# THE ROLE OF SELF-FOCUSED ATTENTION

# IN ASTHMA

By

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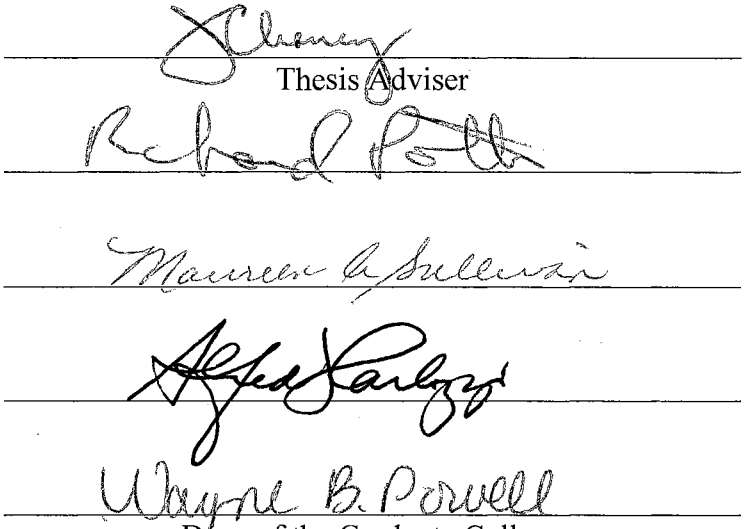

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# The role of self-focused attention in asthma

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## Abstract

The effects of noncontingency on the demonstration of self-focus in asthma were tested by examining self-report measures of depression, mood, expectancy, and attributions, and performance on a self-focusing task. Forty participants (18-25 years of age) with histories of childhood asthma (AS) and a gender and SES-matched healthy cohort (HC) (N=40) received either contingent or noncontingent performance feedback on a computerized concept formation task. Following the experimental procedure, a behavioral evaluation of self-focus was obtained. Pre and post-test ratings of mood, expectancy, and attributions related to experimental task performance were also completed. It was hypothesized that individuals with asthma that were exposed to noncontingent feedback would exhibit increased preferences for self-focusing stimuli when compared to their healthy peers. Although the experimental treatment procedure was generally effective in producing transient mood states and in altering performance expectancies in both AS and HC participants in the noncontingent condition and in HC subjects in the contingent condition at the time of the post-test, results revealed that AS subjects exposed to noncontingent feedback did not spend more time self-focusing than their healthy cohorts. Possible interpretations of the current findings are discussed.

# CHAPTER I

## INTRODUCTION

Childhood asthma is a heterogeneous illness characterized by recurrent and partially reversible, generalized obstruction of the tracheobronchial airflow (Pearlman, 1984). The hallmark features of asthma are its intermittent, variable, and reversible nature (Creer, Harm, & Marion, 1988; Renne, & Creer, 1985). Individuals with asthma are typically genetically predisposed toward the illness. The age of onset of the disorder can vary from infancy to adulthood (Young, 1994). The prevalence estimates of asthma in children range from 3 to 6.7 to 12 percent (Burr, Butland, King, & Vaughan-Williams, 1989; Gergen, Mullally, & Evans 1988; Hobbs, Perrin, & Ireys, 1985). It is the most common chronic physical illness in children (Hobbs et al., 1985; Patterson, 1988). Eiser (1985) reported that the prevalence of asthma and its severity are rising. Also, according to Sly (1988), the morbidity and mortality associated with asthma have been escalating over the past decade. Asthma has been noted as the leading health reason for lost school days (Celano & Geller, 1993; Hobbs et al., 1985), it accounts for 11 to 17 percent of all pediatric hospitalizations in large population areas in the United States (Lindgren et al., 1992), and for those children under the age of five with a previous hospital stay due to asthma, may significantly increase the risk of readmission within one year (Farber, 1998). In addition, it is a significant financial burden on families (Hobbs et al., 1985). Health care expenditures for asthma in 1990 alone were estimated at more than $6 billion (Weiss, Gergen, & Hodgson, 1992). Thus, asthma is a dangerous disease that causes numerous problems for the patient, their families, and health care professionals

throughout childhood, adolescence, and into adulthood (Creer, 1994; Creer et al., 1988; Hamlett, Pellegrini, & Katz, 1992; Jolicoeur, Boyer, Reeder, & Turner, 1994; Miller & Wood, 1991).

As in all chronic illnesses, in addition to the medical and physical dimensions of the disease, asthma may also hinder individuals' emotional development and psychological adjustment (Celano & Geller, 1993; Hobbs et al., 1985). Research suggests that children with asthma have a higher rate of psychological disturbances than their healthy peers (e.g., Kashani, Konig, Sheppard, Wilfley, & Morris, 1988; Lehrer, Isenberg, & Hochron, 1993; MacLean, Perrin, Gortmaker, & Pierre, 1992). Some studies report higher levels of emotional disturbance in individuals with asthma versus other illness groups (i.e., rheumatic illnesses) (Eisner, 1985), whereas other research indicates no differences in psychological adjustment in specific chronic illnesses (MacLean et al., 1992). Although the level of psychological disturbance in asthma is in question, it may be noted that asthma is significantly more intermittent and variable in nature than many other illnesses (e.g., diabetes). These conditions affect the level of illness controllability perceived by the patient and consequently can result in poorer adjustment (Felton & Revenson, 1984).

