ideal prevention program.

The Queensland Early Intervention and Prevention of Anxiety Project (QEIPAP) (Dadds, Spence, Holland, Barrett, & Laurens, 1997) investigated the long-term impact of a cognitive-behavioral prevention program for youth. Following initial screening, selected youth were assigned to a 10-week psychosocial intervention or a monitoring-only control group. The intervention occurred at the childrens' school and consisted of empirically supported treatment techniques. Youth were assessed at pre-treatment, post-treatment, and follow-up via diagnostic interview and self- and parent-report measures. At six-month follow-up, 56% of children in the monitoring group met diagnostic criteria for an anxiety disorder compared to 27% of children in the psychosocial treatment group. At 12 months, the groups no longer differed with respect to rates of anxiety disorders (intervention = 37%, monitoring = 56%). At 24-months, however, the intervention group had a lower rate of anxiety diagnoses (20%) than the monitoring group (39%). While these results are promising and suggest that children at risk for developing anxiety disorders can be successfully treated with durable interventions, a significant number of children who received treatment continued to experience anxiety sufficient to warrant a diagnosis. Furthermore, the program was not strictly preventative because some children were already diagnosed with an anxiety disorder.

Barrett and Turner (2001) trained therapists and teachers to administer a manualized protocol of a school-based anxiety prevention program. They tested the effectiveness of the program and compared therapist-led classes with teacher-led classes.

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Upon completion of the ten-week course, youth in therapist-led and teacher-led classes evinced a reduction in overall level of self-reported anxiety. Scores from children in the control condition, who did not receive the intervention, did not change. Thus, school-based prevention was effective in reducing anxiety. The prevention program was similar to group therapy in terms of structure and duration. To date, no published study has examined the efficacy of a brief, single-session prevention program for youth at risk for developing panic attacks.

Therefore, the goal of the present pilot study was to test the effectiveness of a brief panic prevention program for children and adolescents at risk for developing panic attacks/disorder. Because some skepticism regarding the frequency with which youth experience panic attacks exists (Kearney & Silverman, 1992; Nelles & Barlow, 1988), "at-risk" was defined as a moderate-to-high level of anxiety sensitivity (a significant risk factor for the development of panic/anxiety). Following the initial screening, participants were assigned to a single-session panic prevention workshop or a waitlist control condition.

Consistent with the adult studies outlined above, the panic prevention workshop consisted of approximately five hours of psychoeducation, breathing retraining, cognitive restructuring, and interoceptive exposure. Because some literature has reported enhanced treatment effects when a parent is involved in the intervention (Barrett, Dadds, & Rapee, 1996; Mendlowitz et al., 1999), at least one parent attended the workshop. Pre- and post-workshop assessments of youth included self-report measures of anxiety sensitivity, general anxiety, panic symptoms, and depression as well as an anxiety-based semi-structured diagnostic interview. Parents responded to questions regarding their own internal states (e.g., anxiety sensitivity, psychopathology, and depression). In addition,

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parents evaluated their child's anxiety sensitivity. Finally, youth who participated in the workshop completed measures of anxiety sensitivity, general anxiety, and panic symptomatology three months following the workshop. Waitlist participants completed the same measures upon enrollment in the study and three months later.

Workshop participants were expected to evince greater reductions in anxiety sensitivity (a cognitive risk factor for the development of panic attacks) and associated symptomatology. Waitlist participants were expected to remain the same or worsen with respect to these measures.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The systematic examination of anxiety disorders in youth is in its early stages.

Until the past 20 years, the construct received very little attention from researchers and

practitioners. Childhood fears and anxiety were seen as transient and harmless. However,

within the past two decades, a wealth of studies examining the prevalence and clinical

characteristics of child anxiety have dispelled these myths (Clark, Smith, Neighbors,

Skerlec, & Randall, 1994; Last, Francis, Hersen, Kazdin, & Strauss, 1987; Last, Perrin,

Hersen, & Kazdin, 1992). Although some degree of fear and anxiety are part of normal

development, excessive anxiety is now conceptualized as an enduring trait that can

produce serious adverse consequences for children and their families. The following

section provides a description of anxiety and draws a distinction between normal,

adaptive anxiety and pathological anxiety.

Anxiety

Anxiety is an intense emotional state accompanied by unpleasant physiological

reactions such as palpitations, sweating, muscle tension, and difficulty breathing. The

DSM-IV defines anxiety as "the apprehensive anticipation of future danger or misfortune

accompanied by a feeling of dysphoria or somatic symptoms of tension" (American

Psychiatric Association, 1994, p. 764). Thus, anxiety affects individuals cognitively,

emotionally, and physiologically. Often, the terms "anxiety" and "fear" are used

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interchangeably. However, anxiety can be differentiated from fear. Beck and Emery (1985) suggested that fear is activated when a person is confronted with actual or imagined fear-evoking stimuli. Anxiety is generally conceptualized as an intellectual process characterized by concern about some future dreadful event. Therefore, anxiety is the emotional and physiological reaction to the activated fear (Beck & Emery, 1985).

Fear and anxiety are normal emotional reactions to real or perceived danger. Most people have experienced fear and anxiety at some point. In fact, some degree of anxiety is considered adaptive and essential for the survival of a species (Seligman, 1971). For instance, a startle response (i.e., jumping, looking around, pupil dilation, increased heart rate) triggered by a sudden loud noise such as a gunshot or a firecracker signifies an instinctual and self-protective response to possible threat of injury or death. The senses become heightened. Visual and auditory sensation is amplified so threatening targets can be identified and located. Natural endorphins and adrenaline are released in larger amounts to aid the body in physically demanding tasks (e.g., fighting, running) and reduce pain. Heart rate increases and breathing becomes quick and shallow as the body prepares to fight or flee to survive danger. At the same time, an individual's thoughts race to develop a plan to ward off, escape, or fight the threatening stimulus.

Seligman (1971) suggested that humans have an innate, biologically-based predisposition to fear certain objects and/or events. From an evolutionary standpoint, fear and anxiety responses are necessary for survival and the accompanying physiological and cognitive reactions are normal. Without such a reaction, survival would be jeopardized. If humans were unafraid of certain environmental events such as smoke, fire, loud noises, or internal events such as increased heart rate or difficulty breathing, then they may not respond to these cues in a self-preserving manner and increase risk of injury or death.

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Some fear and anxiety is necessary and aids in survival. However, some individuals experience a disproportionate amount of fear and anxiety or experience them at inappropriate times. In such cases, fear and anxiety may become problematic for an individual and interfere with normal emotional functioning. The Diagnostic and Statistical Manual of Mental Disorders (DSM) is the leading classification system used by mental health professionals to determine the clinical significance of fear and anxiety. Over the years, the DSM evolved with respect to child anxiety. Following is a brief review of the changing classification system of anxiety disorders. Following this review, criteria used to diagnose each anxiety disorder are presented.

Classification

Advances in the field of child anxiety are apparent in the evolving taxonomy and nomenclature of the Diagnostic and Statistical Manual of Mental Disorders (DSM). For example, in the first edition of the DSM, excessive fears were conceptualized psychoanalytically as repression of unconscious motives and desires and termed "psychoneurotic reactions" (American Psychiatric Association, 1952). In the second edition, this terminology changed to "phobic neurosis" and overanxious reaction was included as a disorder of childhood and adolescence (American Psychiatric Association, 1968). In the third editions of the DSM (American Psychiatric Association, 1980; 1987), three distinct anxiety diagnoses for youth emerged: separation anxiety disorder, avoidant disorder, and overanxious disorder. This signified a tremendous advance in the field. Diagnostic criteria now provided a means of discriminating developmentally appropriate reactions from pathological anxiety. Finally, mental health professionals recognized that children and adolescents indeed experience clinically significant fear and anxiety. However, in the fourth editions of the DSM (American Psychiatric Association, 1994;

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2000), overanxious disorder was subsumed under "generalized anxiety disorder" and only separation anxiety disorder remained as a distinct childhood anxiety disorder. Within the adult anxiety disorder section of the DSM-IV-TR, stipulations are provided for formulating a diagnosis with a child. For example, children do not have to demonstrate insight to receive a diagnosis of specific phobia. Attention will now be directed toward describing the nature and diagnostic criteria for the broad range of anxiety disorders. This section is intended to provide the reader with a brief introduction to the anxiety disorders currently recognized by the American Psychiatric Association. More detailed descriptions of these disorders are available elsewhere (Albano, Chorpita, & Barlow, 1996; Bernstein, Borchardt, & Perwien, 1996; Clark et al., 1994; March, 1995; Treffers & Silverman, 2001).

<div align="center">The Anxiety Disorders: Diagnostic Criteria</div>

Separation Anxiety Disorder

To warrant a diagnosis of separation anxiety disorder (SAD), at least three of the following symptoms must be present: 1) recurrent excessive distress when separation from home or major attachment figures occurs or is anticipated, 2) persistent and excessive worry about losing, or about possible harm befalling, major attachment figures, 3) persistent and excessive worry that an unpleasant event will lead to separation from a major attachment figure (getting lost, kidnapped), 4) persistent reluctance or refusal to go to school or elsewhere because of fear of separation, 5) persistently and excessively fearful or reluctant to be alone or without major attachment figures at home or without significant adults in other settings, 6) persistent reluctance to sleep alone or sleep away from home, 7) repeated nightmares involving the theme of separation, or 8) repeated complaints of physical symptoms (e.g., headaches, stomachaches) when separation

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occurs or is anticipated (DSM-IV-TR, 2000, p.125). Symptoms must be present for least four weeks, onset must occur before the age of 18 years, and clinically significant impairment in social, academic, or familial functioning must be present. Finally, the anxiety is not better accounted for by another disorder, such as pervasive developmental disorder, schizophrenia, other psychotic disorder, or panic disorder with agoraphobia. As previously indicated, this is the only DSM-IV-TR anxiety disorder specific to children. Children can, however, be diagnosed with other anxiety disorders if criteria are met (generalized anxiety disorder, obsessive-compulsive disorder, posttraumatic stress disorder, acute stress disorder, panic disorder, specific phobia, and social phobia). DSM-IV-TR diagnostic criteria for these disorders are presented next.

Generalized Anxiety Disorder

Generalized anxiety disorder (GAD) is one of the most pervasive yet understudied disorders. GAD is characterized by the following: 1) excessive anxiety and worry occurring more days than not for at least six months, concerning a variety of domains (school, work, relationships, health, etc.), 2) worry is perceived as difficult to control, 3) adults must endorse at least three somatic symptoms (e.g., fatigue, irritability, muscle tension, sleep disturbance, difficulty concentrating, restlessness); however, children need only endorse one of these somatic symptoms, 4) clinically significant impairment in social, occupational, or other areas of functioning is present, and 5) worry is not due to another disorder (i.e., hypochondriasis, anorexia nervosa, specific phobia, obsessive compulsive disorder or panic disorder), medical condition, or substance (DSM-IV-TR, 2000, p. 476). As evinced by the criteria outlined above, anticipatory anxiety is a central feature of GAD. Thus, GAD is a future-oriented mood state in which an individual is in a

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persistent state of overarousal and hypervigilance (i.e., overly alert or watchful) in expectation of threat-related stimuli.

Obsessive-Compulsive Disorder

A diagnosis of obsessive-compulsive disorder requires that the following criteria be met: 1) presence of obsessions or compulsions, 2) individual recognizes obsessions or compulsions to be excessive or unreasonable (however, children are not required to have insight into the excessive and unreasonable nature of the obsessions or compulsions), 3) obsessions or compulsions cause significant distress, impairment in functioning, and are time-consuming (more than one hour per day), 4) obsessions or compulsions are not accounted for by another disorder, general medical condition, or substance (DSM-IV-TR, 2000, pp. 462-463). According to the DSM-IV-TR, an obsession is: 1) a recurrent and persistent thought, impulse, or image that is intrusive and inappropriate and causes marked anxiety or distress, 2) thoughts, impulses, or images are not worries about real-life problems, 3) individual attempts to ignore or suppress the thoughts or attempts to neutralize them with some other thought or action, and 4) individual recognizes that the obsession is a product of his own mind. A compulsion is 1) a repetitive behavior or mental act an individual feels driven to perform in response to an obsession, and 2) an attempt to prevent or reduce distress, although the acts are not logically connected to the obsession or are clearly excessive in nature.

Posttraumatic Stress Disorder

Posttraumatic stress disorder and acute stress disorder are unlike other anxiety disorders in that they have a known etiology. Both disorders are characterized by a significant emotional reaction to a traumatic event. For a diagnosis of posttraumatic stress disorder, the following criteria must be met with symptoms present for at least one

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month: 1) individual experienced, witnessed, or was confronted with an event that involved actual or threatened death or serious injury, 2) individual's response involved intense fear, helplessness, or horror, 3) event is persistently re-experienced (intrusive memories, dreams, flashbacks, reenactment, psychological and physiological arousal), 4) individual persistently avoids stimuli associated with the event and has a numbing of general responsiveness, 5) persistent symptoms of increased arousal occur (sleep disturbance, irritability, difficulty concentrating, hypervigilance, exaggerated startle response), and 6) clinically significant distress or impairment resulting from the symptoms is present (DSM-IV-TR, 2000, pp. 467-468). Diagnosis of acute stress disorder is warranted when these symptoms last a minimum of two days and a maximum of four weeks and occur within four weeks of the traumatic event (DSM-IV-TR, 2000, pp. 471-472).

Panic Attack

The remaining anxiety disorders share the common feature of panic attacks. Therefore, the criteria used to diagnose a panic attack are explained next. Then, the disorders for which panic attacks may be a primary or secondary feature are described. A panic attack is characterized by a discrete period of intense fear or discomfort with abrupt onset of at least four of the following symptoms that generally peak within ten minutes: palpitations or increased heart rate; sweating; trembling; shortness of breath or a sense of being smothered; choking feeling; chest pain or discomfort; nausea or abdominal distress; dizziness or feeling unsteady, lightheadedness or feeling faint; feelings of unreality or depersonalization; fear of losing control; fear of dying; numbness or tingling sensations; and chills or hot flushes (DSM-IV-TR, 2000, p. 432). Furthermore, the DSM-IV-TR describes three types of panic attacks: unexpected (uncued), situationally bound (cued),

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and situationally predisposed (DSM-IV-TR, 2000). According to the DSM-IV-TR, unexpected panic attacks occur "out of the blue" and no internal or external trigger is readily identifiable. Situationally bound panic attacks almost invariably occur when exposed to a phobic stimulus (e.g., when a person with claustrophobia enters an elevator). Finally, in situationally predisposed panic attacks, the trigger likely (but not always) results in a panic attack (DSM-IV-TR, 2000, pp. 430-431).

Panic Disorder

In the DSM-IV-TR, panic disorder (PD) is characterized by: 1) recurrent, unexpected panic attacks, 2) one month of persistent concern about having another panic attack, worry about the implications of the panic attacks, or a change in behavior related to the attacks, and 3) panic attacks are not due to the effects of a substance, general medical condition, or another psychiatric disorder (DSM-IV-TR, 2000, p. 440). Panic disorder can exist with or without agoraphobia. However, 30-50% of individuals with panic disorder also have agoraphobia (DSM-IV-TR, 2000, p. 436). Agoraphobia is described by DSM-IV-TR as: 1) anxiety about being in places or situations from which escape might be difficult or embarrassing, or in which help might not be available if needed, 2) situations are avoided or endured with great distress, and 3) anxiety or avoidance is not better accounted for by another mental disorder (DSM-IV-TR, 2000, p. 433). Because panic attacks and panic disorder are most germane to the present study, they will be discussed in greater detail later.

Specific Phobia

According to the DSM-IV-TR, a specific phobia (SP) is characterized by: 1) marked and persistent fear that is excessive or unreasonable and cued by the presence or anticipation of a specific object of situation, 2) exposure to the feared object or situation

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almost always cause an immediate anxiety response, which may take the form of a panic attack; in children, the anxiety may be expressed by crying, tantrums, freezing or clinging behavior, 3) adults (and sometimes children) recognize that the fear is excessive or unreasonable, but this insight is not required for diagnosis in a minor, 4) phobic object or situation is avoided or endured with intense distress, 5) avoidance, anticipation or distress in the feared situation must interfere significantly with a person's normal routine or functioning, or there must be marked distress about having the phobia, 6) if the person is under age 18 years, the duration of fear must be at least six months, and 7) anxiety and the response to the anxiety (e.g., panic attacks, avoidance) must not be better accounted for by another mental disorder (DSM-IV-TR, 2000, pp. 449-450). Five main subtypes of specific phobia include: animal type (dogs, bees, spiders), natural environment type (heights, storms, water), blood-injection-injury type (blood, shots), situational type (elevators, airplanes, buses), and other (loud noises, costumed characters).

Social Phobia

The DSM-IV-TR defines social phobia (SOP) as: 1) marked and persistent fear of one or more social or performance situations in which the person fears that embarrassment or scrutiny will occur, 2) exposure to social situations results in anxiety or panic which, in children, may be expressed by freezing, crying, or tantrums, 3) recognition that the fear is excessive or unreasonable, but this insight is not required for children, 4) the feared situations are avoided or endured with intense distress, 5) significant impairment in functioning is present, 6) if the person is under age 18 years, duration is at least six months, 7) fear is not due to the effects of a substance, general medical condition, or other mental disorder (DSM-IV-TR, 2000, p. 456). Furthermore, social anxiety in children is not limited to interactions with adults and thus includes

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same-age peers. While the typical age of onset is mid-adolescence, SOP has been reliably diagnosed in children as young as 8 years (Beidel & Turner, 1998). Situations that typically provoke social anxiety in youth include speaking before others, being called on in class, writing on the chalkboard, eating in public places, attending school social events (dances, games, parties), and using public restrooms.

<div align="center">Other Characteristics of Anxiety Disorders</div>

The disorders described above are among the most common psychological disorders of childhood and adolescence. Current estimates suggest that anxiety disorders occur in approximately 5-15% of youth (Clark et al., 1994; Costello & Angold, 1995; Kashani & Orvaschel, 1988). In addition, these disorders are highly comorbid with depression and substance abuse (Clark et al., 1994) and are associated with significant impairment in social, familial, academic, and personal functioning (Albano, Chorpita, & Barlow, 1996; Clark, Smith, Neighbors, Skerlec, & Randall, 1994; Kashani & Orvaschel, 1988). Furthermore, individuals with anxiety are more likely to overutilize medical services compared to nonanxious individuals (Michelson, Marchione, Greenwald, & Glanz, 1990).

Presently, the field of child anxiety disorders is burgeoning with literature examining more effective methods of assessment and diagnosis, subtype identification, treatment, and preventative strategies. At the same time, however, the field lacks consensus regarding the etiology of these disorders. In light of prevalence and impairment associated with these disorders, research efforts have focused on delineating underlying risk factors involved in the pathogenesis of child anxiety disorders to pave the way for more effective treatments and prevention programs. In fact, when leading researchers in the field of anxiety were asked where they thought future research efforts

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should focus, the prevailing perspective was that more research efforts should be dedicated to exploring the underlying processes involved in anxiety, identifying risk factors, and investigating the efficacy of preventative strategies (Norton, Asmundson, Cox, & Norton, 2000). Studies examining the merit of early intervention and prevention of anxiety disorders will advance the field by improving the design and delivery of more specific, brief, and cost-effective treatments – a driving force in the managed care of mental health services.

In light of the prevalence as well as emotional and financial distress associated with anxiety disorders, furthering an understanding of the development of anxiety has significant implications for designing effective treatment and preventative strategies. Several etiological theories have been proposed to explain the mechanisms underlying the pathogenesis of anxiety in youth. Therefore, the following section reviews the major models of anxiety development. Also included in the following section is a discussion of models emphasizing the role of familial factors that have been implicated in the development of anxiety disorders.

<div align="center">Models of Anxiety Development</div>

Two-Process Theory of Anxiety Development

Theoretical models guiding conceptualizations of anxiety typically involve an interaction between environmental and genetic factors. Given that the family environment is critical for children for an extended period of time (Henderson, 1980), a theory attempting to explain the development of child anxiety would be deficient if it did not emphasize the family. One theory that attempts to explain the etiology of anxiety in terms of family functioning is the "two-process" model (Krohne, 1980, 1990). The two-process model, based on cognitive social learning theories of Bandura (1977), Rotter

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(1954), and Mischel (1974), acknowledges the potential role of heredity but places more emphasis on socialization factors such as childrearing. According to this model, particular childrearing practices explain how children develop competencies and expectancies that lead to anxiety. Krohne (1990) explains competencies in terms of an individual's ability to generate various coping strategies during times of stress, while expectancies refer to beliefs about one's ability to use coping strategies effectively (i.e., competence expectancy) as well as beliefs about the anticipated outcome of the event (i.e., consequence expectancy).

This model theorizes that anxiety develops when parents respond to their children in a critical, inconsistent, and controlling manner and when children subsequently develop a low coping competency, low competence expectancy, and a negative consequence expectancy (Krohne, 1990). In other words, children reared in this type of environment (i.e., critical, inconsistent, and controlling) experience a chain-reaction of events beginning with a failure to acquire adequate coping responses and followed by a perceived inability to cope with problem situations. This leads to a belief that outcomes of problem situations will be aversive. In support of this model, Krohne and colleagues (Krohne, 1990) found children's trait anxiety, assessed by the STAIC-T (Spielberger, 1973), to be highly related to frequency, intensity, and inconsistency of parental criticism and control. The two-process model has thus received some empirical support. Moreover, as will be seen in the following review of familial factors associated with child anxiety, childrearing constructs proposed in the model have been some of the most frequently investigated constructs.

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Family Factors Related to the Development of Child Anxiety

Parenting practices and child anxiety

Components of the environmental system that are specifically related to anxiety are chronic stress, modeling, conditioning, and parenting. Rapee (1997) reviewed the extant literature examining the role of childrearing practices on anxiety and depression in youngsters and reported that most studies were not methodologically sound due to poor adherence to a guiding theory and lack of consistent and reliable measurement. These inconsistencies, in terms of methodology and results, preclude definitive conclusions. However, despite these limitations, Rapee (1997) reported that certain parenting practices may contribute to anxiety symptoms in youth. Specifically, a majority of studies employing various methods found parents of children with anxiety disorders to be controlling and somewhat rejecting. Because various methodologies have distinct advantages and limitations, the literature pertaining to parenting and child anxiety will be discussed according to the method employed. Specifically, information regarding the relationship between parenting and child anxiety comes from four main sources: retrospective reports, child self-report, parent self-report, and observed interactions.

Retrospective reports

Studies examining retrospective reports from anxious adults reveal that they tend to perceive their parents as more controlling and more rejecting when compared with their nonanxious counterparts (Alnaes & Torgersen, 1990; Laraia, Stuart, Frye, Lydiard, & Ballenger, 1994; Rapee, 1997; Tearnan & Telch, 1988). For example, Tearnan and Telch (1988) administered the Critical Life Events Questionnaire (CLEQ) (Tearnan, 1982) to participants with panic attacks and agoraphobia and non-clinical controls. The CLEQ consists of 47 items that inquire about early parental warmth, involvement,

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overprotection, childhood fears, social experiences, behavior problems, and mastery experiences. Several variables distinguished the two groups. First, those with agoraphobia described their parents as less nurturing (i.e., offering less praise, affection, help, and involvement) than the control group. In addition, those with agoraphobia recalled being significantly more anxious than the control group with respect to social anxiety, separation anxiety, school fears, and nightmares. Contrary to expectations, the two groups did not differ with respect to perceived parental overprotection or parental fearfulness.

These results must be tempered given that reliance on retrospective reports is subject to bias and recall errors. For example, adults who have an anxiety disorder may be especially motivated to explain their anxiety in terms of parents' behavior (Muris & Merckelbach, 1998), putting greater emphasis on parents' shortcomings. At the same time, most adults in these studies have lived outside their parents' home for many years. This calls into question the accuracy of subjects' recall.

Child self-report

To correct this methodological flaw, some researchers have administered questionnaires directly to children and adolescents to gauge perceptions of parental childrearing practices. For example, Muris, Bögels, Meesters, Van der Kamp, and Van Oosten (1996) examined the relation between perceived childrearing and fearfulness (Fear Survey Schedule for Children) (Ollendick, 1983) in clinically referred children. Children were referred for various psychological disorders, among whom 22% had a diagnosis of anxiety disorder. Parents rearing behavior was assessed using the EMBU-C (Egna Minnen Betreaffende Uppfostran, My Memories of Upbringing) (Castro, Toro, Van der Ende, & Arrindell, 1993). The EMBU-C, a widely used measure, consists of

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three factors: Emotional Warmth, Rejection, and Control. Results failed to find a relationship between fearfulness and parenting practices assessed by the EMBU-C. Furthermore, children with an anxiety diagnosis described their parents similarly to those with other disorders. One explanation for this finding is that fear, not anxiety, was the outcome measure. While children with anxiety experience fear, fear does not necessarily indicate pervasive anxiety.

Two similar studies were conducted with community samples of children using anxiety rather than fear as the dependent measure. Muris and Merckelbach (1998) gave children aged 8-12 years a revised version of the EMBU-C as well as the Screen for Anxiety Related Emotional Disorders (SCARED) (Birmaher et al., 1997). The new version of the EMBU-C (Grüner, Muris, & Merckelbach, 1999) posed an additional factor to tap more directly anxious rearing behaviors potentially linked to the development of child anxiety symptoms. Sample items of this new scale include: "My parents warn me of all kinds of possible dangers," and "Your parents are scared when you do something on your own." Findings revealed that SCARED total scores were positively related to anxious rearing and control for both parents. Neither emotional warmth nor rejection was significantly associated with level of anxiety. In addition, anxious rearing and control for both parents were predominantly related to generalized anxiety and separation anxiety subscales of the SCARED. Therefore, children with higher levels of anxiety described their parents as anxious and controlling. The authors concluded that anxious rearing behaviors may teach children to pay more attention to potential threats in the environment, thereby increasing anxious apprehension/worry – a defining feature of generalized anxiety disorder. In addition, children who perceive their parents as overly controlling are likely to have fewer opportunities to experience

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unfamiliar events or people. Growing up in a strict household may contribute to a child's shyness and dependence, two features commonly associated with separation anxiety disorder.

In a second study, Grüner et al. (1999) administered the EMBU-C and Children's Anxiety Scale (CAS) (Spence, 1997) to youth aged 9-12 years. Similar to Muris et al. (1996), parental control and anxious rearing practices were positively and significantly related to anxiety scores. In addition, perceived emotional warmth was unrelated to child anxiety. However, unlike findings of Muris and colleagues, rejection was most strongly related to anxiety symptoms and was the most important predictor of these symptoms. Children with high levels of anxiety perceived their parents as rejecting, anxious, and controlling. However, because parents' level of anxiety was not assessed in either study, determining whether these findings represent environmental transmission (e.g., parenting practices) and/or biological transmission (e.g., genetics) from parent to child is not possible.