Creer et al. (1988) noted that the capricious nature of asthma may result in motivational deficits and emotional adjustment problems. Although these authors have recognized that the variable nature of asthma may negatively influence children's expectations for disease management, few studies have delineated the most significant psychosocial factors for healthy adjustment. Even fewer studies have examined the long-

term adjustment problems experienced by young adults with asthma, even though many of these individuals continue to experience complications due to asthma as they get older (Eiser, 1985; Young, 1994).

Due to the distinction of asthma as a heterogeneous illness, as evidenced by its extreme variability in clinical presentation and disease course (both across different patients and within the same patient), it is improbable that a singular group of psychosocial features exists that is common to all individuals with asthma (e.g., Creer, 1994). Yet asthma does appear to have a few distinguishing markers (i.e., its intermittent, unpredictable, and reversible nature) that may lead to individuals experiencing higher levels of uncontrollability and uncertainty about their illness and more emotional maladjustment (Renne & Creer, 1985). Uncontrollable stressors, such as the intermittent and variable nature of asthma, may increase individuals' susceptibility to the effects of learned helplessness (e.g., depression) and prompt them to investigate various causal explanations regarding outcomes that appear irreversible. In turn, these causal interpretations may facilitate the modification of expectancies about future events and, as a result, influence emotional and behavioral reactions to these events (Abramson, Seligman, & Teasdale, 1978). Furthermore, individuals may generalize these responses (i.e., cognitive, emotional, behavioral) to subsequent tasks (Mullins, Chaney, Pace, & Hartman, 1997). Specifically, when individuals attribute noncontingent aversive outcomes to internal (i.e., personal), stable (i.e., unmodifiable), and global (i.e., pervasive) causes, the resulting pessimistic expectations regarding future outcomes can jeopardize emotional adjustment and coping efforts (Abramson, Metalsky, & Alloy,

1989; Alloy, Peterson, Abramson, & Seligman, 1984). Thus, the individual's appraised certainty for situations and his or her outcome expectancies for future events may contribute significantly to the emotional adjustment process. This cognitive appraisal process seems to be an apt response to the ambiguous conditions regularly confronted by individuals with asthma (see also Creer et al., 1988; Renne & Creer, 1985).

An alternative explanation of the psychological maladjustment that can occur in longstanding asthma appears to parallel the process that results in the development of what Pyszczynski & Greenberg (1987) have labeled a "depressive self-focusing style" (p. 127). Self-regulatory perseveration theory suggests that a negative self-image is maintained by a depressive self-focusing style. Depression occurs due to an inability to withdraw from a self-regulatory cycle following the loss of a principal source of self-esteem. It is possible that when an individual is diagnosed with a chronic illness such as asthma, he or she will perceive the diagnosis as a loss, more specifically a loss of health. A common response to such a loss would be an attempt to recover the lost object and regain physical health. Unfortunately, the acquisition of this goal is rarely or never successful in chronic illnesses, but the individual will keep trying. As the individual's efforts continue to fail, he or she may engage in increasingly higher levels of self-focus, always striving to regain the lost object. Depression can occur when there are few, if any, alternatives to replace the lost object.

Previous studies have noted a propensity in depression-prone individuals to generate internal causal attributions for their performance following failure experiences (e.g., Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986;

Pyszczynski, Holt, & Greenberg, 1987). Such tendencies have been shown to diminish cognitive capacity and impede subsequent learning. To elucidate, because this cognitive style is typified by excessive perseveration on the personal implications of events (e.g., "What does this mean for me?"), individuals tend to focus on task-irrelevant material rather than employ performance feedback in subsequent problem-solving tasks (e.g., Kuhl, 1981). Also, perseverative self-focus can induce overly generalized personal inferences about failure and can increase the effects of pessimistic outcome expectancies on subsequent motivation and performance (e.g., Carver, Blaney, & Scheier, 1979; Carver & Scheier, 1981).

It is possible that individuals with asthma may be predisposed to a high level of self-focus due to the nature of their illness and the types of medical regimens they are taught to manage their illness. It may be that because asthma management requires such a high degree of self-monitoring and sensitivity to physical signs (e.g., Priel, Heimer, Rabinowitz, & Hendler, 1994), individuals embrace a self-focusing cognitive style that is functional for disease management under conditions of controllability, but may work against the individuals when they confront uncontrollability or noncontingency in their environment (e.g., Chaney et al., 1999). This may indicate a cognitive style in persons with longstanding asthma comparable to the "depressive self-focusing style" (Pyszczynski & Greenberg, 1987b; p. 106). The present study is an experimental investigation of the relationship between self-focused attention and asthma. It was anticipated that young adults with asthma would show an increased preference for self-focus following failure, compared to a healthy cohort.

The results of this study were expected to have contributed significantly to future research in a number of ways. Specifically, the results would further delineate the process by which certain cognitive appraisal styles develop in chronic illnesses, in general, and in asthma, in particular. A clearer perception of the contribution of medical regimens to self-focused attention would lead to a more comprehensive view of asthma, including both physical and psychological components.