Parent and child self-reports

In studies that assessed parents and their children, anxious children described their parents as more controlling and/or overprotective than parents of nonanxious children (Rubin & Mills, 1990; Rubin, Mills, & Krasnor, 1989). Moreover, Stark, Humphrey, Crook, and Lewis (1990) assessed children aged 9-14 years and their mothers with respect to perceived family environment. Initially, a large community sample of children was screened for anxiety and depression using self-report measures (i.e., RCMAS, CDI, respectively). Children who scored above the cut-off participated in the study.

Using a semi-structured diagnostic interview (K-SADS), children were diagnosed with depression, anxiety disorder, mixed anxiety/depression, and no disorder. Children

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and their mothers completed the Self-Report Measure of Family Functioning (SRMFF) (Bloom, 1985), a measure that consists of items from several commonly used family environment instruments (e.g., Family Environment Scale, Family Assessment Measure). In general, compared to children without a diagnosis, children in all three diagnostic groups perceived their families as lacking on the following dimensions: Cohesion, Democratic Family Style, Active/Recreational Orientation, Moral/Religious Emphasis, and Family Sociability. While children in all diagnostic groups reported higher levels of enmeshment, children in the mixed anxious/depressed group reported more overall distress (including conflict) than children with anxiety or depression. Although Stark et al. (1990) reported low agreement between mother and child reports of family environment, mothers of anxious/depressed children rated their families as less active and religious, imperfect, autocratic, and more enmeshed than mothers of the non-clinical control children. While children in all diagnostic groups experienced their families as distressed, no important differences emerged between the pure depressed and pure anxious groups. However, the study relied solely on self-report measures. Using an observational methodology would provide further information regarding particular mechanisms within the family that lead to elevated anxiety.

Observations of family interactions

In this vein, several studies have attempted to clarify the role of family interactions related to anxiety in children. Barrett, Rapee, Dadds, and Ryan (1996) presented clinically anxious children with ambiguous situations and asked them to provide an interpretation and response-solution for each situation. In addition, two situations were selected for family discussions, following which children were asked for their final solution. Anxious children perceived ambiguous situations as much more

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threatening than non-clinical children and demonstrated a strong preference for avoidant responses compared to non-clinical and oppositional children. Furthermore, for anxious children, avoidant responses dramatically increased following family discussion. Anxious children seem to have a cognitive bias toward threat interpretations and avoidant response patterns, and these response patterns are exacerbated by interactions with their parents – a phenomenon termed "the family enhancement of avoidant responses" (Barrett et al., 1996). Adhering to a family-based social learning perspective, Barrett et al. (1996) postulated that parents of anxious children may contribute to the etiology and maintenance of their child's anxiety by modeling and/or reinforcing an anxious/avoidant cognitive approach to problem-solving.

To clarify these findings, Dadds, Barrett, Rapee, and Ryan (1996) attempted to delineate the underlying mechanisms responsible for the FEAR effect. The authors coded a selection of videotapes reported in Barrett et al. (1996) for specific verbal and nonverbal communications between parents and children. Mothers of anxious children tended to listen and agree less with their children than mothers of non-clinical and aggressive children. Interestingly, no group differences emerged with respect to frequency of threat interpretations. This finding is inconsistent with the view that parental modeling of threat interpretation provides a sufficient explanation for a child's anxious cognitive style. Furthermore, parents of anxious children were more likely to reward or reciprocate their child's avoidant response-solutions, thereby strengthening a child's plan to respond in an avoidant manner. While parents may model anxious cognitions and behaviors, findings from this study suggest that parental reinforcement of child avoidance may be a more important maintaining factor.

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Siqueland, Kendall, and Steinberg (1996) conducted the first multimethod study employing parent and child self-report ratings as well as behavioral observations to examine the relationship between parenting and child anxiety. They compared families having a child with an anxiety disorder with non-clinical control families on several measures of parenting. Parents and children completed measures of anxiety, depression, and parenting behaviors (i.e., acceptance and psychological control). In addition, 20-minute family interactions were videotaped and coded by blind, independent raters on two dimensions: autonomy granting and warmth. Parents were considered autonomy-granting if they encouraged their child to think independently, solicited their child's opinion, tolerated differences, and avoided use of coercion, guilt, power assertion, and/or love withdrawal. Warmth was defined as expressing affection, demonstrating positive regard, recognizing a child's feelings, and laughing and smiling. In families with an anxious child, children rated parents as less accepting than control families. In addition, behavioral observations indicated that parents of anxious children granted less autonomy than nonanxious counterparts. However, unlike studies that found parents of anxious children to be controlling (e.g., Grüner et al., 1999; Muris & Merckelbach, 1998), Siqueland and colleagues (1996) failed to find differences with respect to this construct. Likewise, no differences between families emerged with respect to ratings of warmth or parental level of anxiety and/or depression. This latter result is surprising given the wealth of literature attesting to the biological/genetic transmission of anxiety from parent to child (see Eley, 1999 for review). Because the clinical sample was small, insufficient statistical power to detect differences might account for these findings. Future studies should attempt to replicate this study with larger and more diverse samples to test the biological/genetic hypothesis.

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As Rapee (1997) concluded, definitive statements about the nature of parenting behaviors and anxiety symptoms in children are jeopardized by diverse forms of assessment and discrepant results. While the proportion of variance in child anxiety explained by specific parenting practices is unclear, parenting behaviors impact the psychological adjustment of children and may increase risk for developing anxiety disorders.

In sum, most studies detected significant differences between anxious and non-anxious children with respect to parenting practices. Specifically, anxious children perceived their parents as more anxious, controlling, and rejecting than non-anxious peers. In addition, the aforementioned studies suggest that child anxiety may be partially the result of parental modeling of anxious behaviors, verbal transmission of anxious apprehension, and reinforcement of avoidant behavior. A probable conclusion, then, is that multiple pathways of anxiety transmission exist from parent to child. However, because not all children with anxious, controlling, and rejecting parents develop excessive anxiety, anxiety sensitivity (AS) may mediate this relationship. Children who have anxious, controlling, and rejecting parents and who have a high level of AS may develop an anxiety disorder, whereas children with similar parents but a low level of AS may not develop a disorder. In this scenario, a low level of AS is a protective factor but a high level of AS is a risk factor for developing clinical anxiety. What remains to be addressed in the literature, then, is how parenting practices relate to AS. One possibility is that anxious, controlling, and rejecting parenting progressively leads to greater levels of AS which, over time, lead to greater levels of anxiety.

Parent-child attachment and child anxiety

Another body of literature closely related to the childrearing literature has examined the relationship between anxiety and attachment. According to attachment theory (Bowlby, 1973), three main types of parent-child attachment include secure, avoidant, and ambivalent. Secure attachments are seen in children who confidently explore their environments and are easily comforted in times of stress. Insecure attachments include (1) those with an avoidant attachment who tend to ignore and/or avoid their caregiver, and (2) those with an ambivalent attachment who are clingy and respond to their caregiver with anger, hostility, and rejection.

Bowlby (1973) postulated that child anxiety is influenced by attachment with the caregiver. To gain empirical support of this claim, Warren, Huston, Egeland, and Sroufe (1997) conducted a longitudinal study spanning 16 years. They assessed pregnant women for anxiety during the third trimester. When the infant was twelve months old, mothers and infants participated in The Strange Situation Procedure (Ainsworth, Blehar, Waters, & Wall, 1978) to render an attachment classification. At age 17.5 years, offspring were assessed for psychological maladjustment using a semi-structured interview, the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Modified Present State/Epidemiologic version (Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982). Adolescents were classified as securely (57.9%), avoidantly (22.6%), and ambivalently attached (19.5%). Results indicated that 15% of the total sample of adolescents had at least one current or past anxiety disorder. Based on attachment style, 11% of those with a secure attachment, 16% with an avoidant attachment, and 28% of those with an ambivalent attachment developed an anxiety disorder. An ambivalent attachment may place children at greater risk for developing anxiety. However, given that

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most of those with an insecure attachment (avoidant and ambivalent, respectively) did not develop an anxiety disorder, one can only conclude that an insecure attachment is related to anxiety but is neither sufficient nor necessary for anxiety to develop. Interestingly, maternal anxiety was not correlated with child anxiety.

More recently, Muris, Mayer, and Meesters (2000) obtained self-reports of attachment, anxiety, and depression in youth aged 12 years. Specifically, children read three statements (corresponding to the three attachment styles) describing a pattern of friendships. Children were asked to select one that best describes their friendships. In addition, children completed measures of anxiety (SCARED) (Birmaher et al., 1997) and depression (Depression Questionnaire for Children) (De Wit, 1987). Children with an insecure attachment (i.e., avoidant and ambivalent) reported higher levels of depression and anxiety than securely attached children. A serious limitation of this study is the manner in which attachment was measured. Muris et al. (2000) used a measure originally designed for adults that consisted of only one item. Because children may not have fully understood the content or had enough knowledge of their own relationships to reliably choose a description of their attachment style, this device does not seem appropriate. However, attempting to gauge a child's perception of attachment is a new and innovative strategy that future researchers should consider. Important information could be gained by comparing perceived attachment from multiple sources (i.e., parents, children, and observers).

Taken together, parenting and attachment studies suggest that parent-child relationships are fundamental to a child's psychological adjustment. To date, however, no published study has examined the individual and combined influence of parenting and attachment as they relate to child anxiety and AS. An early insecure attachment may limit

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a child's ability to tolerate frustration and be soothed in times of stress. Furthermore, if a child's parents are perceived as anxious, controlling, and rejecting, elevations in anxiety and AS may emerge. Of course, this hypothesis is not complete without considering the potential contribution of biological vulnerability in the etiology of anxiety and AS. Though two studies failed to find a relationship between maternal and child anxiety (Siqueland et al., 1996; Warren et al., 1997), others have found evidence supporting a biological or genetic link between parent and child anxiety. The following section is devoted to a brief review of the literature examining biological components of anxiety development.

Biological/Genetic Basis for Child Anxiety

In addition to environmental linkages outlined above, high rates of anxiety disorders in parents and their offspring suggest a biological or genetic vulnerability. In terms of family aggregation of anxiety, many studies indicate a greater prevalence of anxiety disorders in children of parents with an anxiety disorder (Beidel & Turner, 1997; Turner, Beidel, & Costello, 1987; Warner, Mufson, & Weissman, 1995; Whaley, Pinto, & Sigman, 1999). For instance, Whaley et al. (1999) found that 50.0% (9 of 18) of children of anxious mothers received a diagnosis of an anxiety disorder compared to 5.6% (1 of 18) of children from non-clinical control mothers. These findings provide indirect evidence for genetic transmission of anxiety from parent to child. In addition, Merikangas, Avenevoli, Dierker, and Grillon (1999) examined familial and physiological factors in children at high risk for an anxiety disorder (i.e., children of parents with an anxiety disorder). Children of parents with an anxiety disorder were significantly more likely to have an anxiety disorder than children of nonanxious parents. Anxious children exhibited increased startle reflex and higher baseline galvanic skin response (both

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measures of autonomic reactivity). Unexpectedly, these children did not report disturbances in family environment or deficiencies in familial cohesion or adaptability. In this sample of children at risk for developing an anxiety disorder, biological/genetic factors were more related to child anxiety than environmental factors.

Although studies that have reported high intra-family prevalence rates of anxiety disorders provide indirect support of a parent-child link, researchers cannot completely dismantle the unique contribution of biological variables from the environment. Moreover, consolidating the current status of biological transmission studies is an arduous task given the small number of studies and the large discrepancies within and among these studies (Eley, 1999). Twin and adoption studies provide purer measures of biological and environmental contributions to pathology. As such, a recent review of twin and adoption research found that environment accounted for a significant proportion of the variance (estimates ranged from 5-60%) in child anxiety and depression (Eley, 1999). In addition, Eley reported that genes accounted for approximately 33% of the variance in child anxiety. Moreover, Torgersen (1993) suggested that the genetic underpinning of anxiety may be disorder specific: generalized anxiety disorder is solely the result of environment, phobias and obsessions are genetically linked to a moderate degree, and panic attacks are predominantly the product of genes.

In summary, high rates of anxiety among first-degree relatives support the contention that genes likely play a role, albeit moderate, in the pathogenesis of anxiety. Additional support for genetic hypotheses comes from behavioral inhibition theory, or the idea that physiological hypersensitivity contributes to a child's vulnerability towards pathologic anxiety. The following section reviews the concept of behavioral inhibition and its relation to anxiety.

Behavioral inhibition and child anxiety

Behavioral inhibition (BI) is a temperament involving elevated and stable heart rate and increased sympathetic arousal (Kagan, Resnick, & Snidman, 1987). Those who demonstrate BI are irritable infants and shy, fearful, and withdrawn children (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). They will frequently seek comfort from a parent, exhibit inhibited play around unfamiliar people and events, and have an accelerated heart rate during stress (Kagan et al., 1984; Kagan et al., 1987). BI theorists contend that anxiety disorders develop when children inherit a physical predisposition toward inhibited behavior such that they have a lower tolerance for novelty and challenge. Children with BI avoid new situations and lessen their chances for developing coping skills and thus become sensitized to unfamiliar people or events (Kagan et al., 1987; Kagan et al., 1990). Rosenbaum, Biederman, Hirshfeld, Bolduc, and Chaloff (1991) assessed BI in children of parents with various diagnoses. BI was identified in 85% of children whose parent was diagnosed with panic disorder and agoraphobia (PDAG), 70% of children whose parent had PDAG and major depression, 50% of children whose parent was depressed, and 15% of children from a non-clinical control group. In addition, according to a structured diagnostic interview with parents, Rosenbaum et al. (1991) found that children identified as BI were significantly more likely to be diagnosed with multiple anxiety and phobic disorders than children who did not demonstrate BI. The authors concluded that BI is a risk factor for anxiety disorders in general and panic disorder and agoraphobia in particular.

Furthermore, in a review of evidence evaluating the relationship between BI and anxiety, Turner, Beidel, and Wolff (1996) concluded that children with BI were more likely to develop anxiety disorders, especially those marked by social-evaluative anxiety

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(e.g., social phobia). However, while BI may contribute to fearfulness and avoidance, a significant number of children with BI never develop an anxiety disorder (Turner et al., 1996). Therefore, BI seems related to anxiety but is neither necessary nor sufficient for the development of an anxiety disorder.

Interactions between biological and environmental factors

The relationship between biology and environment is conceptualized as symbiotic in nature. In this vein, Manassis and Bradley (1994) proposed one of the first integrative models designed to explain the pathogenesis of child anxiety disorders. Their model incorporates temperament and attachment as equally influential contributors. However, unlike previous conceptualizations espoused by temperament and attachment theorists, the Manassis and Bradley (1994) model allows for the interaction of these two factors as well as additional familial, environmental, and social factors. For instance, an insecure attachment accompanied by high sympathetic hyperarousal (as seen in children with BI) can decrease one's opportunities for developing coping strategies to regulate affect and thus increase one's anxiety level (Bradley, 1990). In addition, Kagan (1984; 1987) described the temperament of infants with BI as irritable and colicky. Such a disposition may influence how parents' respond to the infant. Reacting with anger or frustration may have a detrimental effect upon the parent-child attachment which may, in turn, increase a child's vulnerability towards anxiety (Manassis & Bradley, 1994).

Likewise, high levels of parental anxiety have been linked with disengaged and withdrawn parenting behaviors, behaviors that may contribute to child maladjustment (Pellegrin, Richie, & Woodruff-Borden, 1999). Studies suggest that parental pathology has a dramatic impact on family environment. Using an observational methodology, Whaley et al. (1999) rated anxious mothers as less warm, less granting of autonomy, and

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more likely to catastrophize outcomes compared to non-anxious mothers. In addition, anxious mothers were more critical and demonstrated less positivity during interactions with their children. These findings are consistent with those using alternative methodologies. For example, Silverman, Cerny, and Nelles (1988) used self-reports of children whose mothers were diagnosed with panic disorder. Compared to children of non-anxious mothers, children whose mothers had panic disorder described their families as less cohesive and more dependent, conflictual, and controlling. These studies provide evidence for a family-based social learning conceptualization of anxiety transmission (Krohne, 1980, 1990). In essence, anxious mothers may be contributing to a stressful family environment by behaving in a manner the child perceives as cold, distant, and critical. Meanwhile, mothers may unwittingly model anxious and avoidant behavior for their children, indirectly teaching them to fear the unknown and expect the worst.

To summarize, several theories explain the origin of child anxiety. On one hand, those who espouse a family perspective have found mixed support, although the overriding consensus is that parents of anxious children are overcontrolling, anxious, rejecting, and lacking in nurturance. On the other hand, those who advocate a biological perspective have found modest evidence from family aggregation, twin, and BI studies in support of their position. Others support a more complex view, one that regards family environment and biology as potential contributors to the onset of anxiety. This latter perspective is consistent with the notion that maladjustment is complex and that multiple pathways exist in the development of psychopathology (Cicchetti & Rogosch, 1996). Also consistent with a more complex and comprehensive explanatory model is the notion of negative affect. This will be discussed next.

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Tripartite Model of Depression and Anxiety: Negative Affect

Individuals often experience anxiety and depression at the same time. In fact, high rates of comorbidity between anxiety and depression have been found in samples of children and adolescents (Axelson & Birmaher, 2001; Strauss, Last, Hersen, & Kazdin, 1988). Given the likelihood of comorbidity between these disorders, nosologic and conceptual frameworks have evolved to incorporate the potential shared etiology of anxiety and depression.

Historically, formal classification of anxiety and depressive disorders changed as a function of how the psychiatric profession viewed associations between the disorders (Levine, Cole, Chengappa, & Gershon, 2001). In early editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM, DSM-II), anxiety and depressive disorders were seen as manifestations of a common underlying neurotic process. In 1980, the nomenclature shifted when the DSM-III designated mutually exclusive classifications for anxiety and depressive disorders. More recently, however, creators of the third and fourth editions of the DSM recognized the clinical necessity of diagnosing individuals with multiple disorders concurrently. Several hypotheses have been proposed to account for high rates of comorbidity between the two disorders. Although a comprehensive survey is beyond the scope of this review, the potential role of negative affect is explored.

Clark and Watson (1991) proposed that anxiety and depression could be subsumed under the rubric of a more general class of mood disorders. Based on clinical and psychometric evidence, they found two primary dimensions of emotional experience that indicated underlying cognitive processes associated with disturbance in mood: positive and negative affect. In the tripartite model, anxiety is characterized by elevated levels of physiological hyperarousal, depression is characterized by low levels of positive

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affect (or anhedonia and low expectation for future positive events), and both disorders share high levels of negative affect (Clark & Watson, 1991). Thus, individuals with anxiety and depression experience high levels of negative affect, which generally refers to the tendency to experience general distress, to worry, and to overestimate the probability of a negative outcome (Clark & Watson, 1991). The model and resultant empirical activity concerning the model was largely devoted to adult samples. For example, Brown, Chorpita, and Barlow (1998) explored the relationship between mood disorders (anxiety and depression) and three dimensions of anxiety and depression outlined by Clark (negative affect, positive affect, and autonomic arousal). Brown and colleagues found that individuals diagnosed with depression, generalized anxiety disorder, panic disorder with agoraphobia, obsessive-compulsive disorder, and social phobia reported high levels of negative affect. Although the four anxiety disorders and depression shared this feature, evidence exists that they should remain distinct categories. Specifically, Brown et al. found that most anxiety disorders were distinct from other anxiety disorders (only social phobia was undifferentiated) and depression through their unique relationship with low positive affect. Low positive affect was more related to depression than anxiety. Recently, researchers extended these findings to youth (Albano, Chorpita, & Barlow, 1996; Chorpita, Plummer, & Moffitt, 2000; Daleiden, Chorpita, & Lu, 2000; Joiner & Lonigan, 2000; Laurent & Ettelson, 2001). Studies examining these constructs in youth are reviewed next.

Joiner and Lonigan (2000) examined the relationship between the tripartite model of depression and anxiety and psychiatric diagnoses and symptomatology in inpatient youth. Youth aged 7-17 years completed self-report measures of positive and negative affect, depression, and anxiety. For part of the sample, scores on self-report measures

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were compared to diagnosis upon admission. For the rest of the sample, scores were

compared to symptomatology at two month follow-up. Results generally supported the

relationship proposed by Clark and Watson (1991). A strong relationship was found

between positive and negative affect and diagnostic status and symptomatology.

Depression was associated with a combination of low positive affect and high negative

affect. Additional support for the three-factor model of negative emotion is accumulating

(Chorpita, Albano, & Barlow, 1998; Chorpita, Plummer, & Moffitt, 2000). For instance,

Chorpita, Plummer, and Moffitt (2000) used a clinical sample of youth to explore the

relationship between the three dimensions outlined in Clark's tripartite model (negative

affect, physiological hyperarousal, and low positive affect) and severity of anxiety and

depressive disorders.

Youth aged 6-17 years who met diagnostic criteria for depression or anxiety

disorder (social phobia, panic disorder, generalized anxiety disorder, obsessive-

compulsive disorder, and separation anxiety disorder) were given self-report measures to

assess affect and clinical symptoms. Results were consistent with the tripartite model,

indicating that negative affect was associated with anxiety and depression. Furthermore,

low positive affect was uniquely related to depression and physiological arousal was

uniquely related to anxiety. However, the authors noted problems with the measurement

of tripartite factors and suggested revising assessment strategies. This criticism led to the

development of a new self-report measure (Chorpita, Daleiden, Moffitt, Yim, &

Umemoto, 2000).

Barlow (1991a, 1991b) extended Clark's tripartite conceptualization of anxiety

and depression by adding two constructs: uncontrollability and attentional self-focus. The

central aspect of this model is that anxiety and depression are fundamentally related in

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terms of their affective states. Barlow describes a model in which individuals with biological and psychological vulnerabilities perceive their distressing emotions as uncontrollable and threatening and are ill-equipped to cope effectively. When these individuals engage in ruminative self-focus (negative self-evaluations that exacerbate negative affect), they are at increased risk for developing pathological anxiety (Mor & Winquist, 2002). Barlow claims that biological vulnerabilities, temperament, and early childhood experiences with uncontrollability over one's environment may contribute to the development of negative affect which, in turn, may lead to anxiety or depression. Perceptions of control may indeed be central to an understanding of anxiety. For this reason, perceived control will be discussed in more detail later. In the following section, other models of anxiety development emphasizing the cognitive aspects of apprehensive anticipation are reviewed.

Cognitive Models of Anxiety Development

Attributional style

Many cognitive theories have been proposed to explain the development and/or maintenance of anxiety disorders in children (Barlow, 1988; Beck & Emery, 1985; Daleiden & Vasey, 1997; Reiss, 1991; Shaughnessy & Teglasi, 1989). Recent research indicates that attributional style may be key to understanding the cognitive component of anxiety (Bell-Dolan & Wessler, 1994; Rapee, Craske, Brown, & Barlow, 1996). Attributions reflect perceived causality of events in one's life and the world (Bell-Dolan & Wessler, 1994). Individuals routinely form causal attributions about events. However, the attributional style of anxious children differs from their non-anxious counterparts and may reflect maladaptive cognitive behaviors.

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Similar to depressed children (Joiner & Wagner, 1995; Nolen-Hoeksema, Girgus, & Seligman, 1986; Seligman et al., 1984), anxious youth have significantly more internal, global, and stable attributions for negative events than non-anxious children (Bell-Dolan & Last, 1990; Bell-Dolan & Wessler, 1994). Additional findings suggest that children with a negative attributional style (i.e., internal, global, and stable attributions for negative events) are unhappy, anxious, and depressed (Nolen-Hoeksema, Girgus, & Seligman, 1986). Furthermore, negative attributions have been associated with anxiety, depression, self-esteem, achievement, motivation (Bell-Dolan & Wessler, 1994), loneliness, shyness, and social avoidance (Anderson, Jennings, & Arnoult, 1988; Crick & Ladd, 1993).

Attribution theory is concerned with beliefs people hold about the causes of events in their lives (Weiner, 1985). Attributional style has been conceptualized as a multidimensional construct consisting of locus of control (internal, external), stability (persistence over time), and globality (across situations versus situation-specific) (Abramson, Seligman, & Teasdale, 1978). More recent delineation of the external dimension of control includes "powerful others" and "unknown" as separate and distinct sources of control (Connell, 1985). This delineation appears especially useful with children because they often view parents, teachers, and other adults as powerful persons who have much actual and perceived influence over their behaviors.

The first dimension, locus of control, refers to internal and external attributions of causality. Rotter (1975), credited with pioneering the conceptualization of locus of control, claimed that internal attributions of control result when events are perceived as contingent upon one's effort or ability, whereas external attributions occur when events are perceived as contingent upon causes not under one's control. Examples of external

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sources of control include luck, fate, and the influence of powerful others. The second dimension, stability, refers to the persistence of an attribution over time. Stable ascriptions of success or failure are most tenacious because they are trait-like, and unchanging (e.g., ability). Conversely, unstable ascriptions are less persistent because they are changeable (e.g., effort). Finally, the third dimension, controllability, reflects the perception that one can or cannot exert influence over the outcome of an event (Bell-Dolan & Wessler, 1994; Rapee, Craske, Brown, & Barlow, 1996). For instance, effort is controllable because one can always increase or decrease the amount of effort for a given task. Ability, however, is viewed as uncontrollable because it reflects an inherent aptitude.

Another important contribution of Weiner's (1985) theory involves the concept of expectancy. According to this theory, expectancy is the product of causal attributions. Specifically, expectancy for success is determined by the *stability* of the cause. For example, if a person perceives that she succeeded in confronting a feared object or event because of her ability, she will anticipate future success because attributions of ability are stable and persist over time. On the other hand, if she attributed her success to effort, which is unstable, expectancy would not be influenced in either direction. Therefore, events with unstable causes and outcomes may be independent of one another. If, however, she performs poorly and attributes it to a stable cause (e.g., ability), she will have a lowered expectancy of success for similar situations. Weiner contends that this lowered expectancy for success leads to a self-fulfilling-prophecy in which low expectancy leads to a decrease in the amount of time and energy spent in the task, which leads to poorer performance, which then reinforces the perceived stability of the failure.