It is obvious that asthma is not as controllable an illness as had previously been thought. The death rate for asthma has increased from 1.3 per 100,000 to 1.9 per 100,000 from 1980 through 1989 (Creer & Bender, 1993). This is for a disease that it is considered, for the most part, controllable. In addition, the severity of the illness certainly contributes to the psychological problems that can result, but it does not account for these effects entirely. Due to greater knowledge and newer treatments for asthma, a decrease in mortality from asthma would be expected; however, the reverse trend has been found (Creer & Bender, 1993). It was expected that the results of this study should assist individuals with asthma in developing realistic expectations regarding the effectiveness of self-management programs in controlling their illness. Currently, persons with asthma are taught to be high self-monitors and to expect that if they consistently appraise their environment and their physical status for signs of an asthma attack, then they will be able to control all of their attacks. However, many people with asthma demonstrate poor symptom perception, including under and overperception (Rietveld, 1998; Wamboldt, 1998). In addition, it has already been noted that asthma is intermittent and variable in nature; therefore, it should not be expected that patients can control every attack through

self-management. Teaching individuals with asthma otherwise can actually be quite harmful. Encouraging self-focus with respect to controllable aspects of the illness would be more appropriate. In the same manner, it is essential for them to be aware when an attack is escalating beyond their control and, in these instances, to move beyond self-management to requesting help from their physician or an emergency room (Creer & Bender, 1993). Providing patients with asthma with realistic information about the controllability of their illness may upset them emotionally, but hopefully only temporarily, resulting in a wiser, longer-living individual. If they are taught they can control their asthma attacks, but find in reality this is not always true, the emotional upset may persist quite a bit longer with more deleterious effects. Lastly, a better understanding of the development and maintenance of a depressive self-focusing style and psychological maladjustment in asthma may also result.

# CHAPTER II

# REVIEW OF THE LITERATURE

## A Question: How is Self-Focus Related to Asthma?

Previous studies (e.g., Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986; Pyszczynski et al., 1987) have shown that self-focused attention appears to mediate the effects of failure experiences. This may account for the results observed in a study by Chaney et al. (1999) in which individuals with asthma who were exposed to failure experiences performed more poorly on a subsequent cognitive task and made more personal causal inferences for their performance than did their healthy peers. In addition, the self-focus exhibited by these subjects may have hindered their performance on the problem-solving task because they were focusing on task-irrelevant material rather than incorporating performance feedback (Kuhl, 1981). Thus, not only can self-focus increase negative internal attributions and interfere with cognitive performance, it promotes depression through a downward spiral of effects such as increased negative affect, self-criticism, and self-blame (Pyszczynski & Greenberg, 1987a; Pyszczynski et al., 1987).

Self-focused depressed individuals tend to view the world through a negative filter. They appear to be hypervigilant in their perceptions of negative stimuli (Pyszczynski & Greenberg, 1987a). Both medical and psychological treatments of asthma encourage external and self-focus. In fact, one of the most common behavioral treatments for asthma, self-management, in a sense, teaches individuals to be hypervigilant regarding internal and external stimuli that may provoke an asthma attack.

It is possible that an increase in the tendency to self-focus in persons with asthma can be accounted for, in part, by self-management techniques. However, to understand the nature of the relationship between self-focus and self-management, it is first necessary to briefly review both the medical and psychological treatment approaches to asthma.

## Treatment Options

### Medical

The main goal in asthma is to control the episodes and to improve functioning on a daily basis. There are three methods that may be employed to medically manage asthma: environmental control, pharmacological management, and immunotherapy. In order to exert environmental control, it is necessary to avoid and/or reduce exposure to known triggers (i.e., animals, dust). Pharmacological management involves the use of medications to manage and/or prevent attacks from transpiring. Medications that are frequently utilized include oral or inhaled Beta-2 adrenergic agonists, theophylline, cromolyn sodium, inhaled steroids, and oral steroids. Lastly, immunotherapy can be beneficial if the allergens identified with the child's asthma are inescapable and/or present year-round (Young, 1994).

### Psychological

A number of behavioral techniques are effective when applied to different aspects of asthma. Systematic desensitization is useful in teaching the patient to cope with the panic that sometimes accompanies an attack. Relaxation training and biofeedback are also valuable tools for reducing the severity of attacks and helping the patient regain control. Operant procedures such as time-out from positive reinforcement may reduce

hospital overuse in asthmatic patients. Finally, shaping can be beneficial when teaching children how to use the equipment associated with their medications (i.e., nebulizers) (Creer, 1994).

Self-Management Techniques

Self-management has become an essential component of any successful treatment program for asthma. The following areas comprise self-management: contextual variables, antecedent stimuli, behavior, consequences, and relapse prevention (Creer & Bender, 1995).

Contextual variables include setting events, establishing operations, and establishing stimuli. Setting events allude to antecedent stimuli, events, and stimulus-response interactions. Incorporated in this domain are things such as medication compliance and discriminative stimuli for attacks. Establishing operations refer to circumstances that either change frequencies of responses formerly associated with reinforcers or modify effectiveness of reinforcers. For example, medication compliance may be dependent upon patients' perceptions of the drug as reinforcing (i.e., preventing attacks) or not reinforcing (i.e., negative side effects). Lastly, establishing stimuli are stimuli coupled with an establishing operation; the response or stimulus change they elicit becomes a conditioned stimulus for that operation. For example, a nebulizer that releases medication is sought out during an asthma attack because it has become associated with symptom relief (Creer & Bender, 1995).

Antecedent stimuli include risk-factor analysis and establishing stimulus control. Risk factor analysis aids in predicting the probability of asthma attacks in patients.