Similarly, Kelley (1973) claimed that causal attributions play an important role in motivation, decision-making among alternative courses of action, and subsequent behavior. In terms of Weiner's model, a stable attribution for failure outcomes can thus explain avoidant behavior. For example, a person who experiences failure in a social situation and makes a stable attribution for the failure is likely to avoid further failures by avoiding similar situations because he does not foresee that the cause of the failure will ever change. An important aspect of this theory is that behavior is determined by the way failures are interpreted, not the number of failures. For example, if a child repeatedly fails in social situations and attributes failures to lack of effort (unstable), then he will not feel inherently doomed and will not avoid such situations.

Unlike stability, locus and controllability are more related to affectivity. Weiner (1985) postulated that internal/controllable attributions for failure outcomes lead to guilt. Guilt is viewed as a motivating emotion because the person is driven to improve performance by exerting more effort (which is controllable). For example, a person who experiences failure in a social situation because she did not try hard enough (internal/controllable) will be motivated by her guilt to improve future performance by increasing the amount of invested effort. On the other hand, internal/uncontrollable ascriptions for failure are associated with shame, which is a debilitating emotion. If the same person perceived social failure as the result of inability (internal/uncontrollable), then she will experience shame and lack motivation to improve because she believes she has no control over the cause of her failure.

According to this theory, a person with social phobia would attribute social failures to internal, stable, and uncontrollable causes. In other words, having a panic attack while presenting an oral report in class is seen as an inability to perform. Inability

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is internal because it explains failures as resulting from one's aptitude and excludes alternative explanations involving other individuals or situational factors. In addition, the attribution is stable because ability is inherent and unchangeable. Finally, the attribution is uncontrollable because the person cannot imagine being able to exert influence over the outcome. With this type of attributional style, motivation to improve performance is diminished and avoidance increases, thereby exacerbating social anxiety.

Unfortunately, little literature exists examining the relationship between attributional style and anxiety in children. Of those studies available, most have used the Children's Attributional Style Questionnaire to assess causal ascriptions (CASQ) (Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). The CASQ is a 48-item self-report measure designed to assess attributions for general situations. Specifically, the CASQ measures three dimensions: locus, stability, and globality for positive and negative events. The CASQ has been used by researchers in many settings and has demonstrated sound psychometric properties. However, the CASQ does not incorporate all dimensions of attributional style such as controllability and intentionality.

Bell-Dolan and Last (1990) examined attributional style and anxiety in children. They used the CASQ, RCMAS, and the STAIC to compare three groups of children: anxiety-disordered, ADHD, and never-psychiatrically ill controls. Children with anxiety made significantly more negative attributions (internal, global, and stable) for negative events than youth in the control group. No differences were found between the anxious and ADHD groups.

Furthermore, in a review of attributional style and anxiety among adults and children, Bell-Dolan and Wessler (1994) summarized findings from several studies and found that anxious individuals are more likely to exhibit an attributional pattern that is

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uncontrollable, external for success outcomes, internal for failure outcomes, and stable for failures. One explanation for this pattern is reversal of the self-serving bias (Cheek & Melchior, 1990). The self-serving bias states that "normal" people tend to internalize success (i.e., the outcome is due to ability or skill) and externalize failure (i.e., failure is due to bad luck, unfair task, etc.). This bias protects self-image and self-esteem. For example, a child might explain a passing grade by citing an internal cause ("I'm smart"). Conversely, he might explain a failing grade by citing an external cause ("The test was unfair"). Anxious individuals, on the other hand, may reverse this bias so failures are internalized and successes are externalized. For example, a socially anxious child might explain poor performance during an oral report by citing an internal cause ("I stink at this"). On the contrary, he might explain good performance by citing an external cause ("I was lucky"). Reversal of the self-serving bias can perpetuate negative self-perceptions and reduce opportunities to feel competent, in control, and empowered.

Based on these few studies, anxious children seem more likely than non-anxious children to attribute negative events to internal, global, and stable causes. However, until more data are available, meaningful conclusions regarding the impact of attributional style on child anxiety cannot be made. More studies specifically targeted at assessing attributions and anxiety in children are necessary to fully understand the implications of negative attributional style.

Perceived control

Controllability, a dimension of attributional style, has been theorized to play an important role in etiological models of anxiety (Barlow, 1991a; Barlow, Chorpita, & Turovsky, 1996; Chorpita & Barlow, 1998; Mineka & Kelly, 1989). Perceived control theorists believe that behavior, emotion, and motivation are regulated by an individual's

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sense that he is capable of producing positive and avoiding negative events (Skinner, 1992). Researchers have found that children with low levels of perceived control are unhappy, anxious, and depressed (Lambert et al., 2006; Nolen-Hoeksema, Girgus, & Seligman, 1986). According to these theorists, maladaptive affective states such as anxiety and depression result from feelings of helplessness. This sense of helplessness emerges from feelings of incompetence and low levels of perceived control. Thus, Skinner's conception of perceived control embodies the need for competence. Competence is a basic psychological need that, if not met, may result in psychological stress manifested in such forms as anxiety or depression.

Furthermore, Skinner (1992) believes that perceptions of control influence one's motivational orientation. She maintains that if a person's need for competence has been successfully met, she will be engaged rather than disaffected. Engagement refers to effortful, enthusiastic, goal-directed behavior and emotion. On the other hand, disaffection occurs when the need for competence is not met. Avoidance, passivity, anxiety, fear, and lack of motivation are associated features of disaffection (Skinner, 1992). This model, then, attempts to explain how anxious and avoidant behavior result from feelings of incompetence. Specifically, when a person's need for competence is not met, she perceives a lack of control and experiences anxiety. One problem with this model arises when a person is competent but does not perceive herself as competent. Perhaps attributions are distinct from perceptions of control/competence in that they do not have to be congruent with reality.

Panic attack symptoms are associated with internal, catastrophic attributions about somatic symptoms and may therefore reveal a unique pattern of association to perceived control (Nelles & Barlow, 1988). Specifically, internal attributions for the cause of

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physical symptoms may be linked with internal attributions for negative events. To test

this hypothesis, Mattis and Ollendick (1997) examined children's attributions about the

cause of physical symptoms in response to panic imagery using the Panic Attribution

Checklist (PAC) (Mattis & Ollendick, 1997). Children made significantly more internal

than external attributions about panic symptoms on the PAC. In addition, anxiety

sensitivity, the belief that symptoms of anxiety have negative physical, social, or

psychological consequences (Reiss & McNally, 1985), and internal attributional style in

response to negative outcomes predicted internal attributions about panic symptoms. This

study suggests that panic and anxiety sensitivity may be associated with internal

attributions of negative outcomes.

Recent refinements of attribution and perceived control theories suggest that

domain specific measures of perceived control rather than a general assessment may

better explain the relationship between attributions of control and anxiety (Cutrona,

Russell, & Jones, 1984; Rapee, Craske, Brown, & Barlow, 1996). One reason for this

refinement comes from studies that found the presence of situationally specific rather

than global attributions. For instance, Cutrona, Russell, and Jones (1984) were unable to

find empirical support for a consistent cross-situational attributional style and concluded

that attributional style should be more narrowly defined using a situationally oriented

measure. In addition, Rapee and colleagues (1996) concluded that examining perceptions

of control relevant to anxiety-related events as opposed to general events is critical to

understand the mechanisms maintaining excessive anxiety and for designing effective

treatments.

Drake, Ginsburg, Hills, and Vandenbosch (1998) examined the relation between

anxiety symptoms and attributions for general and anxiety-related events in a community

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sample of African-American adolescents. Youth completed self-report measures of anxiety and attributional style. To assess general attributions, the Multidimensional Measure of Children's Perceptions of Control (MMCPC) (Connell, 1985) was employed. The MMCPC consists of 48 items that measure four domains (academic, social, physical, general), two outcomes (success or failure), and three sources of control (internal, unknown, powerful others). Because no anxiety-specific measure of children's attributions exists, one was created for the study. The Children's Attributions of Perceived Control for Anxiety-Related Events (CAPCARE) (Ginsburg & Drake, 1998) is a 12-item self-report measure designed to assess attributions of success and failure outcomes during anxious situations. Based on Connell's (1985) measure of perceived control, each item describes an anxiety-related event (e.g., "when my heart beats really fast and my hands sweat"), one of three sources of control (internal, powerful others, and unknown), and an outcome (success, failure).

With respect to internal attributions, Drake et al. (1998) reported that highly anxious youth made significantly more internal attributions for anxiety-related failures than their low anxious counterparts. No differences were found for success outcomes (general and anxiety-related) or failures for general situations. In addition, highly anxious youth made significantly more external attributions than their low anxious counterparts for both types of situations (general and anxiety) and outcomes (success and failure). Although the data indicated the presence of internalization of failures for highly anxious youth, this relation occurred exclusively within the anxiety-domain. These results support the idea that attributions for anxiety-related events may be more salient than attributions for general events. This finding is consistent with studies advocating the use of more domain specific assessment tools (Connell, 1985; Cutrona, Russell, & Jones, 1984; Rapee

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et al., 1996). Instruments tailored to the construct under investigation (e.g., anxiety-related situations) may be useful in providing a more meaningful and narrowly defined assessment of that construct.

In addition, Lambert, Ginsburg, Boyd, Campbell, Cooley-Quille, and Drake (2006) examined attributions of control and anxiety symptoms in a community sample of African American youth. Participants completed self-report measures of perceived control over general and anxiety-related situations and anxiety symptoms. Perceived control was categorized according to locus (internal, external) and situation outcome (success, failure). Four types of anxiety - panic, social phobia, generalized anxiety, and anxiety sensitivity - were examined. External attributions of control were positively associated with panic, generalized anxiety, and anxiety sensitivity. Internal attributions of control were associated with social phobia. Perceived control over anxiety-related situations explained more variance in anxiety symptoms than general perceived control. These findings support the idea that perceived control plays a critical role in the development and/or maintenance of anxiety.

To better appreciate the development, maintenance, and treatment of panic symptoms, examination of a key risk factor is necessary. Theoretical models and empirical evidence from adult studies indicate that anxiety sensitivity (AS) may be an important construct for understanding the development and/or maintenance of panic attacks and symptoms (see Taylor & Fedoroff, 1999 for review). Thus, AS theory as well as evidence in support of AS theory from adult and child studies are discussed next.

Anxiety Sensitivity

One of the latest developments in the child (as well as adult) anxiety literature is the notion of anxiety sensitivity. Departing from the biological explanations of panic

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disorder, Clark (1986) proposed a cognitive model of panic in which catastrophic misinterpretation of bodily sensations are a necessary precipitant of panic attacks. The model further states that the relation between catastrophic misinterpretation and panic is cyclical in that misperceiving internal threat cues (i.e., bodily sensations) amplifies those sensations and results in a panic attack. This cognitive bias has become known as anxiety sensitivity (AS). Reiss and colleagues (Reiss, 1987; 1991; Reiss & McNally, 1985) extended Clark's model to include all anxiety disorders. According to expectancy theory of fear, Reiss et al. (1985) conceptualized AS as the belief that anxiety-related symptoms (e.g., tachycardia, dypsnea, dizziness, etc.) lead to harmful somatic, social, or psychological consequences (Reiss, 1987; 1991; Reiss & McNally, 1985). Thus, when a person with a high level of AS experiences somatic symptoms associated with anxiety (e.g., palpitations), he expects the symptoms will have dire consequences (e.g., he will have a heart attack and die). In turn, this expectation amplifies anxiety, increases bodily symptoms, and leads to a vicious cycle that results in excessive anxiety and/or panic. As such, AS has been conceptualized as a cognitive risk factor for the development of panic. Support for this hypothesis comes mainly from studies using adult samples that are briefly discussed next.

Anxiety Sensitivity in Adults

   Correlational studies of anxiety sensitivity in adults

   Most studies examining the phenomenology of AS have been conducted with adults, and many of these studies investigated the unique relationship between AS and panic attacks. For instance, non-clinical individuals with high levels of AS are significantly more likely to experience spontaneous (Donnell & McNally, 1990; Watt, Stewart, & Cox, 1998) as well as cued (Asmundson & Norton, 1993; Cox, Endler,

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Norton, & Swinson, 1991) panic attacks when compared to individuals with low to moderate levels of AS. Similar findings have been reported with clinical samples (Cox, Borger, & Enns, 1999; Taylor, Koch, & McNally, 1992). In addition, high AS is not only related to panic but is highly associated with a wider range of anxiety disorders. Taylor, Koch, and McNally (1992) found that AS was substantially elevated in patients with panic disorder, posttraumatic stress disorder, generalized anxiety disorder, obsessive-compulsive disorder, and social phobia. Taken together, these findings provide evidence that AS is indeed associated with anxiety disorders. However, even more compelling documentation supporting AS as a premorbid risk factor in the pathogenesis of anxiety and panic is derived from longitudinal studies. These are discussed next.

Prospective studies of anxiety sensitivity in adults

To date, four studies examined AS using a prospective methodology. Maller and Reiss (1992) administered the ASI to undergraduate students. Three years later, they retested those who scored high and low on the ASI. Time two administration consisted of the ASI, the Panic Attack Questionnaire (PAQ) (Norton, Dorward, & Cox, 1987), the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970), and a semi-structured diagnostic interview. Participants in the high AS group were 5 times more likely to develop an anxiety disorder compared to those in the low AS group. Furthermore, three out of four subjects who reported the onset of panic attacks during the three years between Time 1 and Time 2 assessments had high AS at Time 1. Finally, high AS scores at Time 1 predicted frequency and intensity of panic attacks at Time 2. Thus, elevations in AS, as measured by the ASI, were predictive of panic attacks and anxiety disorders over time.

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Ehlers (1995) compared a non-clinical sample with adults who received the following diagnoses: panic disorder with or without agoraphobia, non-panicking simple phobia, infrequent panic attacks, and panic disorder in remission. As part of the initial assessment, participants completed measures of panic frequency, depression, trait anxiety, and comorbidity as well as degree of agoraphobic avoidance, heartbeat perception, and AS. Participants were contacted one year following initial assessment, at which time they completed measures of trait anxiety, depression, avoidance, and panic attack symptomatology. Similar to findings reported by Maller and Reiss (1992), heightened AS was substantially associated with new onset of panic during the follow-up period in individuals who had never experienced an attack, relapse of panic in those in remission at initial assessment, and maintenance of panic in those originally diagnosed with panic disorder. Although examining AS was not the primary purpose of this study, and was therefore not included in the Time 2 battery, inclusion of this measure would have provided even more information into the nature and stability of AS over time. Future studies using a prospective design should examine how the course of AS varies across time and with respect to intervening variables (i.e., treatment, onset or remission of pathology, life events).

Schmidt, Lerew, and Jackson (1997) investigated the role of AS in the development of anxiety pathology in a large sample of Air Force cadets. Cadets were assessed prior to and upon completion of a highly stressful 5-week basic training program. In support of the hypothesis that AS presents a cognitive vulnerability in the pathogenesis of anxiety/panic, findings indicated that AS was a significant predictor of new onset panic attacks, anxiety symptomatology, depression, and impairment. In addition, AS contributed unique variance in the prediction of panic at Time 2 beyond that

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of trait anxiety. This latter finding provides support for the contention that AS and trait anxiety are distinct concepts that relate differentially – not synergistically – to anxiety development.

Finally, Schmidt, Lerew, and Jackson (1999) replicated their previous study using the same sampling procedures, assessment instruments, and methods. The only exception was that an additional assessment took place midway through basic training. Results were remarkably similar across the two studies. Again, AS was significantly associated with anxiety, panic, and depression. These findings support the view that AS plays a key role in the pathogenesis of anxiety and panic. Evidence that AS is not simply accounted for by shared variance with trait anxiety (Schmidt et al., 1997), as proposed by Lilienfeld and colleagues (1996; Lilienfeld, Turner, & Jacob, 1993), demonstrates that rules of parsimony have not been violated and further investigation of AS is warranted (see also McNally, 1996 for review).

Because the above studies utilized a prospective design, findings are somewhat more provocative than correlational studies. However, results from both methodologies provide impressive support for Reiss' expectancy theory. Overall, AS is a significant cognitive vulnerability that is related to, and often precedes, pathological anxiety. Furthermore, these findings are robust, occurring in clinical and non-clinical samples. Finally, as with most trends in the anxiety literature, advances in the field of adult AS motivated child researchers to question whether similar findings occur in youth. This question is addressed in the following section. Initially, however, the manner in which AS is assessed in youth is reviewed.

Assessment of anxiety sensitivity in youth

Empirical literature examining the phenomenology of AS in youth is sparse. Until recently, the absence of an assessment device precluded researchers from conducting psychometrically sound research. To facilitate this endeavor, two measures of child AS were developed. Both were child appropriate modifications of the ASI, the most widely used measure of AS in adults. To improve comprehensibility for youth, items on the Anxiety Sensitivity Inventory for Children (ASIC) (Laurent, 1989; Laurent, Schmidt, Catanzaro, Joiner, & Kelley, 1998) and Child Anxiety Sensitivity Index (CASI) (Silverman, Fleisig, Rabian, & Peterson, 1991) reflect minor changes in the wording of items on the ASI. However, for both measures, these changes were minimal to maintain established construct validity.

The ASIC possesses adequate psychometric properties including good internal consistency and construct validity (Laurent et al., 1998). In response to recent criticisms regarding the dimensionality of measures of AS (see Lilienfeld, 1996; Lilienfeld et al., 1993), Laurent et al. (1998) subjected the measure to more rigorous psychometric standards. Initial analyses with non-clinical samples of children aged 9-15 years prompted the removal of four items due to low item-total correlations (r's < .30), poor inter-item correlations (r's < .20), and inadequate factor loadings. Results of factor analysis suggest one, strong general factor. However, additional analyses revealed a hierarchical structure with one higher-order factor (general anxiety sensitivity) and two lower-order factors ("fear of physiological arousal" and "fear of mental catastrophe"). Thus, conclusions regarding the factor structure of the measure remain elusive. Although the measure was intended to be unifactorial, its multifactorial nature is still consistent

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with Reiss' conceptualization of AS (i.e., that individuals fear physical, psychological, and social harm as a result of anxiety symptoms). One criticism of the ASI and its corresponding child versions, then, is that not enough consideration was devoted to scale development and analysis of potential subfactors.

Nevertheless, child anxiety researchers welcomed the addition of the CASI. Within a few years following its inception, several articles were published attesting to the psychometric merits and shortcomings of the CASI (see Silverman & Weems, 1999 for review). Initial analyses using the CASI were conducted using two samples of children; a community sample of children aged 11-15 years and a clinical sample of children aged 8-15 years. Children in the clinical sample were recruited from a private psychiatric clinic and had diagnoses determined prior to the study. Diagnoses included adjustment disorder, attention deficit hyperactivity disorder, enuresis, dysthymic disorder, overanxious disorder, conduct disorder, and oppositional defiant disorder. Test-retest reliability coefficients were .76 for the community sample (two-week) and .79 for the clinic sample (one-week). Internal consistency was evaluated using item-total correlations. For both samples, alpha was .87 for Time 1 and Time 2. Furthermore, regression analysis revealed that the CASI accounted for more variance in fearfulness than measures of anxiety frequency and trait anxiety. The authors suggested that the CASI assesses a construct distinct from measures of trait anxiety and anxiety frequency.

Additional studies support the construct validity of the CASI. For instance, Rabian, Peterson, Richters, and Jensen (1993) administered the CASI to three groups of children: anxious, externalizing, and controls. Children with an anxiety disorder reported the highest level of AS, followed by the externalizing group, and then controls. This finding lends support to the position that children with a high level of anxiety also report

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a high level of AS. In addition, Rabian et al. (1993) reported that the CASI failed to

significantly differentiate anxious and externalizing groups. However, children in the

externalizing group also reported high levels of anxiety. Therefore, this finding may have

been an artifact of poor sampling. On the other hand, future studies are needed to test the

discriminative ability of the CASI. According to Reiss and colleagues (1987; 1991), AS

is theorized to have a unique relationship with anxiety/panic symptoms and disorders.

However, results reported by Rabian and colleagues (1993) suggest that AS may be

associated with children with a wide range of disorders.

Notwithstanding, the validity of AS theory in general, and the CASI in particular,

has been questioned (Chorpita & Lilienfield, 1999; Lilienfeld, 1996; Lilienfeld, 1997;

Lilienfeld, Turner, & Jacob, 1993; Lilienfeld, Turner, & Jacob, 1998; Reiss, 1997). With

respect to AS theory, Lilienfeld (1996) initially proposed that AS may merely represent

an aspect of trait anxiety. He suggested that, if this were the case, the validity of AS

would lose credibility on the grounds of parsimony. However, as noted above, many

studies support the incremental validity of the CASI in terms of its ability to account for

significant variance in fear (Silverman & Weems, 1999; Weems et al., 1998) and

panic/anxiety (Chorpita, Albano, & Barlow, 1996; Hale & Calamari, 1999a; 1999b;

Silverman et al., 1991) beyond that of trait anxiety, anxiety frequency, and physiological

symptoms of anxiety.

A second avenue of inquiry proposed by Lilienfeld (1997) was to examine the

relationship between AS and personality traits. Lilienfeld (1996; 1997) proposed that AS

may be related to several higher and lower order personality dimensions. Among the

higher order dimensions, Lilienfeld hypothesized that constraint, which is presumably

related to fearfulness and behavioral inhibition, and negative emotionality (or negative

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affect) may play key roles in understanding the underlying personality components associated with AS. In terms of lower order dimensions, he suggested that absorption, or the propensity to become immersed in sensory and imaginative experiences, and trait anxiety would be related to AS. These assumptions were tested in a large sample of young adults who completed measures of AS (Anxiety Sensitivity Index; ASI) (Reiss et al., 1986), trait anxiety (State-Trait Anxiety Inventory; STAI-T) (Spielberger et al., 1970), fearfulness (Fear Questionnaire; FQ) (Marks & Mathews, 1979), panic (Panic Attack Questionnaire; PAQ) (Norton, Dorward, & Cox, 1986), and personality (Multidimensional Personality Questionnaire; MPQ) (Tellegen 1978, 1982). Contrary to his hypotheses, Lilienfeld (1997) found substantial support for the incremental validity of AS. Specifically, AS contributed significantly more to the prediction of fearfulness and panic attack history than any personality dimension or trait anxiety. Nonetheless, Lilienfeld concluded that evolving conceptualizations of AS should incorporate personality and psychobiological variables.

Further examinations of the validity of AS have yielded mixed support for the clinical assessment of AS in children and adolescents (Chorpita & Lilienfield, 1999). In a review of developmental and theoretical factors associated with AS in youth, Chorpita and Lilienfield (1999) raised several concerns regarding valid assessments of AS. From a developmental perspective, determining when youth are capable of engaging in complex cognitive functions such as catastrophizing is necessary. The literature generally suggests that children's ability to misinterpret anxiety symptoms and make predictions about future harm increases with age (Mattis & Ollendick, 1997; Nelles & Barlow, 1988). The age at which these cognitive phenomena develop remains largely unknown. Moreover, of primary concern to the clinical assessment of AS is *when* youth can reliably and validly

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report these cognitions using self-report questionnaires or other assessment modalities.

Thus, Chorpita, Albano, and Barlow (1996) tested the utility of the CASI with a sample of children aged 7-17 years with anxiety disorders. They found results similar to those obtained by Silverman et al. (1991) with respect to the ability of the CASI to account for a significant amount of variance in trait anxiety beyond that predicted by measures of fear and physiological symptoms of anxiety. However, this was evident for adolescents only. For younger children, the CASI did not add to the prediction equation. The authors concluded that the construct may lack salience with younger children (under age 11 years) because they may not have the cognitive ability needed to make attributions about the adversity of anxiety symptoms.

In response to this proposition, Weems, Hammond-Laurence, Silverman, and Ginsburg (1998) evaluated the properties of the CASI using a clinical sample of children aged 6-17 years with anxiety disorders. In addition to testing the appropriateness of the CASI for younger children, a second goal was to determine if CASI scores could predict variance in fearfulness beyond that predicted by trait anxiety and anxiety frequency. Unlike results obtained by Chorpita et al. (1996), Weems et al. (1998) found the CASI to be equally instrumental in predicting fearfulness for younger children as for adolescents. The authors contended that AS, as measured by the CASI, is a salient construct that may be reliably assessed in children as young as 6 years old. These findings were also supported in a pair of studies using non-referred students aged 6-16 years (Hale & Calamari, 1999a). In both studies, the CASI predicted variance in panic symptomatology beyond that accounted for by anxiety and depression. In addition, these results were robust – occurring in younger as well as older children.

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In light of criticisms regarding the dimensionality of measures of AS (Lilienfeld, 1996), Silverman, Ginsburg, and Goedhart (1999) evaluated the factor structure of the CASI. Exploratory factor analysis yielded one strong factor containing items related to physical concerns/autonomic arousal. However, confirmatory analyses comparing multidimensional to unidimensional models revealed various second factors described in terms of non-autonomic properties (e.g., control, mental incapacitation, social concerns). Silverman et al. (1999) concluded that more studies are needed to determine the consistency of the CASI's factor structure across age groups.

Based on findings obtained by Silverman et al. (1999) and the discrepancies regarding the utility of the CASI with younger children (Chorpita et al., 1996), Chorpita and Daleiden (2000) evaluated the factor structure of the CASI in a large sample of children aged 7-18 years with anxiety disorders. Overall, the CASI performed similarly in children and adolescents. Exploratory factor analysis revealed one factor with the highest loadings pertaining to items predominantly autonomic in nature. Furthermore, Chorpita and Daleiden (2000) reported that items referring to autonomic arousal were better predictors of panic symptoms and items referring to non-autonomic phenomena were better predictors of generalized or trait anxiety. In addition, using clinician severity ratings of panic and generalized anxiety as criteria, Chorpita and Daleiden (2000) found support for convergent and discriminant validity with children and adolescents.

To test the construct validity of the CASI, Rabian, Embry, and MacIntyre (1999) employed a behavioral challenge procedure. Arousal level was manipulated using a stair-stepping task to elevate heart rate. Such a manipulation is reasonable given that increased heart rate is a commonly reported symptom of anxiety/panic that is perceived as dangerous. Self-report ratings of AS, anxiety, and fear were obtained prior to and

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following the challenge task. Results indicate that the CASI accounted for variance on post-task measures of anxiety and fear beyond that accounted for by pre-task levels of anxiety/fear. Earlier level of AS was thus a good predictor of anxiety and fear ratings following the arousal task. This study was the first to employ a unique methodology to investigate the predictive validity of the CASI. When validating psychological instruments, multimethod assessments should be incorporated to establish construct and predictive validity. Overall, the CASI has demonstrated strong psychometric properties, including incremental and predictive validity. The following studies review the extant literature regarding child AS. Because most studies employed the CASI, they provide additional psychometric support for the instrument.