Establishing stimulus control refers to altering antecedent events in order to change the occurrence of a response. For example, instructing patients to organize antecedents through environmental programming and positive self-instruction can assist patients in handling their asthma across settings (Creer & Bender, 1995).

Behavior involves the acquisition and performance of self-management skills. Acquisition primarily entails gaining knowledge of asthma and its management. Performance of self-management skills demonstrates that knowledge has been attained. Performance consists of information collection, information processing and evaluation, and implementation of specific self-management skills. Information collection pertains to patients gathering valid and reliable data about themselves and their asthma. Information processing and evaluation involve the decisions that individuals must make regarding their asthma founded on the information they have compiled about the condition. Self-management skills are based on patients' utilization of self-instruction. This includes prompting, directing, and maintenance of performance of self-management competencies. Self-instruction is essential because it assists in establishing control over attacks and it promotes effective coping strategies such as relaxation skills, systematic desensitization, skill rehearsal, modeling, linking or unlinking chains of behavior, self-reinforcement, rehearsal, and the application of Premack's Principle (Creer & Bender, 1995).

Consequences are made up of self-reaction and self-efficacy. Self-reaction requires that patients focus attention on evaluating their performance. They can then form realistic expectations about their performance and determine if additional training is

necessary. Self-efficacy refers to Bandura's theory (1977) that individuals believe they can sufficiently execute certain skills in a given situation (Creer & Bender, 1995).

Finally, relapse prevention refers to inhibiting a breach of self-imposed rules patients may have learned to employ in managing their asthma (Creer & Bender, 1993). Instructions such as the following should be incorporated into self-management techniques:

1. Taking any prescribed prophylactic medication.
2. Avoiding of high-risk situations.
3. Escaping from high-risk situations.
4. Mastering performance of self-management skills.
5. Rehearsing asthma self-management competencies between attacks.
6. Avoiding factors that weaken self-management performance (e.g., reliance upon memory).
7. Taking remedial steps when necessary.
8. Developing new coping strategies as appropriate (Creer & Bender, 1995, p. 50).

It is readily apparent that appropriate asthma self-management encourages high levels of both external focus and self-focus. However, it is important that individuals form realistic expectations regarding events in general, and their abilities to control their asthma through self-management programs, in particular (Creer & Bender, 1993). A significant degree of self-focus may be beneficial under controllable conditions, but it is also probable that it is detrimental under conditions of little or no control as is often seen

in an intermittent, variable illness such as asthma. Individuals with asthma who have learned to self-focus may get entangled in the attributions and mood states related to a situation, rather than focusing on the specifics of the presented task. They are overtaken by the cognitive aspects of the event and are therefore unable to perform the necessary behavioral responses (Kuhl, 1981). Furthermore, because asthma is such a complex illness, no individual should have the expertise necessary to manage all aspects of an attack (Creer & Bender, 1993). Believing that they have the ability to control all facets of their illness could be not only physically and psychologically harmful, but life threatening as well.

The medical and psychological treatment approaches to asthma have been reviewed. Self-management programs and their connection to self-focused attention have also been examined. It is evident that several positive medical and psychological treatments for asthma have been developed. Yet many psychological problems still remain for individuals with asthma. Studies regarding the emotional maladjustment in persons with asthma are discussed. Two theoretical explanations for these effects are also presented.

## Psychological Adjustment of Individuals with Asthma

Numerous studies have examined the psychological adjustment of children with asthma and their families (e.g., Bender, Milgrom, Rand, & Ackerson, 1998; (Forero, Bauman, Young, Booth, & Nutbeam, 1996; Hambley, Brazil, Furrow, & Chua, 1989; Kashani et al., 1988; MacLean et al., 1992; Miller, 1987; Mrazek, Schuman, & Klinnert, 1998; Perrin, MacLean, Gortmaker, & Asher, 1992; Silverglade et al., 1993; Viney &

Westbrook, 1985) and several have focused on the emotional effects of asthma in adults (e.g., Lyketsos, 1984; Knapp & Nemetz, 1957; Priel et al., 1994; Snadden & Brown, 1992). However, there is a paucity of research exploring the long-term effects of childhood-onset asthma in adults (e.g., Chaney et al., 1999).

Hambley et al. (1989) studied children with moderate to severe asthma in a residential treatment program and found that most were experiencing behavioral and school-related problems. In addition, boys exhibited global social competency problems, whereas girls demonstrated low self-esteem. MacLean et al. (1992) also examined children with asthma and discovered that 11.5 percent scored above the 98th percentile for Total Behavior Problems on the Child Behavior Checklist. Research has revealed that children with asthma are more at risk for psychopathology, namely anxiety and phobic symptoms, than their healthy peers (Kashani et al., 1988). Employing a longitudinal prospective design, Mrazek et al. (1998) found that, of those children who suffer from asthma, children who develop the illness by age three are more substantially in danger of developing behavior problems (e.g., sleep difficulties, depressed mood, fearfulness) than both children with later asthma onset (ages three to six) and those that do not have asthma. A study conducted by Silverglade et al. (1993) divided adolescents with asthma into groups based upon their illness severity (mild, moderate, and severe) and compared them with each other and a fourth group of healthy adolescents on cognitive and emotional indices. Analyses revealed that irrational beliefs, such as the importance of approval from others and the inability to control emotions, in conjunction with self-reported anxiety, depression, and hostility were significantly related to disease severity.