Correlational studies of anxiety sensitivity in youth

Since the advent of adequate measurement devices, a very small but growing body of literature is emerging suggesting AS manifests similarly in children and adults and is a significant predictor of panic and anxiety symptoms. Similar to adult studies, youth with panic in clinical (Kearney, Albano, Eisen, Allan, & Barlow, 1997) and non-clinical samples (Lau et al., 1996) report higher levels of AS. For example, Kearney et al. (1997) investigated the phenomenology of panic in an outpatient sample of youth age 8-17 years with panic disorder and non-panic anxiety disorders. The two groups did not differ on measures of general anxiety symptomatology, depression, or fearfulness. However, youth with panic disorder scored significantly higher on the CASI compared to their non-panic counterparts. Lau, Calamari, and Waraczynski (1996) obtained similar results when they administered the CASI and PAQ to a sample of high school students aged 14-18 years. Based on endorsement of panic symptoms, adolescents classified as panickers, compared to non-panickers, scored significantly higher on the CASI.

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Prospective studies of anxiety sensitivity in youth

Using a prospective design, Ginsburg and Drake (2002) examined the ability of the CASI to predict panic attack symptomatology six months later. The Time 1 sample consisted of 107 African-American adolescents aged 14-17 years. At Time 2, 66 students were re-evaluated. During both administrations, students completed the CASI and the panic subscale of the Screen for Child Anxiety Related Emotional Disorders (SCARED) (Birmaher et al., 1997). In addition, the PAQ was given at Time 2 to determine the proportion of youth who experienced panic attacks. Similar to studies with primarily European-American samples, African-American adolescents with elevated AS reported higher levels of panic symptomatology compared to those with low AS. In addition, youth with panic symptoms, compared to those without panic symptoms, reported significantly higher levels of AS. Despite the finding that initial level of AS was correlated with panic symptoms six months later, AS did not predict later panic symptoms once initial levels of panic were controlled. One explanation for this latter finding may be that the sample size was insufficient to permit adequate power for regression analyses.

Finally, Hayward et al. (2000) followed a large, ethnically diverse sample of high school students (mean age = 15.4 years) over four years to test several predictors of panic attacks (i.e., AS, negative affect, female sex, and history of separation anxiety in childhood). Because participants could enter the study at any time, length of follow-up varied. Questionnaires were used to assess AS and negative affectivity and a structured interview was used to obtain data pertinent to panic, depression, and separation anxiety. Relevant findings support the proposed relation between AS and panic. Specifically, AS was a significant predictor of new onset panic attacks.

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Taken together, the aforementioned studies provide evidence that AS is associated with anxiety disorders and may be a significant risk factor for the development and maintenance of anxiety and panic. Specifically, findings from prospective studies suggest that AS predicts of anxiety and panic in adults (Ehlers, 1995; Maller & Reiss, 1992; Schmidt, Lerew, & Jackson, 1997; 1999) and youth (Ginsburg & Drake, 2002; Hayward, Killen, Kraemer, & Taylor, 2000; Lau, Calamari, & Waraczynski, 1996). Furthermore, striking similarities between child and adult studies suggest that the construct is robust with respect to age and development. Relatedly, AS is a stable and enduring trait uniquely related to the development of anxiety and panic in youth as well as adults. These findings imply that a high level of AS is a constant negative force in an individual's life that often leads to serious complications in the form of anxiety disorders. With this in mind, research endeavors need to focus attention on the phenomenology of AS, including its etiology, course, treatment, and prevention. As is evident from the above review of AS, most research on AS has been devoted to identifying factors predicted by AS (e.g., AS predicts panic attacks). However, very little research has examined factors that predict AS. Once the origin of AS is understood, effective treatments can be designed to reduce AS and prevent the development of pathological anxiety. Hypotheses regarding the origin of AS are discussed next.

Origin of Anxiety Sensitivity

Few attempts have been made to decipher the origin of AS. Initially, fear of anxiety was considered a secondary consequence of experiences with panic attacks (Goldstein & Chambless, 1978). However, expectancy theory suggests that AS can precede anxiety and panic. To test the directional relation between AS and panic, Donnell and McNally (1990) found that panickers, compared to non-panickers, were significantly

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more likely to report high levels of AS. However, over 67% of undergraduates with high AS claimed to have never experienced a panic attack. These findings suggest that panic is not a necessary precursor (or consequence) of high levels of AS. Instead, a more appropriate hypothesis of the etiology of AS incorporates the combined influence of multiple pathways.

Commensurate with this view, Reiss and McNally (1985) proposed that AS may result from learning and/or genetic influences. Two studies directly tested this supposition. First, Watt, Stewart, and Cox (1998) examined the potential role of learning in the development of AS. In a non-clinical sample of young adults, Watt et al. (1998) compared levels of AS with retrospective self-reports of instrumental and vicarious learning experiences with respect to anxiety and cold symptoms (e.g., "When you had these symptoms prior to age 18 did your parents encourage you to stay home from school?," "Did your parents warn you of the possible dangers of your symptoms?"). Participants with high AS reported more parental encouragement of sick role behavior related to their anxiety and cold symptoms compared to those with low AS (evidence of instrumental learning). In addition, high, compared to low, AS individuals reported that their parents demonstrated more sick role behavior related to anxiety (evidence of vicarious learning). High AS subjects also reported significantly more childhood anxiety and cold symptoms. These findings suggest that early learning experiences are correlated with AS. However, learning experiences were related not only to anxiety symptoms but also to benign cold symptoms. Therefore, parents who model and reinforce generalized sick role behavior may contribute to the rise of AS in their child.

Second, Stein, Jang, and Livesley (1999) found considerable evidence attesting to the genetic transmission of AS. Specifically, genetic heritability accounted for almost

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half the variance in AS (as measured by the ASI) in monozygotic and dizygotic adult twins. Thus, some evidence supports both etiological pathways (i.e., learning and genetic) proposed by Reiss and McNally (1985).

McNally, Hornig, Hoffman, and Han (1999) tested the hypothesis that individuals with elevated ASI scores would exhibit the same information-processing bias seen in patients with panic disorder. Because AS refers to the misperception of benign bodily sensations as dangerous, those with high AS may display a tendency towards a threat-related cognitive bias. Contrary to expectations, individuals with high AS (and no history of panic) did not evince an interpretative, attentional, or memory bias towards threat cues. Thus, multiple cognitive processes may be involved in AS and panic and they are likely to operate independently. Beliefs about the harmfulness of innocuous symptoms may function independently of the threat bias seen in patients with panic disorder.

In addition, high rates of family aggregation of anxiety disorders suggest that the same would be true for AS. For example, children of parents with a high level of AS would also be expected to evince a high level of AS. To test this assumption, Weems, Hammond-Laurence, Silverman, and Ferguson (1997) examined the relation between parent-child AS and anxiety/depressive symptomatology. In this study, youth aged 6-17 years with anxiety disorders and one of their parents completed measures of AS, depression, and anxiety frequency. A reciprocal relationship was found between depression and AS such that parental depression predicted child AS and parental AS predicted child depression, but the relation between parent and child AS was not significant. This latter finding is surprising in light of the prevalence of anxiety disorders among family members and the wealth of evidence indicating that AS is a risk factor for these disorders.

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Only one study examined the relationship between various family variables (including parent-child AS) and child AS in a community sample. Drake and Kearney (2006) presented youth with self-report measures of anxiety (Multidimensional Anxiety Scale for Children; MASC) (March, Parker, Sullivan, Stallings, & Conners, 1997) and AS (ASIC and CASI) (Laurent 1989; Silverman et al., 1991). Parents completed measures of AS (ASI) (Reiss et al., 1986), attachment (Parent/Child Reunion Inventory; PCRI) (Marcus, 1988), psychopathology (Symptom Checklist-90-Revised; SCL-90-R) (Derogatis, 1992), family environment (Family Environment Scale; FES) (Moos & Moos, 1981), parenting practices (Alabama Parenting Questionnaire; APQ) (Shelton, Frick, & Wootton, 1996; and Child Development Questionnaire; CDQ) (Zabin & Melamed, 1980). In addition, parents completed a measure designed to assess the extent to which parents are aware of their child's AS (ASIP) (Drake & Kearney, 2006). Data were subjected to two stepwise multiple regression analyses; one for each measure of child AS. When the CASI was the dependent variable, the overall regression was significant and the best predictors of child AS were the ASIP and PCRI Secure Attachment subscale. This combination accounted for almost 17% of the variance in child AS. With ASIC as the dependent variable, results were identical. However, the combination of predictor variables (ASIP and PCRI Secure Attachment) accounted for slightly less variance (13%).

When family variables were analyzed according to child AS status (i.e., high, medium, and low AS), Drake and Kearney (2006) found several differences with respect to parental psychopathology. Specifically, parents of children with medium and/or high AS tended to score higher than parents of children with low AS on measures of phobic anxiety, general anxiety, depression, and global index of severity. In addition, parents of

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children with high AS reported significantly higher levels of AS themselves. Thus, parents who experience mood disturbances such as anxiety, fear, and depression may be more likely to have children who fear these symptoms. Thus, certain familial vulnerabilities may influence levels of AS in youth.

These studies provide evidence that AS is associated with anxiety disorders and may be a significant risk factor for the development of anxiety and panic in adults as well as youth. Specifically, findings from prospective studies suggest that AS is an important predictor of anxiety and panic in adults (Ehlers, 1995; Maller & Reiss, 1992; Schmidt, Lerew, & Jackson, 1997; 1999) and youth (Ginsburg & Drake, 2002; Hayward, Killen, Kraemer, & Taylor, 2000; Lau, Calamari, & Waraczynski, 1996). In light of these findings, AS may hold promise as an important construct that may have vast implications for etiology, maintenance, treatment, and prevention of anxiety disorders in youth. Although a brief introduction to the anxiety disorders was presented earlier, the focus of the current paper is on panic. Therefore, a more detailed description of panic attacks/disorder is warranted. The following section will review clinical features of panic attacks and panic disorder.

<div align="center">Panic in Children and Adolescents</div>

Diagnosis

According to the DSM-IV-TR, a panic attack is characterized by a discrete period of intense fear or discomfort with four or more of the following developing abruptly: palpitations or increased heart rate; sweating; trembling; shortness of breath or a sense of being smothered; a choking feeling; chest pain or discomfort; nausea or abdominal distress; dizziness or feeling unsteady, lightheaded or faint; feelings of unreality or depersonalization; fear of losing control; fear of dying; numbness or tingling sensations;

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and chills or hot flushes (DSM-IV-TR, 2000). Panic attacks tend to peak within 10

minutes and can be unexpected, situationally bound (cued; attacks almost always occur

when faced with a particular trigger), or situationally predisposed (more likely to occur in

certain situations, but do not always occur when faced with the trigger). Unexpected

panic attacks occur "out of the blue" but may later become situationally bound or

predisposed when a fear response is conditioned. For example, if an individual

experiences a panic attack while driving, an association between driving and the

expectation of having another panic attack may develop. In this case, the act of driving

(or being in a car) may cue a panic attack. When attacks recur unexpectedly and are

accompanied by persistent fear of having another attack and/or behavioral changes

resulting from the fear of additional attacks, a diagnosis of panic disorder may be

warranted (APA, 2000). Furthermore, panic disorder can exist with or without

agoraphobia, which is described in the DSM-IV-TR as anxiety about being in places or

situations from which escape might be difficult or embarrassing, or in which help might

not be available if needed.

Assessment

Two assessment strategies have been generally employed to assess panic:

interviews and questionnaires. The following section discusses the most commonly used

instruments from both approaches. The Anxiety Disorders Interview Schedule for DSM-

IV Child Version (ADIS-IV-C) (Silverman & Albano, 1996) has been described as the

premier instrument for assessing anxiety disorders in youth (Stallings & March, 1995).

The ADIS-IV-C can assess diagnostic status across a broad range of anxiety, mood, and

externalizing disorders in youth. The ADIS-IV-C also addresses age of onset, impairment

and avoidance. The instrument facilitates designation of primary versus secondary

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diagnoses. The ADIS-IV-C possesses the best psychometric profile for the diagnostic assessment of childhood anxiety disorders of currently available diagnostic measures (Rapee, Barrett, Dadds, & Evans, 1994; Silverman, 1991a; Silverman & Eisen, 1992; Silverman & Nelles, 1988; Silverman & Rabian, 1995; Silverman, Saavedra, & Pina, 2001). The interview has good interrater reliability ($r = 0.93$; Silverman & Nelles, 1988) and is sensitive to treatment effects in studies of youth with anxiety disorders (e.g., Barrett et al., 1996; Kendall et al., 1997; Silverman et al., 1999a; 1999b). The Anxiety Disorders Interview Schedule for DSM-IV Parent Version (ADIS-IV-P) (Silverman & Albano, 1996) has similar psychometric properties and can be used in conjunction with the child version to derive a composite diagnosis.

The most commonly used self-report measure that specifically assesses panic is the Panic Attack Questionnaire (PAQ) (Norton, Dorward, & Cox, 1987). This questionnaire has recently been revised to facilitate continued research efforts and comparison across studies. Norton (1995) developed the Panic Attack Questionnaire – Revised (PAQ-R) to assess the frequency, intensity, duration, and severity of panic attacks. Similar to the procedure outlined above, participants are given a written description of a panic attack and asked to indicate the number of attacks experienced in the past year and the past month. The measure was refined to include important information neglected in earlier measures. Thus, participants also indicate the severity of 26 somatic and cognitive symptoms, whether an attack was unexpected, duration of symptoms from onset to peak, amount of distress, behavioral changes, and whether treatment was sought. The PAQ-R has been shown to be a reliable and valid measure of these variables (Norton et al., 1999; Norton, Dorwald, & Cox, 1986).

Interviews and questionnaires have been effective in assessing panic. However, some researchers have been interested in comparing the two approaches to determine if one is more effective. One way to evaluate the psychodiagnostic merit of an instrument is to assess its specificity and sensitivity. Sensitivity refers to the percentage of true positives classified by an instrument (Groth-Marnat, 1997). For instance, if an instrument correctly diagnoses 90% of those in a sample, it would be considered very sensitive. In essence, this is a measure of convergent validity. Specificity, on the other hand, is a measure of discriminant validity and refers to the proportion of true negatives identified by the instrument (Groth-Marnat, 1997). Thus, a measure would be considered sensitive if accurately identifies those without the diagnosis. The difficulty in assessing sensitivity and specificity lies in selecting an appropriate criterion upon which to base decisions of accuracy.

Hayward et al. (1997) conducted such an analysis when they compared the two assessment strategies in 11-16 year-old adolescent females. Diagnostic interviews included selected portions of the Structured Clinical Interview for DSM-III-R Non-Patient Version (SCID-NP) (Spitzer, Williams, & Gibbons, 1987) to determine panic attack and panic disorder status. Agoraphobic avoidance was assessed using a portion of the Schedule for Affective Disorders and Schizophrenia in School-Age Children (Kiddie-SADS, modified) (Last, 1986). The questionnaire used was similar to those used in other studies (Macaulay & Kleinknecht, 1989; Warren & Zgourides, 1988) and comparable to the PAQ. The measure first provides a detailed description of a panic attack and asks respondents to indicate whether they had ever experienced such an attack. Those who respond affirmatively are then asked to indicate which of 13 somatic and cognitive symptoms they experienced during the worst episode. Overall, questionnaires and

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interviews were successful in identifying adolescent panickers. However, when the interview was used as the criterion, the questionnaire had a sensitivity of 72% and a specificity of 81%. In addition, the questionnaire format yielded a false positive rate of 18% and a false negative rate of 28% compared to the interview. The authors concluded that the interview may provide a more valid assessment of panic in youth compared to questionnaire format.

Prevalence and Age of Onset

Based on a growing but limited literature, some researchers concluded that panic in youth occurs with comparable frequency and presentation as seen in adults (Moreau & Weissman, 1992; Ollendick, 1998; Ollendick, Mattis, & King, 1994). Others, however, question whether children, especially those under age 9 years, are cognitively capable of producing catastrophic misinterpretations that are a key element in exacerbating and maintaining panic symptoms in adults (Nelles & Barlow, 1988). A review by Ollendick and colleagues (1994), however, cites a growing body of evidence suggesting that adolescents and, to a lesser extent, prepubertal children experience physiological and cognitive symptoms of panic. The authors concluded that youngsters are capable of forming the catastrophic misinterpretation indicative of panic. Kearney and Silverman's (1992) review of the literature led to a recommendation to exercise caution when drawing conclusions because the majority of studies were fraught with methodological problems, including small samples, inconsistent and questionable assessment techniques, and omission of critical information (e.g., whether the attack was precipitated or unprecipitated, perceived severity of the attacks).

Despite this debate, current estimates indicate that 16-63% of community samples of adolescents reportedly suffered at least one panic attack during their lifetime and up to

0.6% currently met diagnostic criteria for panic disorder (e.g., King, Gullone, Tonge, & Ollendick, 1993; King, Ollendick, Mattis, Yang, & Tonge, 1996; Lau, Calamari, & Waraczynski, 1996; Macaulay & Kleinknecht, 1989; Ollendick, 1998; Warren & Zgourides, 1988). Whitaker et al. (1990) investigated the incidence of panic disorder in a large sample of 14-17 year old high school students. They reported a lifetime prevalence of 0.6% for the entire sample (0.7% for girls, 0.4% for boys).

Furthermore, retrospective reports from adults with panic disorder indicate that symptom onset often began during childhood (Thyer, Parrish, Curtis, Nesse, & Cameron, 1985; Von Korff, Eaton, & Keyl, 1985). For instance, Von Korff and colleagues (1985) compiled results from several studies and found an average age of onset of 15-19 years, with roughly 18% of adults with panic indicating an onset prior to 10 years of age. Similarly, Thyer et al. (1985) reviewed inpatient records and determined that approximately 13% of adults diagnosed with panic disorder first complained of panic attacks prior to 10 years of age. These findings suggest that panic occurs in youth with a frequency sufficient to warrant further investigation. Furthermore, while panic attacks occur more frequently than panic disorder in youth (Ollendick et al., 1994), a panic attack is the most significant predictor of future panic disorder and therefore deserves increased research and clinical attention.

Impairment in Functioning

Persistent symptoms of panic in youth are associated with significant impairment in functioning and are often comorbid with symptoms of anxiety, depression, school refusal, and familial stress (Bradley & Hood, 1993; Hayward et al., 1995; Hayward et al., 1997; King et al., 1996; Macaulay & Kleinknecht, 1989). Kearney, Albano, Eisen, Allan, and Barlow (1997) investigated the phenomenology of panic disorder in a clinical sample

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of children aged 8-17 years. Youth diagnosed with panic disorder were compared with those diagnosed with non-panic anxiety disorders on several measures. Among youth with panic disorder, concomitant agoraphobia was more likely than panic disorder without agoraphobia. Furthermore, youth with panic were more likely to have a comorbid diagnosis of major depressive disorder/dysthymia and endorse higher levels of AS compared to nonpanicking counterparts. The groups did not differ with respect to manifest anxiety, trait anxiety, separation anxiety, or fearfulness. Other studies with clinical samples of youth support these findings and demonstrate that youth with panic disorder exhibit poorer performance on tests of academic performance and overall intellectual functioning (Biederman et al., 1997)

Similar findings were reported in community samples of youth. Hayward et al. (1997) found that adolescent girls who experienced panic attacks were more depressed, had higher AS, and used alcohol compared to their peers who had never experienced a panic attack. At the same time, however, panickers and nonpanickers did not differ with respect to age, race, parental education, parental marital status, or nicotine use. Furthermore, AS was the only dependent measure to distinguish those with panic attacks and panic disorder. The importance of AS, and its relation to panic, will be discussed later.

Course

Research investigating the chronicity of childhood anxiety disorders has yielded mixed results. Several studies found support for the stability of anxiety over time, while others indicate a more favorable outcome. Pollack et al. (1990) found that 55% of adults seeking treatment for panic disorder had a history of childhood anxiety disorder. The finding that many adults with panic are likely to retrospectively report problems with

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anxiety dating back to childhood provides evidence that anxiety disorders persist over time.

Biederman et al. (1997) tested children and adolescents referred to an outpatient clinic. They found that youth with panic disorder were quite similar to adults with respect to symptom profile, comorbidity of agoraphobia and other anxiety disorders, and course. With respect to course, average duration of panic disorder (3.5 years) and agoraphobia (5 years) was remarkable given that the mean age of children was 11.8 years. Similarly, Keller et al. (1992) reported that the average duration of anxiety disorders in children aged 6-19 years was four years. For 46% of their sample, however, symptoms persisted for over eight years.

In a 21-year longitudinal study of New Zealand children, Woodward (2001) investigated the relationship between anxiety disorder during adolescence and later mental health and associated impairment. Participants were screened for a DSM-III-R anxiety disorder at age 14-16 years and reassessed for anxiety, other mental disorders, academic achievement, and social functioning at age 16-21 years. A significant relationship was found between anxiety disorders during adolescence and later risks of anxiety disorder, depression, substance abuse, suicidal behavior, academic underachievement, and early parenthood. Adolescents with anxiety disorders may be at increased risk of subsequent anxiety and concomitant impairment.

In contrast, two prospective studies with samples of youth reported findings inconsistent with the notion that anxiety disorders are stable. Last, Perrin, Hersen, and Kazdin (1996) evaluated the course of DSM-III-R anxiety disorders in a clinical sample of youth aged 5-18 years. Based on diagnostic interview, youth were classified into one of three groups: anxiety disorder, attention deficit hyperactivity disorder, and no

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diagnosis. Participants were reassessed using the same diagnostic interview 3-4 years after the initial assessment. Most children (82%) no longer met criteria for an anxiety disorder by follow-up. A small percentage (8%) experienced a relapse of anxiety disorder following brief remission. In addition, children with an initial diagnosis of anxiety disorder were more likely to develop a new anxiety disorder by follow-up (16%) compared to those with no initial diagnosis (2%) and those with an initial diagnosis of ADHD (10%). These results suggest that youth with anxiety disorders are likely to recover, though some may experience a relapse or even the development of a new disorder.

Essau, Conradt, and Petermann (2002) assessed anxiety and other psychiatric disorders in a community sample of German adolescents aged 12-19 years. Youth were retested 15 months after initial assessment. Results indicated that 22.6% of those who met DSM-IV criteria for anxiety disorder at initial assessment continued to have an anxiety diagnosis at follow-up. In addition, several factors were associated with the persistence of anxiety disorders. These factors included older age, somatoform and substance use disorders, and negative life events. These findings suggest a favorable outcome given that the vast majority of those with an anxiety disorder (77.4%) no longer met diagnostic criteria 15 months later. However, given that older age was a significant predictor of chronicity, this study supports the need for developing and testing early intervention and prevention programs for youth with anxiety. Prior to addressing prevention, however, a brief review of the treatment literature is provided. This section is intended to familiarize the reader with the most common and most efficacious treatment components and provide a rationale for designing a prevention program for youth at risk for developing anxiety.

Treatment

The most widely supported psychological treatment for child anxiety disorders in general and panic disorder in particular is cognitive-behavioral therapy (CBT). CBT is a multifaceted approach to treatment that consists of a wide array of techniques and components to develop or enhance an individual's coping skills. The first component, psychoeducation, refers to providing a child with information regarding the nature and prevalence of panic. In addition, in terms the child can understand, the therapist describes how panic may have developed. For example, a therapist may explain that some children are innately more anxious than others and that certain events can happen throughout a person's life to make them more anxious. Eventually, the brain begins interpreting innocuous stimuli as threatening and a fear response is triggered. When this happens, children experience somatic symptoms (e.g., racing heart, sweaty hands) and maladaptive cognitions (e.g., "Something bad is going to happen to me"). Finally, the therapist provides a rationale for treatment that addresses somatic and cognitive aspects of panic.

The second component is systematic desensitization. One of the originators of this strategy, Wolpe (1958), suggested that pairing a neutral or pleasant stimulus (e.g., muscle relaxation, positive imagery) with an anxiety-provoking stimulus gradually decreases fear associated with a phobic stimulus. Application of this procedure involves three steps: 1) relaxation training, 2) construction of a fear hierarchy, and 3) gradual exposure to feared items on the hierarchy while in a relaxed state (Barrios & O'Dell, 1998; Wolpe, 1958). In the first step, a child is taught relaxation exercises. These exercises generally take the form of deep breathing and progressive muscle relaxation. During the breathing-retraining segment, a child is instructed to take long, slow breaths while attending to her stomach as it expands and releases. Helping a child focus on breathing into her stomach,

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rather than into her chest, can help prevent hyperventilation (or rapid, shallow breathing) during anxiety-provoking situations. During progressive muscle relaxation, a therapist guides a child through a series of slow muscular contractions. Beginning with facial muscles, a child tenses and releases each muscle group slowly and repeatedly (generally three times per muscle group). The child is then instructed to tense and relax muscles in the following order: neck, shoulders, stomach, gluteus, thighs, calves, feet, and the whole body. The purpose of these exercises is to help a child develop control over somatic symptoms of anxiety and master an incompatible response to anxiety to be used during later exposure exercises.

The second step consists of rank ordering distressing sensations from least to most anxiety-provoking. The rank-order list forms a hierarchy of fearful stimuli to be used during exposure exercises. Items on the hierarchy can include physical sensations (e.g., feeling dizzy, rapid heart rate) or specific situations a child may avoid or endure with distress for fear of having a panic attack (e.g., eating in a restaurant, being in a crowded place, walking to school alone).

The first two steps form the foundation for the third step, imaginal or in vivo exposure exercises. During imaginal exercises, a therapist instructs the child to relax her body and, with eyes closed, imagine the first step of the hierarchy. During in vivo exercises, fear-producing stimuli are encountered in real life. The purpose of exposure is to produce a mild level of anxiety while invoking an incompatible response to anxiety, namely relaxation. Because one cannot be anxious and relaxed simultaneously, the fear response loses its intensity and a child gradually habituates to the once fear-evoking items on the hierarchy. Over time, as a child experiences success in managing her anxiety, anxiety encountered during the imaginal or in vivo exercises increases until the

greatest fear is experienced and successfully managed. Throughout the course of systematic desensitization, the child practices confronting her fears while gaining opportunities to experience a sense of mastery and achievement. In addition, the therapist encourages, supports, and praises the child's effort and bravery. The use of rewards as reinforcement may also be instrumental in securing childrens' cooperation and providing them with incentives to continue with treatment.

The third general component of CBT is cognitive restructuring. Cognitive restructuring involves monitoring and changing maladaptive negative self-statements that provoke and maintain anxiety. Using cognitive restructuring procedures first introduced by Lazarus (1974), clinicians attempt to transform negative internal dialogue (e.g., "Something bad is going to happen to me," "People will laugh at me") into more adaptive and realistic dialogue (e.g., "I can do it," "If people laugh at me, it will not be the end of the world"). The therapist initially explains to the child how her thoughts influence how she feels and behaves. For example, a therapist can engage a child in discussions of past fearful experiences and elicit from the child thoughts she was having. The therapist can ask, "What were you thinking about when you felt your heartbeat really fast?" or "What did you tell yourself when you felt like you were going to vomit?" In addition, the therapist should give the child thought-monitoring logs to keep track of thoughts that occur during fear-provoking situations outside of therapy sessions. The therapist can then use this information to highlight consequences of negative thoughts (e.g., "So, when you told yourself that you were going to faint or die while standing in line and that nobody would help you, that made you feel even more scared, which made you even more dizzy, so to get away from that feeling, you ran out of the cafeteria and hid in the bathroom until lunch was over.").

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Next, the therapist works with the child to develop alterative thoughts to facilitate coping rather than exacerbate anxiety. A number of methods can be used. For example, the therapist can ask a child to generate all possible alternative thoughts and explanations. The therapist may need to help the child develop this list. For instance, if a child thought that feeling dizzy meant she "would faint or die," the therapist can help her generate other explanations for the feeling (e.g., "Maybe the room was warm, maybe you were hungry, maybe you were tired, maybe you were worried about something, etc."). The therapist can also ask a child to challenge the thoughts. Asking questions such as: "What's the worst thing that could happen?" "Has that ever happened?" "What's the likelihood that (frightening outcome) would happen?" assists a child in challenging maladaptive thoughts. Over time, the child learns to question automatic thoughts and replace them with realistic, adaptive thoughts.

Several well-controlled clinical trials have demonstrated the efficacy of CBT for reducing anxiety in children and adolescents (e.g., Barrett, 1998; Barrett, Dadds, & Rapee, 1996; Kendall, 1994; Kendall, Flannery-Schroeder, Panicelli-Mindel, Southem-Gerow, Henin, & Warman, 1997; Silverman et al., 1999a). These studies indicate that 50-80% of youth who completed a short-term (10-16 week) course of CBT no longer met criteria for their primary anxiety diagnosis. Follow-up data from these studies suggest that treatment gains are durable, with maintenance of CBT benefits lasting as long as five years (Kendall & Southam-Gerow, 1996). A significant limitation, however, was that no child in the aforementioned studies had a primary (or secondary) diagnosis of panic disorder. Most children had a primary diagnosis of separation anxiety disorder, generalized anxiety disorder, social phobia, or specific phobia.

Ollendick (1995) examined the efficacy of CBT in treating youth with panic disorder. Four adolescents aged 13-17 years were first assessed using a structured interview and self-report questionnaires in the following domains: manifest anxiety, anxiety sensitivity, fearfulness, and depression. Participants met diagnostic criteria for panic disorder with agoraphobia. Treatment consisted of psychoeducation, progressive muscle relaxation, breathing retraining, cognitive restructuring, and in vivo exposure exercises. Because criteria for terminating treatment was no panic attacks for two consecutive weeks, the number of sessions varied by patient ($M = 8$ sessions). Patients were reassessed at post-treatment and six-month follow-up. At follow-up, patients reported lower levels (within the normative range) on dependent measures with the exception of one patient whose slightly elevated depression score persisted. Although the sample was small and the follow-up period brief, this study demonstrates that the treatment of choice for adults with panic disorder (i.e., exposure-based CBT) may be effective for adolescents as well.

This review suggests that panic is a significant source of distress for children and adolescents. Despite the substantial impairment and chronic nature of panic/anxiety disorder, little effort has been directed toward developing and testing programs to prevent these difficulties. These efforts are described next.

Prevention of Panic

Studies with Adults

To date, only two studies have empirically evaluated programs to reduce or prevent panic. Swinson, Soulios, Cox, and Kuch (1992) examined the efficacy of early intervention for adults with panic. Adults who presented at an emergency room for panic attacks were randomly assigned to one of two treatment conditions: exposure instruction

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or reassurance only. Participants were reassured that they had experienced a panic attack and evinced no emotional or physical disorder. The exposure group, in addition to being reassured, was instructed that fear is best reduced by returning to the place where they had experienced the attack and remaining there until anxiety subsided. Participants met with a therapist for a single, 60-minute, session. The exposure condition was superior to the reassurance-only condition for reducing agoraphobic avoidance, fear, depression, and number of panic attacks by six-month follow-up. Furthermore, participants in the reassurance-only condition reported an increase in agoraphobic avoidance, fear, and panic attack frequency over six months. The authors concluded that early exposure-based intervention was successful in reducing panic frequency and preventing the development of panic disorder over a short duration.

Gardenswartz and Craske (2001) tested the effectiveness of a single session panic prevention program for adults at risk for developing panic disorder. Participants in this study were considered at risk if they (1) endorsed at least a moderate level of AS (a risk factor for the development of anxiety in general and panic in particular) and (2) had at least one panic attack in the past year but did not meet diagnostic criteria for panic disorder. Participants were assigned to a treatment or a waitlist control condition. Treatment consisted of a single five-hour session focusing on psychoeducation, breathing retraining, cognitive restructuring, and interoceptive exposure. Significantly fewer individuals in the treatment condition (1.8%), compared to those in the waitlist condition (13.6%), developed panic disorder at six-month follow up. These studies provide initial evidence that preventative strategies may be effective in reducing the incidence of panic disorder in adults. However, no published study has examined the efficacy of a brief prevention program for youth at risk for developing panic attacks/disorder. Single-session

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treatments and early intervention strategies have been employed with youth. These strategies signify an early attempt to develop and test preventative approaches and are reviewed next.

Studies with Youth

Ost, Svensson, Hellstrom, and Lindwall (2001) conducted a single-session, controlled clinical trial to treat children diagnosed with specific phobias. Participants were children and adolescents aged 7-17 years. Youth first completed a structured diagnostic interview, behavioral assessment tests, and various self-report questionnaires assessing manifest and trait anxiety, anxiety sensitivity, fearfulness, and depression. They were reassessed one week and 12 months after treatment. Participants were randomly assigned to one of three conditions: 1) one-session exposure treatment alone, 2) one-session exposure treatment with a parent, or 3) wait-list control. Active treatment consisted of a three-hour session devoted to gradual exposure to the fear-evoking stimulus. Significant improvement was found on dependent measures for the two treatment groups. Most (57-95%) of those in the active conditions demonstrated clinically significant improvement compared to only 15% in the waitlist condition. At the same time, however, the authors' hypothesis that parental involvement would enhance treatment effects was unsupported. In contrast, youth evinced greater improvement in severity ratings, behavior approach tests, and self-reported anxiety when a parent was not present. Although this study was not designed as a prevention study per se, the brief nature of the intervention is consistent with an ideal prevention program (i.e., one that is brief, effective, and cost-efficient) and supports the idea that single-sessions interventions can be successful.

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Review of the limited literature examining specific child anxiety early intervention programs reveals two current trends. A brief review of each program will follow. One group of researchers developed a program to assist youth with anxiety problems. The Queensland Early Intervention and Prevention of Anxiety Project (QEIPAP) (Dadds, Spence, Holland, Barrett, & Laurens, 1997) is investigating the long-term impact of a cognitive-behavioral based prevention program for youth. This is not a strictly preventative project because some children entering the program were already diagnosed with an anxiety disorder. However, because these children were determined to have less severe forms of the disorder, they were included to maximize the number of children who could benefit from the program (Spence & Dadds, 1996).

A large sample of youth aged 7-14 years were screened for anxiety and assigned to a 10-week psychosocial intervention or a passive monitoring-only control group. Youth were assessed at pre-treatment, post-treatment, and follow-up via diagnostic interview and self- and parent-report measures. Groups of 5-12 children and their parents attended weekly sessions that occurred at the childrens' school. The intervention was based on *The Coping Koala* treatment program (Barrett, Dadds, & Rapee, 1991) and utilized empirically supported techniques for treating anxiety disorders including physiological, behavioral, and cognitive coping strategies employed within a graduated exposure-based paradigm.

Following the intervention, both groups demonstrated improvements, although the psychosocial treatment group evinced greater benefit. At six-month follow-up, 56% of children in the monitoring group met diagnostic criteria for an anxiety disorder compared to 27% of children in the psychosocial treatment group. On first inspection, the program

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appears to have produced only modest results. Over one-quarter of youth in the active treatment group developed an anxiety disorder shortly after intervention.

Nonetheless, 12- and 24-month post-intervention follow-ups were conducted (Dadds, Holland, Laurens, Mullins, Barrett, & Spence, 1999). Diagnostic status was assessed by blind clinicians who conducted telephone interviews. At 12 months, the groups no longer differed with respect to rates of diagnosable disorders (intervention = 37%, monitoring = 56%). However, group differences reemerged at 24-month follow-up with the intervention group (20%) having a significantly lower rate of anxiety diagnoses than the monitoring group (39%). While these results are promising and suggest that children at risk for developing anxiety disorders can be successfully treated with durable interventions, a significant number of children who received treatment continued to experience anxiety sufficient to warrant a diagnosis.

To extend the QEIPAP findings, the FRIENDS program was developed (Barrett, Lowry-Webster, & Turner, 2000). The treatment protocol of the FRIENDS program utilizes a group-CBT intervention with parental involvement. FRIENDS is an acronym that summarizes the most useful treatment strategies (F = **Feeling** Worried? R = **Relax** and feel good, I = **Inner** thought, E = **Explore** plans, N = **Nice** work so reward yourself, D = **Don't** forget to practice, S = **Stay** calm) (Barrett, Shortt, Fox, & Wescombe, 2001; Shortt, Barrett, & Fox, 2001). Barrett, Sonderegger, and Sonderegger (2001) examined the efficacy of the FRIENDS program with children and adolescents from diverse, non-English speaking backgrounds. Participants aged 7-19 years were recruited from ESL (English as a second language) classes in Australia and assigned to a treatment or waitlist condition.

Greater reduction in anxiety symptoms was found for the intervention group. However, youth were not at risk for developing anxiety. The only eligibility requirement was participants were foreign-born migrants enrolled in an ESL class. Whether similar results would be obtained with a truly at-risk sample of youth has not been investigated. In addition, this program has not been evaluated using samples of American youth. Nevertheless, a subsequent study indicated that child and parent participants in the program were satisfied with the program (Barrett, Shortt, Fox, & Wescombe, 2001). Program satisfaction, however, did not predict treatment outcome. These findings are encouraging and these studies signify progress with respect to early intervention and prevention. Preventative interventions specifically designed for youth who experience panic attacks/disorder have not yet been conducted, however.

Purpose of the Present Study

The present pilot study evaluated the feasibility and effectiveness of a panic prevention workshop for youth. Participants were recruited via large-scale email, flyer, radio and newspaper advertisements. Interested parents contacted the lead investigator to determine qualification for inclusion in the study. Eligible participants were English-speaking youth aged 12-17 years. Participants were assigned to workshop and waitlist groups based on time enrolled in the study. Workshop participants completed self-report measures of anxiety (anxiety sensitivity, general anxiety, and panic symptoms), depression, and an anxiety-based semi-structured diagnostic interview. Following assessment, workshop participants received the panic prevention workshop consisting of approximately five hours of psychoeducation, progressive muscle relaxation, breathing retraining, cognitive restructuring, and interoceptive exposure. Because some literature reported enhanced treatment effects when a parent is involved in the intervention

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(Barrett, Dadds, & Rapee, 1996; Mendlowitz et al., 1999), one parent attended the workshop. Three workshops were conducted. At the end of the workshop, youth and parents completed measures of workshop satisfaction and credibility. Three months later, participants completed measures of AS, general anxiety, and panic attack symptomatology during a telephone interview. Waitlist participants, completed self-report measures of AS, general anxiety, and panic attack symptomatology upon enrollment in the study and three months later. During three-month follow-up, waitlist participants were given an opportunity to participate in the prevention workshop. All waitlist participants declined this offer.

Compared to youth in the waitlist condition, those in the prevention program were expected to evince greater reductions in AS, general anxiety, and panic attack symptomatology at three-month follow-up. Waitlist participants were not expected to evince improvement in AS, general anxiety, and panic attack symptomatology scores at three-month follow-up.

CHAPTER 3

METHODOLOGY

Participants

Participants were 19 youth and their mothers recruited from two communities.

Youth aged 12-17 years ($M = 13.95$, $SD = 1.78$) were divided into two groups (workshop,

$n = 9$; waitlist, $n = 10$) based on time of entry into the study. The total sample consisted

of 11 males and 8 females. Nine participants lived in Las Vegas, Nevada and 10 lived in

Norfolk, Nebraska. Participants were European-American ($n = 17$; 89.5%), Asian

American ($n = 1$; 5.3%), and Hispanic American ($n = 1$; 5.3%).

Table 1 shows demographic data for the groups. Workshop participants were

primarily female (66.7%), European-American (77.8%), from Las Vegas (55.6%), and

aged 12-16 years ($M = 13.67$, $SD = 1.58$). Waitlist participants were primarily male

(80%), European-American (100%), from Norfolk (60%), and aged 12-17 years ($M =$

14.20, $SD = 1.99$). No differences were found between workshop and waitlist participants

with respect to age, gender, location, or race.

Inclusion Criteria

Eligible youth were aged 12 –17 years and fluent in English. Youth and one

parent were required to provide informed consent at every stage of the program.

Specifically, youth and parents provided verbal consent prior to screening, written

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informed consent prior to completing questionnaires, and verbal consent prior to telephone follow-up interview.

Initially, an at-risk sample was desired. However, given the poor overall public response, some inclusion criteria were omitted. Specifically, the proposed sample was to consist of children and adolescents identified as at-risk for developing anxiety pathology. At-risk was defined as a total CASI score of 32 or above. During the early phase of recruitment, difficulties obtaining such a sample were encountered. Recruitment efforts then focused on obtaining a community sample of youth.

In addition, youth diagnosed with a mental disorder or receiving treatment (psychological and/or pharmacological) were to be excluded from the study. However, given the poor response, some youth who met these criteria were included in the study. Specifically, a male waitlist participant diagnosed with ADHD was taking Strattera during initial assessment. One female workshop participant with no diagnosis of mental disorder was undergoing outpatient counseling during initial and follow-up assessments. No other participant endorsed a current diagnosis or treatment.

Experimental Conditions

Panic prevention workshop

Following screening and pre-workshop assessments (see Procedures below), participants in the panic prevention workshop (PPW) participated in the workshop. The design of the workshop was largely based on that used by Gardenswartz and Craske (2001), though several components were modified to tailor the program for youth. The panic prevention workshop consisted of approximately five hours of empirically supported cognitive behavioral strategies, including psychoeducation, breathing

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retraining, progressive muscle relaxation, cognitive restructuring, and interoceptive

exposure. In addition, at least one parent or guardian attended the workshop.

Waitlist

The waitlist (WL) served as the control group. As outlined below (see

Procedures), individuals in the WL completed questionnaires but did not participate in

the workshop. However, they were contacted again three months later for follow-up

telephone assessments and offered an opportunity to attend the workshop. All waitlist

participants declined participation in the workshop.

The ethical dilemma inherent in using a waitlist group is recognized. However,

several reasons exist for using a waitlist comparison group. First, due to the novelty

associated with the prevention program, a non-treatment control group helps ascertain the

effectiveness of the program. Because anxiety prevention programs are rare, most at-risk

children typically do not receive treatment. Furthermore, participants in this study did not

meet criteria that would be considered at-risk and so these participants were not expected

to be in acute need of psychological services. If a participant in either group required

more comprehensive or immediate care at any phase in the study, the participant and his

or her parent were to be given a referral list of appropriate providers. This, however, did

not occur.

Child Measures

Child Anxiety Sensitivity Index (CASI) (Silverman et al., 1991). The CASI, an age

appropriate modification of the ASI (Reiss, Peterson, Gursky, & McNally, 1986),

consists of 18 items that assess the extent to which children believe the experience of

anxiety will result in negative consequences. Sample items include: "It scares me when I

feel like I am going to throw up" and "It scares me when my heart beats fast." Youngsters

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respond to each item using a 3-point Likert-type scale (none, some, a lot). The CASI

yields a total score obtained by summing ratings across all items, with higher scores

reflecting higher levels of AS (scores can range from 18 to 54). Psychometric data on the

CASI is promising with adequate test-retest reliability (over one- to two-week periods)

and internal consistency for clinical and community samples (Silverman et al., 1991).

The construct validity of the CASI has also been supported (e.g., Chorpita et al., 1996;

Chorpita & Daleiden, 2000; Rabian et al., 1999; Silverman et al., 1991; Weems et al.,

1998).

Anxiety Sensitivity Inventory for Children (ASIC) (Laurent, 1989). The ASIC is a

16-item measure of the extent to which youngsters fear symptoms of anxiety. Items were

derived by modifying the ASI for children. Examples of items include: "When I notice

that my heart is beating fast, I worry that something really bad is going to happen to me,"

and "It scares me when I can't catch my breath." Youth are asked to select the phrase that

best describes how much they agree with each item (not true, sometimes true, mostly

true, and true). A total score is derived by summing all items. Thus, total scores can range

from 0 to 48 with higher scores indicating higher levels of AS. Good internal consistency

as well as a reliable factor structure have been noted (Laurent, Schmidt, Catanzaro,

Joiner, & Kelley, 1998). While this device has not been used as frequently as the CASI,

the ASIC was included to facilitate comparisons with the CASI and obtain more

information related to its psychometric properties.

Multidimensional Anxiety Scale for Children (MASC) (March, 1997; March,

Parker, Sullivan, Stallings, & Conners, 1997). The MASC consists of 39 items and four

main factors: 1) physical symptoms (tense/restless and somatic/autonomic), 2) social

anxiety (humiliation/rejection and fear of public performance), 3) harm avoidance

(perfectionism and anxious coping), and 4) separation anxiety. The measure also includes an Anxiety Disorders Index (ADI) of 10 items shown to accurately classify youth based on diagnostic status. Sample items include: "I worry about other people laughing at me" and "I get shaky or jittery." Children respond to items using a 4-point Likert-type scale describing the degree to which statements are true about them (never, rarely, sometimes, and often). In addition to the four factor scores, the MASC yields a total score obtained by summing all 39 items. Thus, total scores can range from 0 to 117. The instrument has been used with children and adolescents aged 6-18 years. Analysis of the psychometric properties indicates good internal reliability, satisfactory to excellent test-retest reliability, and adequate convergent and divergent validity with clinical (March et al., 1997) and nonclinical samples (March, Sullivan, & Parker, 1999).

Children's Depression Inventory (CDI) (Kovacs, 1981). The CDI is the most commonly used self-report measure of depression in youth. This scale consists of 27 items derived from the Beck Depression Inventory (BDI). Each item addresses a mood-relevant construct and children select one of three statements describing varying levels of the construct. Sample items include: "Nobody really loves me, I am not sure if anybody loves me, I am sure that somebody loves me" and "I do not feel alone, I feel alone many times, I feel alone all the time." Youngsters respond to items by checking the box describing their current sentiment. Scores on items range from 0 to 2 where 0 indicates absence of the symptom, 1 indicates the symptom is occasionally present, and 2 indicates the symptom is nearly always present. A total score, which can range from 0-54, is obtained by summing all 27 items. In addition, five subscales can be computed: negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem. This

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widely used measure has demonstrated sound psychometric properties including good internal consistency, test-retest reliability, and stability over two weeks (Kovacs, 1981).

Panic Attack Questionnaire – Revised (PAQ-R) (Norton, 1995). The PAQ-R assesses the frequency, intensity, duration, and severity of panic attacks. Children were provided a written description of a panic attack and asked to indicate how many such attacks they experienced in the past year and past month. In addition, participants are asked to indicate the severity of 26 somatic and cognitive symptoms. Additional items assess unexpectedness, duration, distress, behavioral changes, and treatment. The PAQ-R is a reliable and valid measure of these variables (see Norton et al., 1999 and Norton, Dorwald, & Cox, 1986 for summaries). Adequate test-retest reliabilities of the PAQ-R with adult samples have been reported (Margraf & Ehlers, 1988). With respect to validity, the PAQ-R has been shown to correlate in expected ways with measures of anxiety and depression (King et al., 1993; King et al., 1996; Macaulay & Kleinknecht, 1989).

Anxiety Disorders Interview Schedule for DSM-IV Child Version (ADIS-IV-C) (Silverman & Albano, 1996). The ADIS-IV-C assesses a broad range of anxiety, mood, and externalizing disorders in youth, and screens for developmental, psychotic, and somatoform disorders. The ADIS-IV-C also addresses age of onset, impairment, and avoidance, and has been described as the premier instrument for assessing anxiety disorders in youth (Stallings & March, 1995). The ADIS-IV-C possesses the best psychometric profile for diagnosing childhood anxiety disorders of available diagnostic measures (Rapee, Barrett, Dadds, & Evans, 1994; Silverman, 1991a; 1991b; Silverman & Eisen, 1992; Silverman & Nelles, 1988; Silverman & Rabian, 1995; Silverman, Saavedra, & Pina, 2001). The interview has good interrater reliability for parent and child versions

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(Silverman & Nelles, 1988) and is sensitive to treatment effects in studies of youth with

anxiety disorders (e.g., Barrett et al., 1996; Kendall et al., 1997; Silverman et al., 1999a;

1999b). In the present study, diagnostic status was assessed using the panic attack, panic

disorder, and agoraphobia sections of the ADIS-IV-C. Agreement between clinician and

consensus diagnosis for the panic disorder section is very good (k = .93; Wood,

Piacentini, Bergman, McCracken, & Barrios, 2002).

Parent Measures

Anxiety Sensitivity Index (ASI) (Reiss, Peterson, Gursky, & McNally, 1986). The

ASI is a 16-item measure of anxiety sensitivity that assesses the degree to which an

individual believes physical symptoms will result in negative consequences (e.g., a belief

that shortness of breath will result in suffocation). Using a 4-point scale (very little, a

little, some, much), parents rate the extent to which they agree with items such as

"Unusual body sensations scare me" and "It scares me when I am nauseous." A total

score is obtained by summing items (scores can range from 0 to 64). Despite its brevity,

the ASI has demonstrated adequate internal consistency (Telch, Shermis & Lucas, 1989)

and test-retest reliability (Maller & Reiss, 1992). Evidence supports the construct validity

of the ASI as well (e.g., Maller & Reiss, 1992; Peterson & Reiss, 1987; Reiss, 1991;

Reiss et al., 1986).

Anxiety Sensitivity Index-Parental Perceptions (ASIP). The ASIP is an 18-item

measure designed to assess parent's perceptions of their child's anxiety sensitivity.

Created by Drake and Kearney (2006), the measure was constructed by taking CASI

items and changing wording to reflect how parents view their child's reactions to their

anxiety symptoms. For example, the item "It scares me when I feel like I am going to

faint " was changed to "It scares my child when s/he feels faint." Endorsement of all

items utilized the same 3-point scale (none, some, a lot) as the CASI. Based on 12 participants in this study, the measure has adequate internal consistency ($a = .76$).

The extent to which parents are able to accurately report the internal states of their children can have a serious impact on the reliability of clinical diagnostic assessment. With this in mind, Beasley and Kearney (1996) investigated patterns of variance in parent and child ratings of child's stress and negative affect. They found a significant correlation between parent and child ratings with greater concordance occurring for items describing situations in which parents were likely to be active participants (e.g., difficulty going to school, being sick) compared to items describing situations in which parents are not likely to be present (e.g., uncomfortable at lunchtime, hard to discuss personal things with friends).

Beck Depression Inventory (BDI) (Beck, Rush, Shaw, & Emery, 1979; Beck & Steer, 1987; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is a widely used, 21-item self-report measure of depressive symptoms. Participants rate how much they have been distressed by symptoms during the past two weeks on a scale from 0 to 3 where higher scores indicate greater severity. Sample items include: "I do not feel sad, I feel sad much of the time, I am sad all the time, I am so sad or unhappy that I can't stand it" and "I don't cry anymore than I used to, I cry more than I used to, I cry over every little thing, I feel like crying, but I can't." Scores range between normal (0-9) and severely depressed (30-63). Many studies have supported the reliability and validity of this measure. Furthermore, the BDI has demonstrated high internal consistency for non-clinical populations (Beck, Steer, & Garbin, 1988) as well as good concurrent validity with other measures of depressive symptoms (Beck, Epstein, Brown, & Steer, 1988).

The Brief Symptom Inventory (BSI) (Derogatis, 1993). The BSI is the brief

version (53 items) of the Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1992),

a widely used measure that assesses current symptoms of psychological distress in adults.

The instrument requires respondents to endorse the degree of distress accompanied by

symptoms that occurred in the past seven days. Distress was gauged using a 5-point scale

(not at all, a little bit, moderately, quite a bit, extremely). Sample symptoms include:

"Nervousness or shakiness inside" and "suddenly scared for no reason." Respondents

receive T scores based on normative data. High T scores indicate the presence of

psychopathology and low T scores imply the absence of psychopathology. Subscales

include somatization, obsessive-compulsive disorder, interpersonal sensitivity,

depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. The

Global Severity Index (GSI) is a summary score that was used as a measure of general

psychological distress. The GSI has acceptable interitem and test-retest reliability. The

BSI has been used widely with clinical and non-clinical populations and reportedly has

excellent psychometric properties (Boulet & Boss 1991; Derogatis & Melisaratos 1983).

Furthermore, Derogatis and Spencer (1982) recommended that a GSI T-score of 63 be

used for determining clinically relevant levels of psychological distress on the BSI.

Demographics. Parents were asked to respond to items regarding standard

demographic variables and contact information. Demographic variables included age,

gender, race, education, occupation, income, number of children, and marital status.

Workshop Measures

The following measures were created by the primary investigator to assess

participants' opinions regarding the workshop. These measures were given to children

and parents after completing the workshop.

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Treatment Satisfaction and Credibility Inventory (TSCI). Participants were asked to anonymously complete a questionnaire evaluating the workshop and workshop leader. Specifically, they were asked to rate degree of satisfaction with the workshop and workshop leader on a 5-point scale (1 = very unsatisfied, 2 = somewhat unsatisfied, 3 = neither satisfied nor unsatisfied, 4 = somewhat satisfied, 5 = very satisfied). In addition, participants were asked to anonymously complete a questionnaire to rate how helpful they thought the tools learned in the workshop would help decrease anxiety on a 5-point scale (1 = not at all helpful, 2 = somewhat helpful, 3 = moderately helpful, 4 = quite helpful, 5 = extremely helpful).