Furthermore, the cognitive and emotional adjustment of adolescents with mild asthma favored that of their healthy peers, whereas the adolescents with moderate to severe asthma exhibited a high level of cognitive and emotional maladjustment. A content analysis of interviews conducted with healthy children and children with asthma revealed that asthmatic children express more direct and indirect hostility, experience increased helplessness, and feel less competent than their healthy peers (Viney & Westbrook, 1985). Australian investigators examined health behaviors, social adjustment, and psychosomatic symptoms in adolescents with asthma. They concluded that adolescents with asthma manifested higher rates of daily tobacco smoking, binge drinking, psychosomatic symptoms (e.g., headaches, backaches), and feelings of loneliness, unhappiness, and depression when compared to their healthy peers (Forero et al., 1996). One study utilized the movie "E.T., The Extra-Terrestrial" to elicit sadness, happiness, and a combination of sadness and happiness while recording heart and respiration rate and levels of oxygen saturation. Sadness was demonstrated to evoke patterns of autonomic reactivity consistent with cholinergic activity and airway constriction, whereas happiness was associated with the alleviation of airway constriction (Miller & Wood, 1997). Family dysfunction (e.g., no affection displayed, expectations and consequences of behavior unclear) has also been linked to medication nonadherence which can result in poor illness control (Bender et al., 1998).

Research on adults with asthma when compared to age-matched physically ill control subjects revealed increased anxiety, depression, and "inhibited hostility" among the subjects with asthma (Lyketsos, 1984). Knapp and Nemetz (1957) found a positive

relationship between level of asthma severity and personality disturbance in adults with asthma. A study involving adults with asthma in an outpatient setting showed that individuals higher in negative affect were more introspective and tended to be more sensitized to physical symptoms. Their vigilant cognitive styles allowed them to detect even minor asthma symptoms (Priel et al., 1994). Snadden and Brown (1992) employed an interpretive research format to explore the emotions of seven adults with asthma who reported feeling stigmatized or pessimistic due to their illness. A dynamic conceptualization of the asthma experience was formulated. The model depicted a continuum from diagnosis to final acceptance during which the individual with asthma learns to integrate knowledge, experience, and self-awareness in order to advance to acceptance and control of their illness. It was found that disease severity was not as important as patient attitudes in predicting adjustment to the illness (see also Kintner, 1997).

It is apparent that there is an association between asthma and emotional adjustment in both children and adults; however, the exact nature of this relationship has yet to be delineated. Furthermore, the significance of illness duration from childhood to adulthood remains to be explored. Certain theories presented in the literature may be useful in gaining insight regarding the connection between asthma and long-term psychological adjustment.

**Learned Helplessness**

Although relatively little work has focused on the long-term emotional sequelae of childhood asthma, one study did examine depression and the effects of experimentally

induced learned helplessness in a group of individuals with longstanding asthma and an age-matched healthy cohort (Chaney et al., 1999). These authors found that young adults with a history of childhood asthma had more negative expectations for future events and higher rates of depression These subjects performed more poorly than their healthy peers on an experimental task designed to induce cognitive deficits associated with learned helplessness (e.g., Abramson et al., 1978).

Such results suggest that the intermittent and variable nature of asthma may have increased the susceptibility of asthmatic subjects to learned helplessness effects. For example, learned helplessness theory (e.g., Hiroto & Seligman, 1975; Peterson et al., 1993) would suggest that a learning history characterized by repeated exposure to aversive behavior-outcome noncontingency produces decreased problem-solving, hinders recognition of subsequent contingencies in the environment, and increases the likelihood that future encounters with uncontrollable stimuli will result in the types of cognitive deficits (i.e., diminished problem-solving ability) observed by Chaney et al. (1999). In addition to cognitive deficits, learned helplessness theory would also predict that continued exposure to noncontingency would also result in affective deficits. Previous studies have demonstrated that increased asthma uncertainty and/or unpredictability is associated with emotional deficits (i.e., poorer psychological adjustment) in individuals with longstanding asthma (Mullins et al., 1997).

In the study conducted by Chaney et al. (1999), individuals with asthma also demonstrated an increased tendency to make greater internal attributions for their performance following noncontingent failure on experimental tasks. In essence, these

subjects made internal causal attributions following uncontrollable, unsolvable problems. It may be that by interpreting their inability to effect the correct response and succeed in the task as a sign of personal inadequacy, persons with asthma make inappropriate outcome appraisals. This can compromise their sense of self-efficacy and contributes to decreased self-esteem (Leventhal, Zimmerman, & Gutmann, 1984). Furthermore, initiating any attributional search process interferes with subsequent performance on problem-solving tasks because the individuals are focusing on task-irrelevant material (Kuhl, 1981).

Low self-esteem and the perseverative attempts to regain the lost source of self-esteem are central components of a depressive self-focusing style (Pyszczynski & Greenberg, 1987b). Further, self-regulatory perseveration theory may provide an alternative explanation for the attributional pattern that was observed by Chaney et al. (1999).