Treatment Integrity Checklist (TICL). When available, a trained graduate student evaluated the workshop leader's adherence to a standardized workshop protocol. When a trained graduate student was not available, the workshop leader completed the TICL. This was to ensure that workshop groups received the same information. Workshop and dependent measures are presented in the Appendix.

Procedure

Stage 1: Recruitment, initial screening, and group assignment

Approval from the UNLV Social Behavioral Sciences Institutional Review Board in conjunction with the Office for the Protection of Research Subjects (OPRS) was obtained. Next, participants were recruited from two communities: Las Vegas, Nevada and Norfolk, Nebraska. Recruitment strategies included: 1) mass media and advertising using newspapers, magazines, radio, internet, and television, 2) large-scale distribution of letters, informational flyers, and newsletters, and 3) in-person meetings with representatives of schools, churches, and organizations that attract youth and parents.

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With respect to mass media and advertising, in Las Vegas a press release informed the public of the study and requested volunteers. The press release resulted in a live television interview, an article in UNLV magazine, and a posting on the main UNLV website. Additional advertisements that included a brief description of the study and requested volunteers were placed in a high circulation newspaper. In Norfolk, advertisements and announcements appeared in two local newspapers and four local radio stations announced upcoming workshops.

Large-scale distribution of letters, flyers, and newsletters occurred in both communities. Informational flyers that included a brief description of the study and requested volunteers were placed in schools, libraries, grocery stores, and hair salons. Flyers were distributed local pediatricians, family practice physicians, churches, youth groups, Boys/Girls Clubs, and Boy/Girl Scouts.

Finally, in-person meetings with representatives of schools, churches, and organizations that attract youth and parents resulted in distribution of flyers. In addition, meetings with personnel from parent advocacy groups, support groups, secular and non-secular youth group coordinators, outreach coordinators, and outpatient practitioners resulted in newsletter announcements and flyers that were mailed to several hundred people. The primary investigator also attended morning and afternoon sessions of religious worship on four occasions. Saint Thomas More has one of the largest congregations and youth groups in Henderson, Nevada. During Mass, the pastor announced the workshop and directed interested parents to the primary investigator. Finally, public and private school counselors, school psychologists, and principals were contacted and provided information about the workshop as well as flyers to distribute to parents. Information about the workshop was included in a school newsletter distributed

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to all teachers in the Clark County School District (the fifth largest public school district in the United States). Advertisements were also distributed to several hundred parents of school-aged children and adolescents by attaching letters and flyers to report cards. All media and advertisements included a contact telephone number and email address so interested participants could contact the primary investigator (Kelly Drake).

Responses to advertisements were routed through the psychology department office at UNLV, the primary investigator's office at the Norfolk Regional Center, and via email to the primary investigator. Messages given to the primary investigator (PI) included the prospective participant's name and home telephone number. Once the PI received an inquiry from an interested parent, the PI returned the telephone call or email message to the parent. During this initial contact, the PI provided detailed information about the study and obtained verbal consent from the parent and child prior to further screening. The PI did not speak to a child until verbal consent was obtained from the parent. In addition to information regarding the nature of the study, parents and children were informed that they had the right to refuse to answer any question and/or withdraw from the study at any time without loss of benefit. They were given contact information for the PI's research advisor (Christopher Kearney, Ph.D.) as well as the Office of Sponsored Programs if they had questions about the study or their rights as study participants. Once verbal consent was obtained, eligibility was assessed during a brief telephone interview.

To facilitate adequate distribution of important sample characteristics and avoid possible confounds, participants were expected to be matched on gender, age, and level of AS. However, given the overall poor response to recruitment efforts, participants were

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initially assigned to the PPW condition. The WL condition consisted of individuals interested in attending the workshop but unable to do so for various reasons.

For participants assigned to PPW condition, parent-child dyads were scheduled to participate in one five-hour workshop. Workshops occurred on Saturdays (9:00am – 2:00pm). Workshops were capped at five dyads to maximize the effectiveness of the workshop's individualized components.

Dyads assigned to the WL control condition were given information regarding their role in the study. These individuals, once they consented, participated in initial assessments and three-month telephone follow-up. After follow-up, the workshop was offered to all WL participants. However, all WL dyads declined participation in the workshop.

Stage 2: Prevention workshop

Dyads assigned to the PPW group participated in a five-hour, single-session workshop. A total of three workshops were held. The first workshop consisted of five parent-child dyads and was held at Saint Thomas More, a Catholic church in Henderson, Nevada. The second and third workshops, attended by two dyads each, were held at the Norfolk public library in Norfolk, Nebraska. To increase participation, four newspaper advertisements listed specific dates, times, and locations of additional workshops. Unfortunately, these workshops were cancelled due to lack of attendance.

At the beginning of the workshop, the primary investigator welcomed participants, provided a description of the study, and presented an outline of the workshop. Participants were informed of their right to refuse participation in the workshop as well as their right to withdraw from the study at any time, without having to provide a reason, and without loss of benefit. In addition, participants were informed that

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data were kept confidential, that data were summarized in a large, anonymous pool, and that their names were not associated with future publications or other written materials. Following this information, participants provided written informed consent and completed pre-workshop assessments.

Next, the PI led a psychoeducational discussion regarding the nature and treatment of anxiety. The presentation was child-friendly and supplemented with visual stimuli. Parents were involved in all aspects of the workshop. Next, empirically-supported treatment techniques were presented and practiced. Those techniques included breathing retraining (e.g., deep diaphragmatic breathing), progressive muscle relaxation (tensing and loosening major muscle groups), and interoceptive exposure to mild fear-producing stimuli (e.g., running in place to simulate rapid heart rate and breathing rapidly through a straw to simulate lightheadedness). Following discussion of interoceptive exercises, participants watched a short video documentary (approximately seven minutes) on treatment of panic. Snacks and breaks were provided during the last 5-10 minutes of each hour. Parents and youth were encouraged to participate actively, ask questions, and share experiences throughout the workshop. In addition, at the end of the workshop, participants completed measures of treatment satisfaction and credibility. Because the discussions, techniques, and interoceptive exercises might have produced mild to moderate levels of anxiety, each child was closely monitored for signs of discomfort. The primary investigator was prepared to intervene should any individual require assistance, but this was unnecessary.

Stage 3: Follow-up

Three months following the workshops, child-parent dyads in the PPW group were contacted via telephone. Participants in the WL group were contacted three months

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following initial assessment. Verbal consent was obtained and participant's rights to withdrawal or to refuse questions were reiterated. Youth participants completed orally administered versions of the CASI, PAQ-R, and MASC. Research has demonstrated little difference in diagnostic information obtained from interviews conducted in-person compared to those conducted over the telephone (Fenig, Levav, Kohn, & Yelin, 1993; Wells, Burnam, Leake, & Robins, 1988). The telephone assessment lasted approximately 15 minutes. Therapeutic instructions or interventions which, if provided, could jeopardize the study's results were avoided.

Data Analyses

Workshop effectiveness was evaluated by comparing workshop and waitlist groups on measures of anxiety sensitivity, general anxiety, and panic attack frequency and severity. Workshop participants completed dependent measures before (Time 1) and three months following the workshop (Time 2). Waitlist participants completed dependent measures upon enrollment in the study (Time 1) and three months later (Time 2). Compared to waitlist participants, workshop participants were expected to have lower anxiety sensitivity (CASI) and general anxiety scores (MASC) at Time 2. In addition, workshop participants were expected to have less frequent and less severe panic attacks (PAQ-R) at Time 2. For waitlist participants, anxiety sensitivity, general anxiety, and panic attack frequency and severity were expected to remain stable or increase from Time 1 to Time 2.

Given the small sample, parametric tests were not appropriate because assumptions of independence, normality, and homogeneity of variance could be violated. Such violations impose limits on the integrity and stability of statistical analyses. Random assignment would have helped ensure independence. However, given the overall

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poor response to recruitment, participants were entered into the workshop group first in hopes of obtaining an adequate number of participants in the treatment group. Therefore, nonparametric tests were used to evaluate hypotheses.

Initially, Mann-Whitney tests were used to detect possible preexisting group differences. Workshop and waitlist groups were compared on key demographic variables including age, gender, race, and location (Las Vegas and Norfolk). Because participants were recruited from the community using various forms of mass media and advertising, workshop and waitlist participants were expected to be demographically similar.

For Time 1 dependent variables, descriptive statistics were calculated for the entire sample. Dependent variables included level of anxiety sensitivity, general anxiety, panic attack frequency and severity, panic disorder and agoraphobia, and depressive symptoms. Next, gender, location, and group (workshop and waitlist) differences were examined using Mann-Whitney tests. No gender, location, or group differences were expected for any dependent variable.

Parallel analyses were conducted for Time 2 dependent variables. Time 2 dependent variables included anxiety sensitivity, general anxiety, and panic attack frequency and severity. Initially, descriptive statistics were calculated for the entire sample. Then, each dependent variable was subject to gender, location, and group (workshop and waitlist) comparisons using Wilcoxon's Signed Ranks and Mann-Whitney tests. Of these comparisons, only differences related to group assignment were anticipated. Specifically, compared to waitlist participants, workshop participants were expected to have lower scores on all Time 2 dependent measures.

Subsequent analyses evaluated workshop effectiveness by examining change in anxiety sensitivity and general anxiety over time. Change scores were created by

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calculating differences between Time 1 and Time 2 scores. When a Time 2 score was lower than a Time 1 score, the change score was negative. Likewise, when a Time 2 score was higher than a Time 1 score, the change score was positive. Change scores were evaluated using Mann-Whitney tests. Workshop participants were expected to have more negative change scores (Time 2 < Time 1) reflecting a reduction in anxiety-related symptomatology. Waitlist participants were expected to have more positive change scores (Time 2 > Time 1) reflecting an increase in anxiety-related symptomatology.

Data were also collected for parents at the beginning of the workshop. Parents of waitlist participants were to complete questionnaires when they attended a workshop three months following enrollment in the study. However, no waitlist participant attended a workshop. Initially, the impact of parental psychopathology on child anxiety-related symptomatology was to be evaluated. Because the workshop sample was small and data were not available for parents of waitlist participants, the number of statistical computations was restricted and these analyses were omitted.

The impact of attrition was analyzed. Every attempt was made to remain in contact with those who did not attend a scheduled workshop or participate in telephone follow-up interviews. The percentage of participants who dropped out of the study was calculated for workshop and waitlist groups. Descriptive information for each participant who dropped out was collected. Finally, workshop satisfaction and credibility ratings were tabulated and percentages were calculated.

CHAPTER 4

RESULTS

Response Rate

Despite efforts to recruit an adequate sample of participants, the overall response

was poor. An exact response rate cannot be calculated given various media and mass

advertising used to recruit participants. An in-depth analysis of factors that may have

contributed to the poor response, as well as suggestions for increasing response and

participation in future studies, is in the Discussion.

Pre-Workshop Analyses (Time 1)

To assess for possible between-group differences prior to treatment (Time 1),

several tests were used to compare participants with respect to demographic variables. In

addition, between-group differences on key dependent variables, including level of

anxiety sensitivity, general anxiety, clinically significant anxiety, panic attack frequency

and severity, and depressive symptoms, were examined.

Age, gender, race, and location

With respect to age, no differences were found between the workshop ($M = 13.67$,

$SD = 1.58$) and waitlist groups ($M = 14.30$, $SD = 1.99$), $F(1, 17) = .41$, $p = .53$. Mann-

Whitney tests indicated no differences between the two groups with respect to gender, U

$= 24$, $p = .10$; race, $U = 45$, $p = 1.00$; or location, $U = 38$, $p = .60$.

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Additional demographic variables were assessed during the workshop. Because none of the waitlist participants attended a workshop, comparisons between workshop and waitlist groups could not be made. Of the workshop participants, maternal age ranged from 30-50 years (M = 42.88, SD = 6.71) and paternal age ranged from 31-54 years (M = 44.67, SD = 7.63). Regarding education, 100% of mothers and 88.9% of fathers graduated from high school and 44.4% of mothers and fathers earned a bachelors degree. With respect to marital status, 55.6% were married, 11.1% were separated, 22.2% were divorced, and 11.1% were remarried. Total number of siblings ranged from 0-3 (M = 1.33, SD = .87). Finally, annual income ranged from $30,000 to $400,000.

Anxiety sensitivity

Table 2 summarizes means and standard deviations for workshop and waitlist groups for child, parent, and workshop dependent measures. With respect to anxiety sensitivity, total scores on the CASI (M = 26.11; SD = 4.51) and the ASIC (M = 9.07; SD = 5.40) for the entire sample were within normative range and consistent with studies using community samples of youth. Given the small sample size and potential of violating assumptions of parametric tests, nonparametric analyses were utilized. Thus, further analyses of possible differences on pre-workshop assessments were conducted using Mann-Whitney tests.

With respect to gender, males (M = 25.73, SD = 4.29) and females (M = 26.63, SD = 5.04) scored similarly on the CASI (U = 41.5, p = .84). In addition, males (M = 9.29, SD = 4.92) and females (M = 8.88, SD = 6.13) scored similarly on the ASIC (U = 24.5, p = .69).

With respect to location, no differences were found between participants from Las Vegas (M = 27.22 SD = 4.29) and Norfolk (M = 25.10, SD = 4.68) on the CASI (U =

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34.5, $p = .40$). Likewise, no differences were found between participants from Las Vegas ($M = 8.40$, $SD = 5.59$) and Norfolk ($M = 9.40$, $SD = 5.58$) on the ASIC ($U = 22.5$, $p = .77$).

With respect to group assignment, Table 3 shows that no differences existed between workshop ($M = 28.22$, $SD = 4.21$) and waitlist groups ($M = 24.20$, $SD = 4.05$) on the CASI ($U = 22$, $p = .07$). Similarly, no differences were found between workshop ($M = 9.89$, $SD = 5.21$) and waitlist groups ($M = 7.83$, $SD = 5.95$) on the ASIC ($U = 20.5$, $p = .46$).

General anxiety level

Total MASC scores ($M = 32.87$; $SD = 18.64$) for the entire sample were consistent but somewhat lower than mean scores obtained with the normative sample. No gender differences were found between males ($M = 31.14$; $SD = 17.64$) and females ($M = 34.38$; $SD = 20.56$) on MASC total scores ($U = 23$, $p = .61$). With respect to location, participants from Las Vegas ($M = 37.40$; $SD = 23.94$) and Norfolk ($M = 30.60$; $SD = 16.39$) scored similarly ($U = 21.5$, $p = .68$). Finally, as shown in Table 3, workshop ($M = 36.78$, $SD = 17.51$) and waitlist groups ($M = 27.00$, $SD = 20.35$) did not differ on MASC total score ($U = 14$, $p = .15$).

Additional pre-workshop analyses examined the four subscales and the Anxiety Disorders Index of the MASC. Means, standard deviations, and comparisons using Mann-Whitney tests are presented in Table 4. Means obtained for each subscale for the entire sample are consistent with those reported for normative samples of youth. Furthermore, no differences were found between workshop and waitlist groups for physical symptoms ($U = 14$, $p = .15$), social anxiety ($U = 17$, $p = .27$), separation/panic ($U = 17.5$, $p = .27$), or harm avoidance ($U = 20.5$, $p = .46$).

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The Anxiety Disorders Index (ADI) is an index that has demonstrated diagnostic efficiency by successfully classifying children and adolescents based on diagnostic status. March (1997) claimed the index can be used to identify children and adolescents likely to meet diagnostic criteria for an anxiety disorder. On this index, a T score of 65 or above indicates clinically significant anxiety. Only one female participant, from the workshop group, scored in the clinically significant range during the pre-workshop assessment ($t = 67$). In addition, no differences were found between workshop and waitlist groups ($U = 14.5, p = .15$).

Panic attack frequency and severity

For the entire sample, PAQ-R scores indicated that 3 of 19 (15.8%) participants had at least one panic attack during pre-workshop assessment, a finding consistent with community estimates of panic attack prevalence. Only 1 of those 3 participants reported that panic attacks occurred "out of the blue." With respect to gender, two participants with panic attacks were male. No gender differences were found for number of panic attacks in the past twelve months ($U = 42.5, p = .90$), number of panic attacks in the preceding four weeks ($U = 41.5, p = .84$), or severity of panic attack symptoms ($U = 41.5$, $p = .84$).

With respect to location, two participants with panic attacks lived in Norfolk. No differences were found between participants living in Norfolk and Las Vegas for number of panic attacks in the past twelve months ($U = 40, p = .72$), number of panic attacks in the preceding four weeks ($U = 41, p = .78$), or severity of panic attack symptoms ($U = 40$, $p = .72$).

Table 5 shows results of comparisons between workshop and waitlist groups using Mann-Whitney tests. Of the three participants who reported panic attacks, two were

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in the workshop group and one was in the waitlist group. No differences were found

between workshop and waitlist groups for number of panic attacks in the past twelve

months ($U = 39.5, p = .66$), number of panic attacks in the preceding four weeks ($U =$

$39.5, p = .66$), or severity of panic attack symptoms ($U = 40.5, p = .72$).

Panic disorder and agoraphobia

Workshop participants were evaluated using the Anxiety Disorders Interview

Schedule for Children (ADIS-IV-C). Results indicated that one female participant living

in Norfolk met diagnostic criteria for a panic attack but not for panic disorder or

agoraphobia.

Depressive symptoms

Only those participants in the workshop group completed the CDI. Youth scored

in the normative range on this measure ($M = 6.44, SD = 5.34$) and no gender ($U = 9, p =$

1.00) or location ($U = 7, p = .56$) differences were found.

Post-Workshop Analyses (Time 2)

Attrition

Workshop participants completed follow-up assessments three months after the

workshop and waitlist participants completed follow-up assessments three months after

initial assessment. Two male participants from the waitlist group could not be contacted

during the three-month follow-up phase because their telephone numbers had changed

and/or had been disconnected. Directory Assistance and Internet searches to locate these

participants were unsuccessful. One male participant from the waitlist group and one

female from the workshop group declined follow-up assessments. One male workshop

participant completed part of the follow-up (the CASI and PAQ-R) but declined to

complete the MASC. Thus, in terms of follow-up assessments, 70.0% of the waitlist

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group completed the CASI, MASC, and PAQ-R. Among workshop participants, 88.9% completed the CASI and PAQ-R and 77.8% completed the MASC. These percentages should be interpreted with caution given the small sample.

Results of follow-up analyses are presented next. Workshop effectiveness was evaluated using nonparametric tests. Specifically, workshop and waitlist groups were compared with respect to Time 2 level of AS, general anxiety, and frequency and severity of panic attacks. Time 1 refers to pre-workshop assessments and Time 2 refers to three-month follow-up assessments.

Anxiety sensitivity

Wilcoxon's Signed Ranks test yielded no difference between CASI Time 1 and CASI Time 2 ($T = -.32, p = .75$) for the entire sample. No gender ($U = 18, p = .28$) or location ($U = 16, p = .31$) differences were found for Time 2 CASI scores. As shown in Table 6, further analysis of CASI Time 2 data revealed no difference between workshop and waitlist groups ($U = 25, p = .78$). Change in anxiety sensitivity over time was evaluated by calculating the difference between CASI Time 1 and Time 2 scores. Workshop and waitlist groups did not differ in CASI scores over time ($U = 20.5, p = .40$). However, when scores were plotted (see Figure 1), a trend emerged in which CASI scores decreased from Time 1 to Time 2 for the workshop group and increased from Time 1 to Time 2 for the waitlist group.

General anxiety level

For the entire sample, Wilcoxon's Signed Ranks test yielded no difference between total scores on MASC Time 1 and MASC Time 2 ($T = -1.71, p = .09$). In addition, no gender ($U = 11, p = .10$) or location ($U = 11, p = .24$) differences were found for Time 2 MASC scores. Table 6 also shows analysis of MASC Time 2 data for

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workshop and waitlist groups. No difference was found between groups ($U = 23, p = .90$). Change in MASC total scores over time (MASC Time 2 minus MASC Time 1) yielded no difference between workshop and waitlist groups ($U = 11, p = .18$). When MASC total scores were plotted (see Figure 2), another trend emerged in which MASC scores for both groups increased from Time 1 to Time 2. Closer examination of this trend revealed that the waitlist group appeared to sustain a more dramatic increase compared to the workshop group.

Additional analyses examined MASC subscales and ADI. No gender or location differences were found on these scales. Analyses comparing workshop and waitlist groups with respect to MASC subscales and ADI at Time 2 are presented in Table 7. As shown, no differences were found between groups for physical symptoms ($U = 21.5, p = .71$), social anxiety ($U = 24, p = 1.00$), separation/panic ($U = 23, p = .90$), harm avoidance ($U = 20, p = .62$), or ADI ($U = 22, p = .80$). Change in subscale and ADI scores over time was evaluated by calculating the difference between Time 1 and Time 2 scores. Results are presented in Table 8. No differences were found between workshop and waitlist groups for MASC subscales.

On the ADI, waitlist participants had a significant increase in ADI scores from Time 1 to Time 2 compared to workshop participants ($U = 6.5, p = .04$). Furthermore, Time 1 analysis of the ADI revealed one female participant who scored in the clinically significant range ($t = 67$). Following the workshop, during three-month follow-up, her score decreased ($t = 62$) and no longer indicated clinically significant anxiety. No other participant from either group scored in the clinically significant range on this index.

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Panic attack frequency and severity

During pre-workshop assessment, 3 of 19 (15.8%) participants had panic attacks in the four weeks preceding that assessment. During follow-up, 2 of 15 (13.3%) had panic attacks in the four weeks preceding that assessment. With respect to panic frequency, no gender ($U = 21, p = .46$) or location ($U = 23, p = .86$) differences were found. Similarly, no gender ($U = 21, p = .46$) or location ($U = 23, p = .86$) differences were found for severity of panic symptoms. Table 9 shows no difference between workshop and waitlist groups in terms of frequency ($U = 20, p = .40$) and severity ($U = 20, p = .40$) of panic attacks in the four weeks prior to Time 2.

Table 10 summarizes descriptive data for workshop and waitlist groups with respect to frequency of panic attacks during the four weeks preceding assessment, and severity of panic attack symptoms during Time 1 and 2. Among workshop participants, two important findings emerged. First, at Time 1, one female met diagnostic criteria for a panic attack but not panic disorder or agoraphobia. Based on the PAQ-R, she also indicated having experienced one panic attack in the four months preceding pre-workshop assessment. That same participant had no panic attacks in the four weeks preceding the three-month follow-up. Second, a male participant from the workshop group (who did not meet diagnostic criteria for a panic attack) had one panic attack in the four weeks preceding Time 1 and no panic attacks in the four weeks preceding Time 2.

Among participants in the waitlist group, one male participant had one panic attack in the four weeks preceding Time 1 and reportedly had two panic attacks in the same period during Time 2. Finally, another male participant who had no panic attacks during Time 1 reported one panic attack during Time 2.

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Workshop evaluation

Table 11 summarizes the frequency of ratings for the three post-workshop measures. Most child-parent dyads were at least somewhat satisfied with the workshop and workshop leader. In addition, most dyads found the workshop quite helpful or better. Specifically, youth were very satisfied (n = 6, 66.7%), somewhat satisfied (n = 2, 22.2%), and neither satisfied nor unsatisfied (n = 1, 11.1%) with the workshop. With respect to the workshop leader, youth were very satisfied (n = 7, 77.7%), somewhat satisfied (n = 1, 11.1%), and neither satisfied nor unsatisfied (n = 1, 11.1%). Finally, youth found the workshop extremely helpful (n = 1, 11.1%), quite helpful (n = 4, 44.4%), moderately helpful (n = 2, 22.2%), somewhat helpful (n = 1, 11.1%), and not at all helpful (n = 1, 11.1%).

Parents were very satisfied (n = 2, 22.2%), somewhat satisfied (n = 5, 55.5%), neither satisfied nor unsatisfied (n = 1, 11.1%), and very unsatisfied (n = 1, 11.1%) with the workshop. With respect to the workshop leader, parents were very satisfied (n = 4, 44.4%), somewhat satisfied (n = 3, 33.3%), and very unsatisfied (n = 2, 22.2%). Finally, parents found the workshop extremely helpful (n = 2, 22.2%), quite helpful (n = 3, 33.3%), moderately helpful (n = 2, 22.2%), somewhat helpful (n = 1, 11.1%), and not at all helpful (n = 1, 11.1%).

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CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Although the high prevalence, associated impairment, and chronic nature of pediatric anxiety disorders is well documented, little attention has been directed toward preventing these disorders. This was the first pilot study to examine the efficacy and feasibility of a single-session anxiety prevention workshop for youth. As such, this study adds to a sparse but growing body of research on the prevention of anxiety. With respect to efficacy, the following paragraphs summarize preliminary results obtained from the present study. Next, feasibility of conducting successful prevention workshops is examined. This section describes how this pilot study evolved over time to accommodate methodological predicaments, particularly those related to recruitment, that were encountered. The limitations of these pilot data, methods utilized to collect data, and issues related to generalizability are discussed. Finally, implications for research and clinical work are presented and recommendations for future research are offered.

Efficacy of Anxiety Prevention Workshop for Youth

In spite of vigorous efforts to recruit an adequate sample of participants for workshop and waitlist groups, overall response was poor. Nine child-parent dyads participated in the workshop group and 10 dyads participated in the waitlist group. Participants were assigned to waitlist and workshop groups based on time of entry into the pilot study rather than randomly. With small samples, insufficient power to detect

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differences between groups is a concern. In addition, the number and variety of statistical procedures was limited. Parametric statistics were inappropriate because the likelihood of violating assumptions of independence, normality, and homogeneity of variance increases with small samples. Thus, nonparametric statistics were used to test hypotheses. Nonparametric tests do not rely on the estimation of population parameters. However, because they rely on ranks rather than continuous data, they are less powerful than their parametric counterparts. Given the small samples, lack of random assignment, and nonparametric analyses, results are interpreted with caution and conceptualized in terms of trends.

Participants were self-selected and predominately European-American. Potential biases associated with a self-selected sample are inherent risks with community-based samples. Questions regarding why some parents chose to enroll their children in this prevention workshop, and why some did not, cannot be answered using present data. One might postulate that child participants had higher levels of anxiety and that this distress motivated them and/or their parents to seek help from the workshop. However, results indicated that youth in the present sample scored within the normative range on self-report measures of general anxiety, anxiety sensitivity, and depression. Another possibility might be that parents of child participants in this study value prevention in general and take advantage of opportunities that might benefit their child's psychological well-being. Or, parents in this sample may have had previous experience with excessive anxiety and wanted to take precautions to prevent that from happening to their children. These and other explanations for motivation, and how motivation can be enhanced should be explored systematically in the future.

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Initial analyses of possible preexisting demographic differences between workshop and waitlist groups were examined. Results indicated no differences between the two groups with respect to age, gender, race, or location. Therefore, the possibility that key demographic variables might account for post-workshop group differences is unlikely.

The finding that males and females scored similarly on measures of anxiety sensitivity, general anxiety, and depression in this study is surprising given a wealth of studies reporting that females tend to score higher on these self-report measures (Ginsburg & Silverman, 2000; Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998; March, 1997). Because more males than females were in this study and the overall sample size was quite small, statistical comparisons were especially sensitive to potential outliers and could have distorted group means.

Though participants were recruited from two very different communities, they scored similarly on demographic variables (age, gender, race) and pre-workshop dependent measures (anxiety sensitivity, general anxiety, depression). Thus, small community samples of youth from an urban community were more similar than different when compared to youth from a rural community in terms of anxiety-related symptomatology. Unfortunately, no studies have examined phenomenological differences and similarities in anxiety among youth from urban and rural environments.

Pre-workshop comparisons based on group assignment also yielded no differences between groups. Workshop and waitlist participants scored in the normative range and did not differ with respect to anxiety sensitivity, general anxiety, panic attack symptomatology, or depression. Taken together, youth in the present study evinced a

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level of anxiety-related symptomatology consistent with non-clinical, community samples.

Results of three-month follow-up data failed to detect significant differences between workshop and waitlist groups with respect to level of anxiety sensitivity, general anxiety, and panic attack frequency and severity. Anxiety Disorders Index change scores (i.e., Time 2 minus Time 1) suggest that waitlist participants experienced a significantly greater increase in anxiety symptoms over time compared to workshop participants.

Based on this finding, the prevention workshop appeared ineffective in reducing overall anxiety-related symptoms. However, such a conclusion is premature for several reasons. First, a trend existed for the workshop group to have a somewhat lower level of anxiety sensitivity three months following the prevention workshop, suggesting that they may have benefited from coping skills and psychoeducation presented in the workshop. Conversely, the waitlist group had a somewhat higher level of anxiety sensitivity during the three-month follow-up, suggesting that anxiety sensitivity symptoms may have worsened slightly for those individuals who did not participate in the prevention workshop. Although this finding was not statistically significant, a trend for workshop participants to experience less anxiety sensitivity over time is promising.

Second, no differences were found between the two groups with respect to general level of anxiety during the three-month follow-up. However, a trend existed for workshop participants to have somewhat higher means on all subscales (Physical Symptoms, Social Anxiety, Harm Avoidance, and Separation/Panic) compared to waitlist participants during initial assessment, but somewhat lower means than waitlist participants during follow-up on all subscales except Separation/Panic subscale. Again,

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all scores (for both groups) were within the normative range on these subscales during both assessment periods and differences were not statistically significant.

Third, when clinically significant anxiety was examined using the Anxiety Disorders Index (ADI) from the MASC, one female participant from the workshop group scored in the clinical range during the pre-workshop assessment. Following the workshop, during the three-month follow-up, her score decreased and no longer indicated clinically significant anxiety. The ADI is an especially useful and sensitive index that has demonstrated diagnostic accuracy (March, 1997). This finding suggests that one participant with excessive anxiety prior to the workshop may have benefited from psychoeducational, skills training, and interoceptive components of the workshop. Alternatively, her initial self-reported anxiety may have been exaggerated or influenced by other factors, such as the presence of her mother or unknown peers who were also completing assessments prior to the start of the workshop. In addition, her follow-up assessment may have been influenced by unknown factors. As part of the follow-up, youth were asked if they received pharmacological or psychological therapy since their initial assessment. This participant denied receiving any form of treatment. Thus, her reduced anxiety may be related to her participation in the prevention workshop.

Fourth, a trend existed for workshop participants to experience fewer and less severe panic attacks following the workshop. At the same time, waitlist participants experienced more frequent and more severe panic attacks over the three months following their initial assessment. Conclusions regarding workshop effectiveness with respect to reducing panic attack symptomatology are limited by the small sample. However the trend is promising and warrants future investigation. Larger samples of

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youth are needed to determine if the prevention workshop is effective in reducing panic attack symptomatology.

In addition, a surprising trend related to gender was noticeable. Specifically, among youth who experienced at least one panic attack, three were male and one was female. This finding, though not statistically significant, is inconsistent with empirical literature examining the phenomenology of child anxiety. Traditionally, the literature suggests that panic occurs infrequently among youth (Kearney & Silverman, 1992; Nelles & Barlow, 1988) and females are likely to be more anxious when compared to male counterparts (Ginsburg & Silverman, 2000; Lewinsohn et al., 1998; March, 1997). The same was not true among the small number of participants in this study. One explanation is that the occurrence of panic among males appears exaggerated because of the small sample size. On the other hand, male subjects who participated in this study may have been genuinely distressed and willing to engage in a prevention workshop to help alleviate their suffering.

Another particularly unexpected finding was a trend in which level of general anxiety increased slightly for both groups from pre- to post-workshop assessments. As expected, waitlist participants evinced a more dramatic increase in level of anxiety compared to workshop participants. However, increase in anxiety among workshop participants was unexpected. Of course, even with the slight increase in scores over time, scores for both groups remained in the normative range. One possible explanation is the difference in administration of dependent measures. Specifically, during initial assessment, youth completed measures independently. However, during follow-up assessment, items were read aloud over the telephone and youth were asked to verbally indicate their responses. Although research has demonstrated little difference in

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diagnostic information obtained from interviews conducted in-person compared to those conducted over the telephone (Fenig, Levav, Kohn, & Yelin, 1993; Wells, Burnam, Leake, & Robins, 1988), youth may have been impacted by the difference in format. For example, hearing an adult read items such as "I feel tense or uptight" might impact the meaning of the item (perhaps clarifying the meaning) and influence the way youth respond to test items. At the same time, the paper-and-pencil version provides visual anchors indicating varying levels of distress that were not as readily apparent when response options were read aloud. Thus, not having visual cues could have influenced the way youth responded to test items.

Another possible explanation is that youth who participated in the workshop learned to pay more attention to their internal states, including symptoms of anxiety, and were able to give an accurate appraisal of physical and emotional experiences. Youth who participated in the workshop were provided psychoeducation and interoceptive experiences designed to teach youth to attend to internal states, understand physiological mechanisms that produce arousal in the presence of fear/anxiety, and practice anxiety management skills to lower level of arousal and anxiety. Thus, youth may have left the workshop with a greater appreciation of what terms such as "tense or uptight" mean and how they experience such emotional states.

Finally, the relatively low level of distress reported in both groups should also temper conclusions regarding workshop effectiveness. Workshop and waitlist participants reported a normative level of anxiety-related symptoms. Such floor effects make it difficult to detect changes following a preventative intervention. Whether similar results would be obtained with larger samples of youth, or with samples of youth who are at-risk for pathological anxiety, is unknown.

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Overall trends suggest that workshop participants had a somewhat lower level of anxiety sensitivity, less clinically significant anxiety, and less frequent panic attacks three months following the prevention workshop. Conversely, waitlist participants had a somewhat higher level of anxiety sensitivity, a larger increase in clinically significant anxiety, and more frequent panic attacks three months following initial assessment. Thus, workshop participants were better equipped to manage anxiety compared to their peers who did not participate in the workshop. Future evaluation of prevention workshop effectiveness will require larger, more diverse, samples of youth. Therefore, obstacles encountered in this pilot study are presented next. In addition, suggestions for enhancing workshop effectiveness and recruiting larger samples are provided.

Feasibility of Anxiety Prevention Workshop for Youth

The proposed methodology originally indicated that parent/child dyads would be recruited and screened for inclusion/exclusion criteria. The desired sample was to consist of youth aged 12-17 years who spoke English and had elevated anxiety sensitivity scores and no diagnosis of any other anxiety or behavioral disorder. Because studies found that high anxiety sensitivity contributes to higher levels of anxiety symptomatology and places youth at risk for developing anxiety/panic disorder(s) (Ginsburg & Drake, 2002; Hayward, Killen, Kraemer, & Taylor, 2000; Lau, Calamari, & Waraczynski, 1996), this criterion was proposed to identify an at-risk sample of youth. An at-risk sample was expected to benefit most from the present prevention program because these youth are likely experiencing discomfort and fear associated with anxiety symptoms, but have not yet developed severe, persistent symptoms and avoidance associated with a disorder.

Despite painstaking efforts to recruit a sample large enough to screen participants for high anxiety sensitivity (see below for review), the response rate was insufficient to

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permit enforcing an inclusion criterion related to elevated anxiety sensitivity scores. The criterion related to elevated anxiety sensitivity scores was omitted and the need to conduct pre-workshop screening assessments was eliminated. Thus, the obtained sample differed from the proposed sample in that the obtained sample does not represent an at-risk group of youth but a general community sample with varying levels of anxiety sensitivity.

The change in sample composition (at-risk versus community) was unanticipated but remains consistent with current theoretical conceptualizations of mental health preventative strategies. Specifically, Gordon (1987) described three approaches to preventative interventions: universal, selected, and indicated. According to this conceptualization, a universal approach targets an entire population of individuals regardless of risk for developing a particular disorder. The goal of a universal approach is to reduce the overall incidence of a disorder. A selected approach targets individuals at risk for developing a disorder so early interventions can reduce risk factors and prevent new cases of the disorder. Finally, an indicated approach targets individuals demonstrating subclinical symptoms of a particular disorder and the goal is to prevent these individuals from developing the disorder (Gordon, 1987). Thus, the present study shifted from a selected to a universal approach to prevention.

The proposed methodology also indicated a desired sample size of 40 participants in the workshop group and waitlist control group. As mentioned above, painstaking efforts to recruit participants failed to yield desired sample size. To analyze difficulties encountered with data collection for the present pilot study, five main factors are explored. Factors related to the youth, their parents, recruitment procedures, the workshop itself, and prevention programming in general are examined in detail next.

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Factors related to youth

First, factors related to youth themselves may have prevented them from participating in the prevention workshop. Youth may have been hesitant to participate for various reasons. A few studies examined obstacles that inhibit youth from seeking help. Sheffield, Fiorenza, and Sofronoff (2004) noted that many adolescents with psychopathology do not seek help from mental health professionals. To investigate variables that increased and decreased likelihood of help-seeking behavior among youth, Sheffield et al. (2004) had adolescents complete measures that assessed attitudes toward mental disorders and willingness to seek assistance to cope with psychological symptoms. The authors found adolescents to be more willing to seek services if they had fewer barriers to help seeking, higher levels of psychological distress, greater adaptive functioning (or perceived self-efficacy), and social support. Perceived barriers identified by youth included affordability, not knowing where to go for help, and feeling that services would not be helpful. Adolescents were more likely to seek help for emotional and behavioral problems from informal sources such as friends and family members than from formal sources such as doctors, psychologists, and counselors (Sheffield et al., 2004).

Similarly, Rickwood, Deane, and Wilson (2005) identified several variables that prevented youth from seeking help for mental health problems. These variables included lack of emotional competence, negative attitudes about seeking help for mental health problems, and fear of being stigmatized by peers. Many obstacles thus preclude youth from seeking formal help for mental health problems.

While participation in a prevention workshop is not the same as seeking formal help from a professional, adolescents may have perceived the workshop as formal

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treatment. Youth may have believed that the workshop would not be as beneficial as seeking help from friends and/or family. Even if their parents discussed the possibility of attending the workshop with them, they may have been reluctant to do so for various reasons. For example, youth may hold negative attitudes toward prevention programs similar to attitudes about seeking help for mental health problems (Rickwood et al., 2005). In addition, they may have been fearful of social stigma and overly concerned about what other members of the workshop would think of them.

If youth were experiencing anxiety, especially social anxiety, they may have been especially fearful of attending a workshop with strangers. Fears such as going to a new place, the possibility of talking in front of others, and the chance of being evaluated in some capacity may have deterred youth from participating in the workshop. At the same time, however, the group therapy format for treating youth with anxiety disorders (including social phobia) is successful (Albano et al., 1995; Flannery-Schroeder, Choudhury, & Kendall, 2005; Flannery-Schroeder, & Kendall, 2000; Ginsburg & Drake, 2002; Silverman, Kurtines, & Ginsburg, 1999) and the group setting is not a significant barrier to recruitment.

At least two important differences exist between youth recruited for a therapy group and those recruited for the present workshop. First, youth recruited for therapy groups traditionally meet with a therapist or group leader and received information about what they can expect prior to beginning the group. This may help alleviate initial anxiety associated with joining a group with unfamiliar peers. The same advantage was not afforded youth in the prevention workshop. Workshop participation may have been enhanced if youth had the opportunity to meet with the workshop leader prior to beginning the workshop.

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Second, youth who participate in therapy groups reported in the child anxiety treatment literature are generally referred to groups by outpatient clinics and university-based counseling centers where research studies are conducted. For the present study, outpatient referrals were not a source of recruitment as the initial goal was to target an at-risk sample of youth rather than youth already diagnosed with an anxiety disorder.

Finally, research suggests that youth with higher levels of distress are more likely to seek formal sources of help compared to those not experiencing distress (Sheffield et al., 2004). Perhaps youth targeted in the present recruitment campaign who were in distress were already receiving formal treatment from other sources. Conversely, youth who were not in distress may have lacked motivation to spend their free time engaging in prevention for something that is not perceived as a problem for them. These possibilities are speculative and need to be subjected to empirical analysis before definitive conclusions can be made.

Factors related to parents

Second, factors related to parents may have accounted for nonparticipation in the prevention workshop. Workshop recruitment placed heavy reliance on parents to identify their children as needing professional help to better manage anxiety. Research suggests that parents are adept in identifying behavioral problems but are not well informed about their children's internal states (Beasley & Kearney, 1996; Kashani et al, 1985; Stanger & Lewis, 1993). Relatedly, anxious youth do not typically demonstrate disruptive behaviors that create distress for parents and motivate them to seek help. Thus, parents may be unaware that their child might be struggling with anxiety or fear and underestimate the benefit of participating in a preventative workshop. This could negatively impact the perceived costs, in terms of time, effort, and motivation to attend the workshop.

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Because distress predicts help seeking behavior (Sheffield et al., 2004), parents of youth beginning to experience difficulty managing anxiety were expected to be particularly interested in a free prevention workshop. At the same time, however, research suggests that parents of anxious children may share some common characteristics that could inhibit them from taking advantage of such a workshop. Specifically, parents of children with anxiety disorders are described as controlling, rejecting (Grüner et al., 1999; Rapee, 1997), anxious (Muris & Merckelbach, 1998), and overprotective (Rubin & Mills, 1990; Rubin, Mills, & Krasnor, 1989). Muris and Merckelbach (1998) postulated that children who perceive their parents as overly controlling are likely to have fewer opportunities to experience unfamiliar events or people. Furthermore, children reared in strict households are more shy and dependent compared to those reared in less strict environments. These features are commonly associated with anxiety pathology and may impede help seeking behavior.

Furthermore, parents may inadvertently reinforce their children's avoidant behavior by modeling and rewarding anxious/avoidant approaches to problem-solving (Barrett, Rapee, Dadds, & Ryan, 1996). Family aggregation studies also suggest that parents of anxious children are anxious themselves (Beidel & Turner, 1997; Turner, Beidel, & Costello, 1987; Warner, Mufson, & Weissman, 1995; Whaley, Pinto, & Sigman, 1999). Thus, parents of children with difficulty managing anxiety might have problems managing their own anxiety and tend to perceive novel situations, such as attending a prevention workshop, as threatening and react with avoidance. Parenting practices and parents' own psychopathology may thus account for difficulties in recruitment.

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Factors related to recruitment procedures

Third, factors related to recruitment procedures warrant examination. Procedures used in the present study included diverse forms of media advertising that are described in the following paragraphs. These procedures are consistent with traditional methods of recruitment (Stanley & Kovacs, 2003). Determining the response rate was impossible because of recruitment methods. Specifically, the proportion of individuals who saw advertisements and actually participated in the study is unknown. Advertisements were placed in high circulation newspapers and other forms of media that should have reached a large number of people.

Advertising campaigns took place Las Vegas, Nevada and Norfolk, Nebraska. Las Vegas is a major metropolitan area in Clark County with a population of approximately 1-2 million people. In Las Vegas, advertisements were placed in a high circulation local newspaper. A press release included information about the workshop and led to the publication of several news-related stories in widely read magazines and websites. In addition, a brief television interview with the workshop leader aired on a local news network. Local organizations that attract youth and parents were contacted by telephone and sent letters and flyers to publicize the workshop. Hundreds of informational flyers were distributed local pediatricians, family practice physicians, churches and youth groups, Boys and Girls Clubs, Boy and Girl Scouts, libraries, grocery stores, and hair salons. Public and private school principals and counselors were contacted and provided information about the workshop as well as flyers to distribute to parents. The local school district agreed to print information about the workshop in the school newsletter distributed to all teachers in the Clark County School District (the fifth largest school district in the United States).

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Norfolk is a rural community with a population of approximately 23,000 people. In Norfolk, several newspaper advertisements were placed in the town's only local newspaper. In addition to paid advertisements, the newspaper printed an ongoing announcement about the workshops in the "Upcoming Events" section. These advertisements and announcements were also accessible on the Internet. Radio announcements were made on the town's four radio stations. In-person meetings with representatives from a local parent advocacy group (Parent-to-Parent), parent support group (Mothers-in-Step), Teammates (a program similar to Big Brothers/Big Sisters), and youth group coordinators resulted in newsletter announcements and flyers mailed to several hundred people in Norfolk and surrounding communities. In addition, in-person meetings were held with outpatient practitioners and Youth and Family Services outreach coordinators and flyers were posted on office doors and distributed to clients. Several local and surrounding area outreach programs (Visions for Tomorrow, Families Care, Prevention Pathways) that provide parent support and education were contacted and provided with flyers to post and distribute. Flyers were also displayed at the local library and grocery stores. Finally, local public and private schools were contacted. Information about the workshop and flyers were provided. Additional flyers were sent to surrounding public and private school principals, counselors, and school psychologists. One local high school agreed to attach flyers to their students' report cards. In both communities, public and private schools refused direct access to students and parents.

Flyers and advertisements were designed to capture attention and provide readers with information about the nature of the workshop. Advertisements included a general statement about the target audience (Is your child/adolescent anxious? Stressed out? Worried? We can help!) and that workshops were free of charge. Inclusion criteria

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indicating that appropriate youth were aged 12-17 years and English-speaking with parental permission were listed. Advertisements also included a statement regarding the goal of the workshop and that participants would be asked to complete questionnaires and a brief interview. Some advertisements listed specific dates/times of upcoming workshops while others indicated that workshops would be schedule on evenings and weekends to accommodate demand. Finally, the name of the workshop leader, her affiliation with University of Nevada, Las Vegas, and contact information (telephone number and email address) was provided.

Because not all advertisements included specific dates and times, the ambiguity of when workshops would be held may have precluded some individuals from inquiring about the workshops. To address the ambiguity of date/time, some newspaper and radio advertisements, flyers, and announcements had specific dates and times listed. Unfortunately, this approach did not result in an increase in response.

As mentioned previously, all advertising and flyers included a statement that the workshop was free of charge. Individuals may be wary of accepting products and services that are free for fear they may somehow be exploited or manipulated. The media routinely warns consumers about fraudulent practices. Thus, individuals may have questioned the motivations of an individual from a university who would offer a service for free. Related to this is a possible problem with perceived credibility. All advertisements included name and affiliation (with UNLV) of the workshop leader. Perhaps affiliation with a university, rather than an organization familiar to the public and associated with prevention (American Red Cross, American Cancer Society), was a deterrent. Again, these proposed obstacles are speculative and require empirical examination before definitive conclusions can be drawn.

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Stanley and Kovacs (2003) suggested that traditional methods of recruitment, such as running advertisements in local papers, may not be the most effective way of capturing the intended audience. With respect to child abuse prevention, they recommend face-to-face contact with prospective participants at their home, supermarkets, restaurants, or other public places. In the present study, the workshop leader personally met with many representatives of groups and organizations working with children and parents. Whether a higher rate of participation would have been obtained if parents were contacted directly and presented with workshop information during a face-to-face meeting is unknown. Future prevention endeavors that do not have a large pool of participants should consider incorporating more personal contact during recruitment.

Other studies that have implemented prevention programs have successfully recruited participants. Of course, studies that had difficulty recruiting an adequate sample are less likely to detect and report significant results and are less likely to be published. Thus, whether other researchers have encountered similar problems in recruitment is unknown. Of the published studies on anxiety prevention, successful ones had access to large groups of people, primarily through undergraduate subject pool students (Gardenswartz & Craske, 2001) or large public schools (Barrett & Turner, 2001).

The present study was largely modeled after the single-session prevention workshop conducted by Gardenswartz and Craske (2001). In their study, the authors had access to a large sample of undergraduate students enrolled in an introductory to psychology course at the University of California, Los Angeles. They were able to screen over 1000 students for their study. Inclusion criteria included at least a moderate level of AS, at least one panic attack in the past twelve months, and no panic disorder diagnosis.

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Having access to such a large number of individuals undoubtedly played a major role in the successful implementation of their screening process and selected approach to prevention.

Similarly, Barrett and Turner (2001) tested the effectiveness of a school-based anxiety prevention program for youth. To recruit participants, the authors sent letters to twelve primary school principals explaining the nature of the study and requesting their participation. Ten of the twelve schools agreed to participate. A large sample of students received cognitive-behavioral skills training during their regularly scheduled social sciences class. Because they utilized a universal approach, students were not screened for risk factors or other inclusion/exclusion criteria. Again, having access to a large body of potential participants contributed to the feasibility and successful implementation of a preventative intervention.

Few studies have investigated recruitment difficulties in prevention programs. Kinard (2001) identified several factors related to recruitment failures in child abuse prevention programs. Those factors included recruiter's inability to locate eligible families, refusal to participate, relocation, lack of interest, hostility toward protective service agencies, and persistent family crises. The Center for Disease Control reported difficulty recruiting participants for health and disease related studies even when incentives such as monetary compensation are used (CDC, 1998). Furthermore, Ginsburg (2002) recently initiated a federally grant-funded family-based program to prevent anxiety in youth. In this study, parents with anxiety disorders are approached, provided information about familial transmission of anxiety disorders, and asked to have children participate in a prevention program. Personal communication with the author revealed recruitment difficulties as well. Specifically, parents were reluctant to engage in

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prevention for their children even when fully informed about familial transmission and risk factors (G. Ginsburg, personal communication, February 15, 2006).

Factors related to prevention programming

Fourth, factors related to prevention programming may help explain the lack of participation in the workshop. As previously mentioned, if youth are not distressed, and their parents do not believe their children are distressed, they may be less likely to participate in a prevention program that requires their limited free time. Thus, a lack of distress may have inhibited their motivation to attend the prevention workshop. In this study, the level of distress reported by youth was fairly low and well within the normative range.

Universal preventative programs that have received the most attention have included those focused on physical and public health issues such as heart disease (Viswanath & Finnegan, 2002), abstinence from tobacco (Bayer & Kiesig, 2003), drug abuse prevention (Lynam, Milich, & Zimmerman, 1999), and breast cancer awareness (McKay & Bonner, 2004; Rees & Bath, 2000). The success of these campaigns is difficult to measure and often neglected in the empirical literature.

Of the published studies, Lynam, Milich, and Zimmerman (1999) evaluated the efficacy of Project DARE (Drug Abuse Resistance Education). The campaign is a well-publicized and widely used drug-prevention program. Ten years after the initiation of Project DARE, recipients were reevaluated and compared to same age peers who received a standard school-based drug-education program. The groups did not differ with respect to self-reported drug use, attitudes towards drugs, or level of self-esteem. The authors concluded that Project DARE did not significantly contribute to long term abstinence from drugs despite its continuing popularity and perceived efficacy.

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In addition to Project DARE, another recently popularized prevention campaign is the early detection of breast cancer and efforts in enhance awareness about the importance of routine self-examination. McKay and Bonner (2004) examined the occurrence and nature of breast cancer information in popular magazines targeting an at-risk group of women age 50 years and older. They found that most information was related to the importance of regular self-examination, healthy lifestyle, and early detection. The nature of the information disseminated through the magazines reviewed was, in large part, anecdotal narratives from celebrities and other survivors and, to a lesser degree, information provided by medical professionals. Other researchers interested in the perceived impact of this campaign noted that women generally considered the information valuable in raising awareness, promoting breast self-examination, and encouraging women to consult medical professionals if they noticed physical changes in their breasts (Rees & Bath, 2000). Women diagnosed with and undergoing treatment for breast cancer, on the other hand, reported that the information was less useful, especially if the coverage was sensationalized and frightening (Rees & Bath, 2000).

Another popular source of universal prevention is public service messages aired on television. These messages focus on many issues including the importance of reading to children, adopting a healthy lifestyle, engaging in safe sex, avoiding discrimination, and the popular "Friends don't let friends drive drunk" campaign. Some campaigns have attempted to inform the public about depression and other mental disorders to reduce social stigma. Again, the effectiveness of such messages is difficult to measure and no empirical studies were found that could attest to the impact of these campaigns.

Notwithstanding, a similar approach might be beneficial in informing parents about the prevalence of anxiety disorders, key signs/symptoms to monitor, and where to go for help. This approach may be useful in disseminating information to parents and youth. However, given time constraints and financial cost of television advertising/campaigning, this venue is not an appropriate means of teaching coping skills.

While these campaigns are not related to the prevention of child anxiety, they represent serious efforts to inform the public about health related problems and provide some information about precautions that may minimize risks associated with a particular disease or disorder. Taken together, these studies suggest a limited understanding of the impact of prevention, especially when a universal, mass-media approach is used. More research is needed to discern the long-term effectiveness of such programs.

Factors related to the workshop

Fifth, factors related to the workshop itself may have limited participation in this study. Practical issues related to the workshop meeting time and location may have been inconvenient given the busy schedules of families. Many families are faced with demanding schedules that include school, work, extracurricular activities, providing for daily care needs, and maintaining a home. For families who are not distressed by a child's growing difficulties with anxiety, they may lack motivation to spend their free time (if they have free time) engaging in a prevention workshop. This may be especially true given that the benefits of prevention are often difficult to gauge. In general, prevention programs do not produce immediate relief and reinforcement because most people who receive a universal prevention are not at risk for developing the

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disorder/disease (Gordon, 1987). Thus, parents may have been hesitant to invest their time in a prevention workshop that may or may not benefit them and their children.