**Self-Regulatory Perseveration Theory**

Self-regulatory perseveration theory (Pyszczynski, Holt, & Greenberg, 1987) suggests that depression occurs due to an inability to withdraw from a self-regulatory cycle following the loss of a principal source of self-esteem. The high degree of investment in the lost object decreases the effectiveness of normal defensive strategies employed for coping with the loss and prevents exiting from the self-regulatory cycle which is directed toward reducing the negative discrepancy and regaining the object. This causes a continual focus on the irreducible discrepancy (Pyszczynski & Greenberg, 1987a). The inability to exit the cycle and the subsequent high degree of self-focus

creates a spiral of effects, including an escalation of negative affect, an elevated tendency to generate internal attributions for the loss, increases in the frequency of self-evaluations and self-criticism, increased self-blame, and deficits in self-esteem, motivation, and performance (Pyszczynski & Greenberg, 1987a; Pyszczynski et al., 1987). These outcomes result in a state of depression (Pyszczynski & Greenberg, 1987a).

Research has indicated that depressed individuals are commonly highly self-focused (e.g., Smith & Greenberg, 1981; Ingram & Smith, 1984; Smith, Ingram, & Roth, 1985). However, there is one exception to this proclivity: following a positive outcome, depressed individuals find self-focus aversive and actively evade stimuli that intensify self-focus (Pyszczynski et al., 1987). People who have recently experienced the loss of a meaningful source of self-worth will engage in high levels of self-focus as an element of their perseverated self-regulatory efforts to recover the lost object. Consequently, according to the theory, depressed individuals, in general, will be highly self-focused. However, typically, positive outcomes will interfere with the individual's perseveration on the lost object and imply a reason for optimism. Self-focus after such outcomes would be aversive and therefore, is actively avoided (Pyszczynski et al., 1987). Thus, a depressed individual self-focuses primarily when negative consequences are salient but evades self-focus when positive consequences are salient (Pyszczynski & Greenberg, 1987a).

The depressive self-focusing style then sustains and intensifies the depressive symptomatology. Such a self-focusing pattern

> (a) minimizes positive affect after positive outcomes and magnifies negative affect after negative outcomes, (b) decreases internal attributions for positive outcomes and increases internal attributions for negative outcomes, (c) discourages an increase in self-esteem after positive outcomes and encourages a decrease in self-esteem after negative outcomes, and (d) minimizes the increase in motivation that could follow from positive outcomes and magnifies the decrease in motivation that could follow from negative outcomes. In general, then, the depressive self-focusing style minimizes the positive psychological consequences of success and maximizes the negative psychological consequences of failure (Pyszczynski & Greenberg, 1987a, p. 128).

The only way that this negative, downward spiral can be halted is if the individual relinquishes the lost object and unearths substitute sources of identity and self-esteem.

The negative effects that result from the perseveratory cycle augment a negative self-image which furnishes a reason for the individual's state and provides a buffer against further disappointment and disillusionment. The negative self-image is preserved and bolstered by the depressive self-focusing style (Pyszczynski & Greenberg, 1987a).

Several studies have examined the relationship between self-focused attention, self-preoccupation, depression, self-regulatory perseveration, and negative memory bias (e.g., Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986; Pyszczynski, Hamilton, Herring, & Greenberg, 1989; Pyszczynski et al., 1987; Sakamoto, 1999). Pyszczynski & Greenberg (1985) examined depressed and nondepressed introductory psychology students to determine their preferences for self-focusing stimuli

after success versus after failure. Subjects worked on solvable or unsolvable anagrams (resulting in either success or failure) and then worked on each of two puzzles, one of which faced a mirror and one that did not. Subjects then rated the two puzzles according to preference, thus indicating their propensity toward self-focusing stimuli. Results showed that nondepressed subjects preferred self-focusing stimuli more after success than following failure, whereas the depressed subjects did not. In turn, depressed subjects preferred the self-focusing stimuli more after failure than after success. Furthermore, depressed and nondepressed subjects also differed in their attributions for their performance on the anagram task. Nondepressed subjects attributed their performance after failure as due to luck. They also viewed the test as less valid. Depressed subjects did not exhibit such differences. Rather, depressed subjects manifested a loss of self-esteem following failure, but nondepressed subjects did not. This study clearly demonstrated the differences in self-focusing tendencies in depressed and nondepressed individuals.

Pyszczynski & Greenberg (1986) employed a similar methodology to the study described above except that subjects worked on each of two identical puzzles (they were led to believe that the set of letters in each puzzle was different), one of which was in front of a mirror and one which was not. Next, they were given the opportunity to choose which puzzle they would like to work on for 10 more minutes; however, they could alternate between the two puzzles as often as they desired. The dependent measures were whether or not they moved immediately to the non-mirror puzzle and the amount of time spent working on the mirror-associated puzzle. It was shown that depressed success

subjects spent notably less time on the mirror-associated puzzle than did depressed control, depressed failure, or nondepressed success subjects. Once again, a behavioral demonstration of depressed persons' preference for self-focus after failure over self-focus after success is provided.

In another study, Greenberg & Pyszczynski (1986) assessed the tendency of depressed and nondepressed subjects to spontaneously self-focus following success and failure. The measure of self-focus utilized in this study was Exner's (1973) Self-Focus Sentence Completion (SFSC). Experiment one showed that both depressed and nondepressed individuals were more likely to self-focus immediately following failure than after success. The authors accounted for this result by hypothesizing that all individuals tend to self-focus after failure due to self-regulatory needs. In experiment two, a substantial delay and distraction were added. As a result, it was found that over time, depressed subjects continued to engage in increased levels of self-focus after failure than after success, whereas nondepressed subjects switched to the opposite pattern.

In a study focusing on depression, self-focused attention, and individuals' expectancies for positive and negative future life events occurring to both themselves and others, Pyszczynski et al. (1987) determined that a significant degree of self-focus partially mediated depressive pessimism. In other words, self-focused depressed subjects judged negative events as much more likely to befall themselves than did nondepressed subjects and externally-focused depressed subjects. Thus, self-focused depressed subjects exhibited a greater amount of pessimism than nondepressed subjects, whereas externally focused depressed subjects did not.

Pyszczynski et al. (1989) examined the relationship among depression, self-focused attention and negative memory bias. The first experiment revealed that the incidents remembered by depressed subjects were more negative than those recalled by nondepressed subjects; however, this was viewed only under conditions of self-focus and not under conditions of external focus. Thus, the bias towards negative memories among individuals suffering from depression is mediated by the level of self-focus. Highly self-focused depressed people will be more prone to remembering negative events. Encouraging an external focus can decrease or eradicate the negative memory bias. Once again, in the second experiment, self-focus resulted in depressed subjects recalling less positive memories about themselves. Nevertheless, for both depressed and non-depressed subjects, self-focus did not effect the positivity of information recalled about others. The authors interpreted this as self-schema deactivation. In other words, the consequence of a negative self-schema can be a negative memory bias and depressive pessimism. By having subjects recall information about others, depressed subjects were able to deactivate their self-schemata.

Viewing Greenberg and Pyszczynski's (1986) concept of self-focused attention as a state, Sakamoto (1998) proposed self-preoccupation as a trait. Self-preoccupation, defined as "the tendency to focus more on the self and to maintain self-focused attention" (Sakamoto, 1999, p. 109) was the central theme of a longitudinal study examining the concept's relationship to depression (Sakamoto, 1999). At Time One, Sakamoto assessed Japanese undergraduate students with the Preoccupation Scale (Sakamoto, 1998) and the Zung Self-rating Depression Scale (SDS) (Zung, 1965). Three months later, at Time

Two, depression was again measured with the SDS and the number, type, and affective response to life events between Time One and Time Two were assessed by the Life Event Questionnaire (LEQU; Sakamoto & Kamabara, 1998). It was found that when confronted with more negative life events, individuals high in self-preoccupation were more depressed than subjects low in that domain. Thus, the author determined that self-preoccupation could be interpreted as an ingredient increasing one's vulnerability to depression. It was further stated that those individuals high in self-preoccupation may focus their attention internally when depressed, searching for the reason for the depressed mood and thereby maintaining the depressed mood. In contrast, depressed individuals low in self-preoccupation might focus their attention externally, attempting to assuage the depressed mood.

**Summary**

Research has been presented depicting the variety of psychological problems which can occur in both children and adults with asthma (e.g., Hambley, Brazil, Furrow, & Chua, 1989; Kashani et al., 1988; Knapp & Nemetz, 1957; Lyketsos, 1984; MacLean et al., 1992; Perrin, MacLean, Gortmaker, & Asher, 1992; Priel et al., 1994; Silverglade et al., 1993; Snadden & Brown, 1992; Viney & Westbrook, 1985) including behavioral problems, low self-esteem, depression, and hostility. Learned helplessness theory (Hiroto & Seligman, 1975; Peterson et al., 1993) and self-regulatory perseveration theory (Pyszczynski, Holt, & Greenberg, 1987) were presented as possible explanations for the psychological maladjustment observed in individuals with asthma. A potential link between self-focus and management of asthma was delineated.

The literature which has been reviewed provides evidence for a plausible relationship between asthma and self-focused attention. However, the exact nature of this relationship has yet to be delineated. One possible factor which may predispose individuals with asthma to a depressive self-focusing style is the self-management techniques often used to treat the illness. Research has indicated that persons with asthma seem to have an increased tendency to internalize failure experiences that have resulted from exposure to noncontingent outcomes (Chaney et al., 1999). However, this tendency has not been directly researched in relationship to the development of a depressive self-focusing style. Research also was presented which suggests a relationship between self-management and self-focus. The direct relationship between self-focused attention and asthma has yet to be examined.

# CHAPTER III

# THE PRESENT STUDY

Various theories regarding the development of psychological problems in individuals with asthma have been presented in the literature. The learned helplessness model (Hiroto & Seligman, 1975; Peterson et al., 1993) may account for an increased vulnerability of individuals with asthma to the effects of learned helplessness due to variable and intermittent characteristics of the illness. Self-regulatory perseveration theory (Pyszczynski & Greenberg, 1987b) may provide another explanation for the formation of psychological disturbances in asthma. This theory suggests that individuals tend to dwell excessively on negative experiences in an attempt to regain a lost source of self-esteem. However, because this is often an unattainable goal, the efforts fail and the individual spends longer periods of time focusing internally. Psychological difficulties such as depression result when the probability of reducing the discrepancy is low. Pyszczynski & Greenberg (1987b) posit that the attributional properties of depression are a repercussion of the self-focusing tendencies that surface due to the individual's inability to relinquish a lost source of self-esteem. Thus, a depressive self-focusing style may explain both the negative attributions and depression that occur in individuals with asthma.