Related to this, consumer expectations related to workshop advertisements remain unknown. The term "workshop" may have elicited various interpretations and expectations. Parents of prospective participants were provided information regarding the nature of the research project and given a brief description of workshop components (e.g., psychoeducation about the nature of stress and anxiety, examination of thoughts and their relation with anxiety, breathing retraining, deep muscle relaxation, and interoceptive practice). In addition, this information was reiterated at the beginning of the workshop. However, the vast majority of individuals who would have seen an advertisement or flyer never inquired further about the workshop, so their expectations could not be assessed or corrected. In future studies, terminology should be examined systematically. For example, parents could be asked about what expectations they would have if offered an opportunity to participate in a "prevention workshop." Other terms could be assessed as well. Perhaps referring to the prevention workshop as a "class," "seminar," "retreat," "clinic," or "meeting" would be more appealing and consistent with their expectations.

Although issues related to perceived credibility of the workshop leader were reviewed above, other issues related to the workshop leader's credentials might have played a role in the lack of participation. Again, information regarding credentials was provided to those who called to inquire about the workshop. Therefore, most people who saw the advertisements only saw the leader's name, degrees (Kelly Drake, M.S., M.A.), and university affiliation (University of Nevada, Las Vegas). The level of expertise, or lack thereof, attributed to that information remains unknown.

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In addition, parents and children may be more comfortable in programs led by individuals with whom they are familiar and trusted. Parents and children may be less comfortable with individuals associated with research projects and the mental health field, especially if they hold negative attitudes toward mental health professionals (Rickwood, Deane, & Wilson, 2005). For these reasons, teachers and/or youth group leaders may be better equipped to recruit large numbers of participants. Barrett and Turner (2001) trained therapists and teachers in administering a manualized protocol of a school-based anxiety prevention program. They tested the effectiveness of the program and compared therapist-led classes with teacher-led classes. They found that teacher-led classes had a higher rate of participation (99%) compared to therapist-led classes (74%). Upon completion of the ten-week course, both groups evinced a reduction in overall level of self-reported anxiety. Scores from children in the control condition, who did not receive the intervention, did not change. An important finding was no difference in clinical outcome between teacher-led and therapist-led classes. This study provides support for the transfer-of-control model in which individuals who spend the most time with children (e.g., teachers and parents) can successfully implement interventions once trained by a competent mental health professional (Silverman & Kurtines, 2005). Future prevention programs might consider utilizing a psychologist as a consultant to educate teachers about anxiety and train them to implement prevention strategies in the classroom. This may make prevention programs more accessible to a greater number of youth, thereby enhancing feasibility.

In coordinating workshops, a waiting period elapsed before a workshop came to fruition. The waiting period was necessary to recruit a sufficient number of participants. Unfortunately, when this waiting period was an extended length of time (more than 3

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weeks), some participants dropped out. Future child anxiety prevention studies with access to a large number of children could bypass this obstacle, especially if the intervention is conducted in the classroom (Barrett & Turner, 2001).

Finally, the length of the workshop may not be sufficient to produce the desired changes in pre- to post-workshop assessments. While Gardenswartz and Craske (2001) found that benefits (reduced risk of develop panic disorder) were maintained for six months post-workshop in a large group of young adults, longer-term follow up is still needed to ascertain the longevity of a single-session preventative intervention. Prevention programs targeting children have employed multiple-session formats. Ginsburg (2002) is currently implementing a prevention program that meets weekly for 6-8 brief sessions. Barrett and Turner (2001) conducted 10 weekly sessions lasting approximately seventy-five minutes each. Children might require more repetition, over a shorter length of time to learn and master anxiety management skills. A single-session format was effective for young adults and this may be, in part, due to age-related superiority in learning and memory capacity (Gardenswartz & Craske, 2001). On the other hand, research has supported the transfer-of-control model in which mental health professionals act as consultants who train others (teachers, parents, peers) to provide skills-based training to children (Barrett & Turner, 2001; Silverman, Kurtines, & Ginsburg, 1999) and carry out in vivo exposure exercises (see Silverman & Kurtines, 2005 for review). Thus, a single-session format is still feasible, but parental involvement will be necessary to reinforce adaptive skills and encourage regular practice of anxiety management strategies.

The five factors discussed above are offered to help explain the lack of participation in the present study. These factors were conceptually and not empirically derived. Because this was a pilot study, the factors reviewed represent potential obstacles

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that should be considered when designing, recruiting, and implementing an anxiety prevention program for youth in the future. Addressing these potential obstacles during the design phase of future studies may contribute to more successful outcomes and greater benefit for children and their families.

Implications and future directions

This single-session anxiety prevention workshop is an innovative approach to child anxiety management. Until now, child anxiety prevention consisted of modified treatment programs implemented in childrens' classrooms (Barrett & Turner, 2001; Dadds, Spence, Holland, Barrett, & Laurens, 1997) with format and structure similar to group therapy. In addition, prevention studies lasted approximately 10 weeks. Conversely, this anxiety prevention workshop was less time consuming for participants, more cost-effective, and successful in reducing anxiety-related symptomatology for some participants.

Findings related to panic attack symptomatology contribute to clinical conceptualizations of childhood panic. Specifically, 15.8% of youth reported at least one panic attack. This is consistent with current estimates of panic attack prevalence in community samples of youth. At the same time, only one participant described panic attacks as occurring "out of the blue." This criterion is used to diagnose panic attacks in adults and is conceptualized as a central feature of panic. In children, diagnosis may be distorted by age-related differences in how panic manifests in youth. For example, children may not experiences panic as occurring "out of the blue" because they might associate discomfort with something or someone in the environment.

Furthermore, the youngest participant with panic was 12 years old. Panic attacks are associated with complex cognitive symptoms such as anxious apprehension and

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catastrophizing. Clinicians may thus overlook and/or misdiagnose panic by assuming children are developmentally incapable of such cognitive processes. This study suggests that children as young as 12 years experience cognitive symptoms associated with apprehension and panic. At the same time, one participant with panic had especially high panic attack severity ratings. This participant was 17 years old and the oldest participant in the study. Thus, older youth may experience more severe panic symptoms because cognitive maturation enhances perceptions of dangerousness.

Finally, 75% of youth with panic were male. Though there were more male than female participants, such a gender difference is striking. Widely documented and accepted is the notion that females tend to report higher levels of anxiety. Perhaps males in this study were distressed and motivated to seek help from the workshop. Alternatively, males may be mis- or under-diagnosed in epidemiological studies. Taken together, findings suggest that clinicians should not underestimate the occurrence of anxiety and panic among young and male clients and routinely assess for panic attacks.

Therapeutic components of the anxiety prevention workshop used in this study were based on empirically validated procedures and techniques and should be useful for clinicians working with anxious youth. In the future, workshop components and the accompanying workbook from the present study could be made portable and available for clinicians to utilize as part of their therapy with anxious (or pre-anxious) youth. In the meantime, individuals working with children should be informed of factors that place youth at risk for developing anxiety disorders. Specifically, research has demonstrated that anxiety sensitivity is a predictor of pathological anxiety in general and panic disorder in particular. Clinicians should have youth routinely complete a measure of anxiety sensitivity, such as the CASI. The measure is brief and has sound psychometric

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properties. Thus, level of anxiety sensitivity could be assessed over time. If a youth scores high on this measure, or if a pattern of increasing scores over time is found, a clinician should begin to incorporate preventative anxiety management strategies.

With respect to research, several suggestions for future studies have been presented throughout this paper. These suggestions are based on lessons learned from the present study as well as the literature reviewed. The most important suggestions are those related to revising recruitment procedures. Forming cooperative relationships with school officials may enhance feasibility and portability of youth-focused prevention. School-based programming is likely to yield the greatest participation among youth given the large, captive pool of possible participants. This should facilitate a large and representative sample of youth from diverse socioeconomic, cultural, and ethnic backgrounds. In addition, the trend toward transfer-of-control models of service delivery and early evidence attesting to the effectiveness of teacher-led preventative interventions (Barrett & Turner, 2001) suggests that teachers themselves may play a central role in implementing such interventions. Further examination of utilizing teachers to execute prevention programs in the school may present a promising avenue of intervention.

Conclusions

The present pilot study represents an innovative means of implementing a single-session anxiety prevention workshop for youth and their parents. Overall, workshop participants did not experience a significant reduction in anxiety-related symptomatology. However, trends for the workshop group to report less anxiety sensitivity, clinically significant anxiety, and panic following the workshop were found. Definitive conclusions regarding workshop effectiveness and feasibility cannot be made given methodological and statistical limitations. However, lessons learned from the present study will serve as a

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foundation for improving the design and execution of future efforts to provide anxiety prevention for youth.

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APPENDIX I

TABLES AND FIGURES

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Table 1

Descriptive Statistics for Demographic Variables by Group

| Variable | Workshop Group | | Waitlist Group | | | |
	n	*%*	*n*	*%*	*U*	*p*
Gender					24	.10
Male	3	33.33	8	80		
Female	6	66.67	2	20		
Race					45	1.00
European-American	7	77.78	10	100		
Asian	1	11.11	0	0		
Hispanic	1	11.11	0	0		
Location					38	.60
Las Vegas, NV	5	55.56	4	40		
Norfolk, NE	4	44.44	6	60		

Note. U = Mann-Whitney Test.

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Table 2

Descriptive Statistics for Dependent Variables by Group

Variable	Workshop Group			Waitlist Group		
	n	*M*	*SD*	*n*	*M*	*SD*
Child Measures						
CASI - Time 1	9	28.22	4.21	10	24.20	4.05
CASI – Time 2	8	26.00	3.46	7	26.71	3.64
ASIC - Time 1	9	9.89	5.21	6	7.83	5.95
MASC - Time 1	9	36.78	17.51	6	27.00	20.35
MASC - Time 2	7	43.86	30.54	7	47.71	12.37
CDI - Time 1	9	6.44	5.34			
Parent Measures						
ASI	9	9.67	7.14			
ASIP	9	32.11	10.40	4	37.25	9.64
BDI	9	10.56	10.27			
BSI	9	33.22	39.20			

Note. CASI = Child Anxiety Sensitivity Index; ASIC = Anxiety Sensitivity Index for Children;

MASC = Multidimensional Anxiety Scale for Children; CDI = Children's Depression Inventory;

ASI = Anxiety Sensitivity Index; ASIP = Parent's Perceptions of their Child's Anxiety

Sensitivity; BDI = Beck Depression Index; BSI = Brief Symptom Index.

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Table 3

Pre-Workshop Descriptive Statistics with Comparisons between Workshop and Waitlist

Groups using Mann-Whitney Tests

Variable	Group	*n*	*M*	*SD*	*U*	*p*
CASI					22.0	.07
	Workshop	9	28.22	4.21		
	Waitlist	10	24.20	4.05		
ASIC					20.5	.46
	Workshop	9	9.89	5.21		
	Waitlist	6	7.83	5.95		
MASC					14.0	.15
	Workshop	9	36.78	17.51		
	Waitlist	6	27.00	20.35		

Note. CASI = Child Anxiety Sensitivity Index; ASIC = Anxiety Sensitivity Index for

Children; MASC = Multidimensional Anxiety Scale for Children.

Table 4

Pre-Workshop MASC Subscale Scores for Workshop and Waitlist Groups: Results of Mann-Whitney Tests

Variable	Group	*n*	*M*	*SD*	*U*	*p*
Physical Symptoms					14.0	.15
	Workshop	9	8.89	5.62		
	Waitlist	6	5.50	7.37		
Social Anxiety					17.0	.27
	Workshop	9	9.78	4.79		
	Waitlist	6	8.67	8.76		
Separation/Panic					17.5	.27
	Workshop	9	6.00	5.63		
	Waitlist	6	2.50	2.07		
Harm Avoidance					20.5	.46
	Workshop	9	12.11	4.88		
	Waitlist	6	10.33	4.46		
Anxiety Disorder Index					14.5	.15
	Workshop	9	8.78	4.97		
	Waitlist	6	6.00	4.73		

Note. MASC = Multidimensional Anxiety Scale for Children.

Table 5

Pre-Workshop PAQ-R Scores and Comparisons between Workshop and Waitlist Groups:

Results of Mann-Whitney Tests

Variable	Group	n	M	SD	U	p
Frequency of Panic Attacks in Past 12 Months					39.5	.66
	Entire sample	19	.47	1.17		
	Workshop	9	.67	1.41		
	Waitlist	10	.30	.95		
Frequency of Panic Attacks in Past 4 Weeks					39.5	.66
	Entire sample	19	.16	.38		
	Workshop	9	.22	.44		
	Waitlist	10	.10	.32		
Severity of Panic Attack Symptoms					40.5	.72
	Entire sample	19	3.89	12.34		
	Workshop	9	2.33	4.64		
	Waitlist	10	5.30	16.76		

Note. PAQ-R = Panic Attack Questionnaire-Revised.

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Table 6

Post-Workshop CASI and MASC Scores and Comparisons between Workshop and

Waitlist Groups: Results of Mann-Whitney Tests

Variable	Group	n	M	SD	U	p
CASI Time 2					25.0	.78
	Workshop	8	26.00	3.46		
	Waitlist	7	26.71	3.64		
CASI Time 2 minus Time 1					20.5	.40
	Workshop	8	-1.13	2.53		
	Waitlist	7	3.00	7.53		
MASC Time 2					23.0	.90
	Workshop	7	43.86	30.54		
	Waitlist	7	47.71	12.37		
MASC Time 2 minus Time 1					11.0	.18
	Workshop	7	6.43	20.98		
	Waitlist	7	14.31	22.63		

Note. CASI = Child Anxiety Sensitivity Index, MASC = Multidimensional Anxiety Scale

for Children.

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Table 7

Post-Workshop MASC Subscale Scores for Workshop and Waitlist Groups: Results of Mann-Whitney Tests

Variable	Group	n	M	SD	U	p
Physical Symptoms					21.5	.71
	Workshop	7	9.71	6.85		
	Waitlist	7	11.43	4.65		
Social Anxiety					24.0	1.00
	Workshop	7	11.57	9.29		
	Waitlist	7	11.86	5.08		
Separation/Panic					23.0	.90
	Workshop	7	7.71	7.45		
	Waitlist	7	6.57	3.15		
Harm Avoidance					20.0	.62
	Workshop	7	14.86	8.71		
	Waitlist	7	17.86	5.24		
Anxiety Disorder Index					22.0	.80
	Workshop	7	10.14	6.62		
	Waitlist	7	11.00	5.51		

Note. MASC = Multidimensional Anxiety Scale for Children.

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Table 8

Change in MASC Subscale Scores for Workshop and Waitlist Groups: Results of Mann-Whitney Tests

Variable	Group	*n*	*M*	*SD*	*U*	*p*
Physical Symptoms Time 2 minus Time 1					10.5	.14
	Workshop	7	.14	3.85		
	Waitlist	7	6.83	8.06		
Social Anxiety Time 2 minus Time 1					15.5	.45
	Workshop	7	.71	7.30		
	Waitlist	7	3.83	7.36		
Separation/Panic Time 2 minus Time 1					17.5	.63
	Workshop	7	2.86	5.49		
	Waitlist	7	3.83	4.62		
Harm Avoidance Time 2 minus Time 1					10.0	.14
	Workshop	7	2.71	6.47		
	Waitlist	7	9.00	6.90		
Anxiety Disorder Index Time 2 minus Time 1					6.5	.04*
	Workshop	7	1.00	4.90		
	Waitlist	7	5.83	5.78		

Note. MASC = Multidimensional Anxiety Scale for Children.

*$p < .05$.

Table 9

Post-Workshop PAQ-R Scores for Workshop and Waitlist Groups: Results of Mann-Whitney Tests

Variable	Group	n	M	SD	U	p
Frequency of Panic Attacks in Past 4 Weeks					20	.40
	Entire sample	15	.20	.56		
	Workshop	8	.00	.00		
	Waitlist	7	.43	.79		
Severity of Panic Attack Symptoms					20	.40
	Entire sample	15	4.53	15.01		
	Workshop	8	.00	.00		
	Waitlist	7	9.71	21.62		

Note. PAQ-R = Panic Attack Questionnaire-Revised.

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Table 10

Description of Panic Attack Frequency and Severity During Time 1 and Time 2

			Time 1		Time 2	
Participant	Gender	Age	Frequency	Severity	Frequency	Severity
Workshop Group						
1	Male	12	1	10	0	0
2	Female	13	1	11	0	0
Waitlist Group						
3	Male	13	0	0	1	12
4	Male	17	1	53	2	58

Note. Frequency refers to the number of panic attacks during the four weeks preceding assessment as endorsed on the Panic Attack Questionnaire-Revised (PAQ-R). Severity refers to perceived severity ratings of panic attack symptoms endorsed on the PAQ-R. This item consists of 26 symptoms that can be rated on a scale of 0-4 where higher scores indicate a more severe experience of that particular symptom.

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Table 11

Description of Post-Workshop Ratings of Workshop Satisfaction and Credibility

	Frequency of Child Ratings	Frequency of Parent Ratings
Satisfaction with Workshop		
Very Satisfied	6	2
Somewhat Satisfied	2	5
Neither Satisfied or Unsatisfied	1	1
Somewhat Unsatisfied	0	0
Very Unsatisfied	0	1
Satisfaction with Workshop Leader		
Very Satisfied	7	4
Somewhat Satisfied	1	3
Neither Satisfied or Unsatisfied	1	0
Somewhat Unsatisfied	0	0
Very Unsatisfied	0	2
Helpfulness of Workshop		
Extremely Helpful	1	2
Quite Helpful	4	3
Moderately Helpful	2	2
Somewhat Helpful	1	1
Not at All Helpful	1	1

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Figure 1

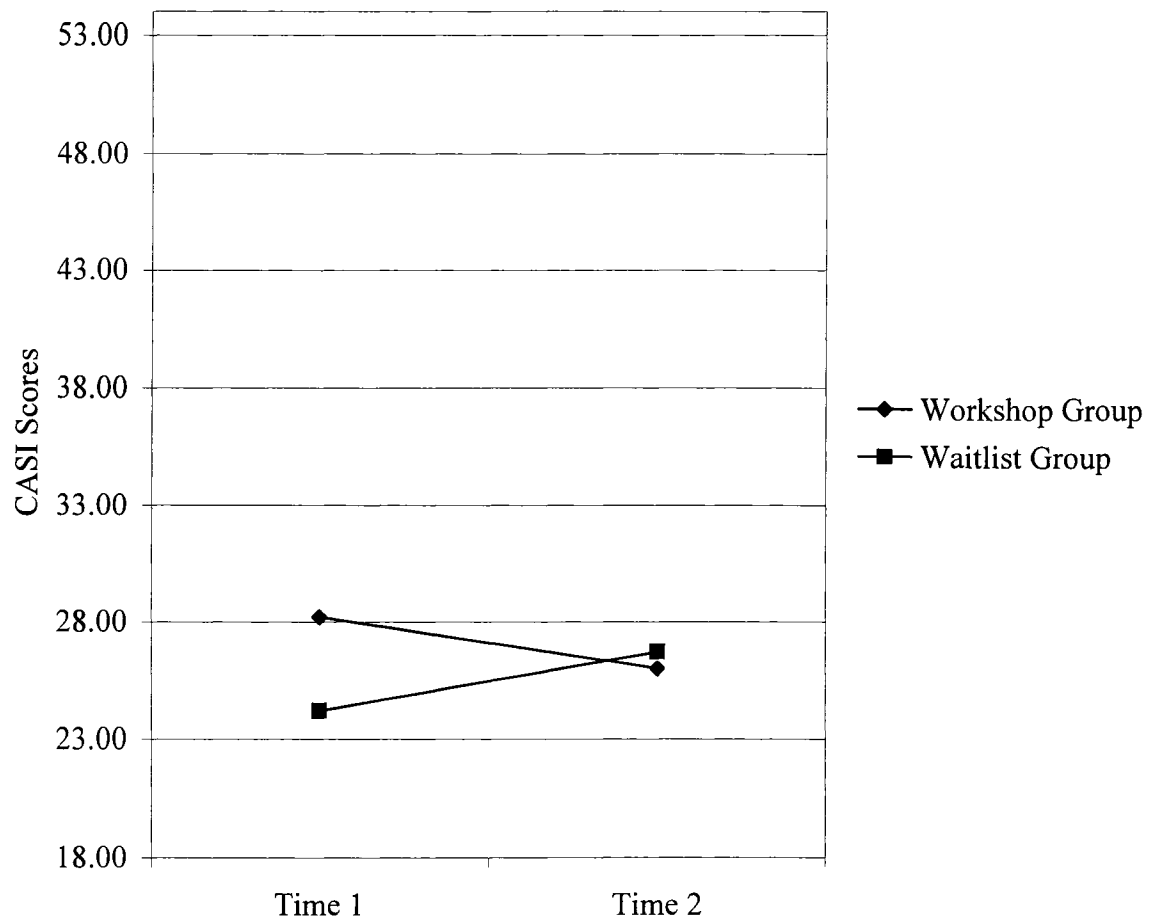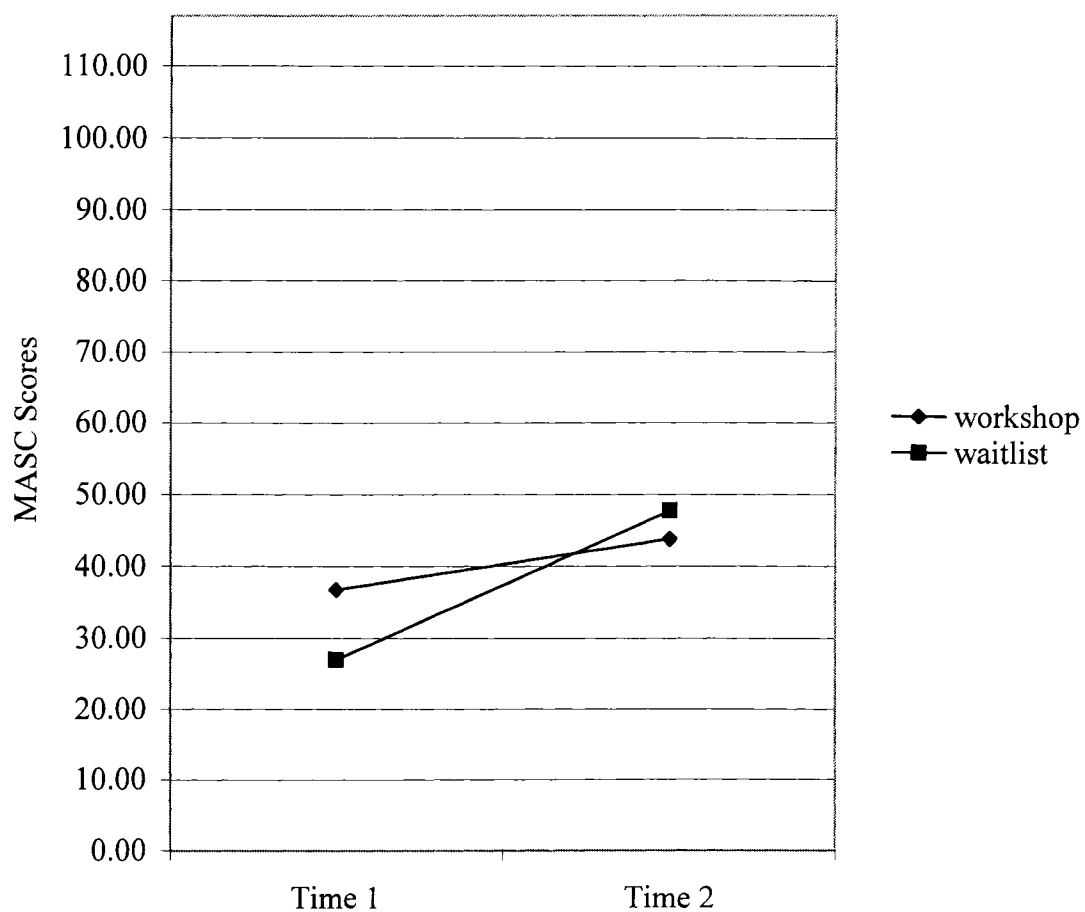*Change in Mean CASI Scores from Time 1 to Time 2 for Workshop and Waitlist Groups*

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Figure 2

Change in Mean MASC Scores from Time 1 to Time 2 for Workshop and Waitlist Groups

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APPENDIX II

OUTLINE OF PANIC PREVENTION WORKSHOP

9:00 – 9:10:   Welcome, introduction, explanation for workshop, and agenda.

9:10 – 9:50:   Pre-workshop assessment.

9:50 – 10:00: Break #1

10:00 – 10:50: Psychoeducation about panic and anxiety, description of cognitive-

behavioral components of workshop. Video clips.

10:50 – 11:00: Break #2

11:00 – 11:50: Identify feared bodily sensations, hyperventilation exercise, corrective

breathing techniques, and progressive muscle relaxation.

11:50 – 12:20: Lunch Break

12:20 – 1:00: Cognitive restructuring: Exploration of the role of thoughts in panic and

anxiety; identify errors in thinking; practice identifying negative thoughts.

Challenge errors in thinking and generate realistic alternative thoughts in

relation to panic, anxiety.

1:00 – 1:10:   Break #3

1:10 – 1:40:   Interoceptive exposure (running in place, breathing through a straw).

1:40 – 2:00:   Review workshop contents and discuss a practice plan.

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TREATMENT SATISFACTION AND CREDIBILITY INVENTORY

Based on your experience as a participant in the workshop, we would like to get some feedback from you in order to improve the quality of the program.

TREATMENT SATISFACTION:
(1) Please rate the degree of your satisfaction with the **workshop program:**

    ☐   (1) = very unsatisfied

    ☐   (2) = somewhat unsatisfied

    ☐   (3) = neither satisfied nor unsatisfied

    ☐   (4) = somewhat satisfied

    ☐   (5) = very satisfied

(2) Please rate the degree of your satisfaction with the **workshop leader:**

    ☐   (1) = very unsatisfied

    ☐   (2) = somewhat unsatisfied

    ☐   (3) = neither satisfied nor unsatisfied

    ☐   (4) = somewhat satisfied

    ☐   (5) = very satisfied

TREATMENT CREDIBILITY:
How helpful do you think the tools you learned in the workshop will be in decreasing your anxiety?

    ☐   (1) = not at all helpful

    ☐   (2) = somewhat helpful

    ☐   (3) = moderately helpful

    ☐   (4) = quite helpful

    ☐   (5) = extremely helpful

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