The current study was an experimental investigation of the relationship between self-focused attention and asthma. The primary goal was to investigate experimentally the effects of noncontingency on the demonstration of self-focus in asthma. The relationship among these variables was determined by comparing subjects' responses on a

self-report measure of depression, their emotional, expectancy, and attributional responses prior to and following a learned helplessness induction, and their subsequent performance on a self-focusing task.

The present study utilized a computerized version of a standard concept formation task (e.g., Levine, 1971), similar to that originally used by Hiroto and Seligman (1975). This type of task was chosen for this study because it has been shown to successfully induce helplessness (or failure) in previous studies (e.g., Hiroto & Seligman, 1975; Chaney et al., 1999).

Based on a review of self-focus task paradigms employed in the study of self-focused attention and depression (e.g., Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986; Pyszczynski et al., 1987), a behavioral evaluation of self focus was chosen. Specifically, the format of the present study most closely approximated that of Pyszczynski and Greenberg's (1985, 1986) studies. These authors utilized puzzle tasks to examine the relationship between failure or success and subsequent preference for self-focusing stimuli. Preference for self-focusing stimuli was assessed in two different manners. In the 1985 study, Pyszczynski and Greenberg used two adult games, namely Perquackey and the Scrabble Sentence Cube Game. The former was referred to as the "word puzzle" and the latter was referred to as the "sentence puzzle." The tasks in each puzzle were similar. The puzzle associated with the mirror was counterbalanced so that for half of the subjects the word puzzle was in front of the mirror and for the other half of the subjects the sentence puzzle was in front of the mirror. Preference for self-focusing stimuli was measured by a nine-point scale asking, "Which of the two puzzles did you

like the most?" Subjects rated their preference from 1 = sentence puzzles very much more, to 5 = both equal, to 9 = word puzzles very much more.

In the 1986 study, Pyszczynski and Greenberg used the same puzzle, Perquackey, on two tables, one set in front of a mirror. Subjects were led to believe that the identical puzzles contained sets with different distributions of letters. Following a three-minute practice session with each puzzle, subjects were given the opportunity to work on either puzzle for as much or as little of a subsequent 10-minute period. They were permitted to switch from one puzzle to the other as frequently as they wanted. The authors assessed preference for self-focusing stimuli by determining the amount of time spent working on the mirror-associated puzzle.

These studies are preferable compared to other self-focus task paradigms because they allow for a more direct, observable measure of self-focusing preferences. However, Greenberg and Pyszczynski (1986) have noted that these methods assess preferences for self-focus enhancing stimuli rather than actual self-focusing tendencies. Yet it can be argued that by virtue of choosing self-focus enhancing stimuli one is actually increasing the likelihood that he or she will actively engage in self-focus, thereby demonstrating a proclivity for self-focus.

Some of the shortcomings of previous studies of self-focused attention and depression have included small sample sizes, subclinically depressed subjects which can limit the generalizability of results, subjects that were not matched on potentially confounding variables such as gender, age, or SES (e.g., Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986; Pyszczynski et al., 1987), and the use self-

report measures of self-focus rather than behavioral observations (Greenberg & Pyszczynski, 1986; Pyszczynski et al., 1987). In addition, some studies involved a substantial delay (up to two weeks) between the measurement of depression and the experimental procedure ( Pyszczynski & Greenberg, 1985, 1986). It is possible that subjects' level of depression may have changed during the delay, affecting the validity of the subsequent results.

In the present study, preference for self-focusing stimuli was determined in the same manner that was utilized by Pyszczynski and Greenberg (1986): the total time spent working on the mirror-associated puzzle. Weaknesses of previous studies were addressed by employing a larger sample in this study and controlling for potential confounds by recruiting participants only between the ages of 18 and 25 and matching them on gender and SES. Additional strengths of the present study included the use of an experimental component rather than dependence on questionnaire data, utilization of a behavioral measure of self-focus, and a design that required no delay between the measurement of depression and the experimental task.

Based on a review of the literature on asthma and self-regulatory perseveration, one central outcome to this study was anticipated. It was hypothesized that individuals with asthma that were exposed to noncontingent feedback would exhibit increased preferences for self-focusing stimuli when compared to their healthy peers. It was further expected that no significant differences would be observed between individuals with asthma and healthy individuals that received contingent feedback.

It was expected that results of this study would positively impact future research and treatment programs for asthma. The identification of specific cognitive styles in individuals with asthma would allow more targeted treatment plans for this population. In addition, it would lend evidence to a comprehensive etiological model for psychological maladjustment in individuals with asthma.

# CHAPTER IV

# METHOD

## Participants

Two groups of students, matched for gender and socioeconomic status (SES) were recruited via oral solicitation to undergraduate psychology classes, word of mouth, and fliers at Oklahoma State University and University of Central Oklahoma. Participants were told that the aim of the study was to investigate life-events and problem solving skills in persons with and without asthma. The first group of participants included 40 young adults (22 female; 18 male) with histories of childhood asthma (AS). Individuals were included in the AS group if they: 1) had experienced their first asthma episode or had been diagnosed with asthma prior to the age of 12; and 2) were presently receiving treatment for their asthma. The AS group subjects ranged in age from 18 to 25 years ($M$ = 19.7, $SD$ = 1.77), were predominantly Caucasian (88%, $n$ = 35), and were from middle to upper-middle Socioeconomic (SES) classes ($M$ = 2.18, $SD$ = .96, Class II) (Hollingshead, 1957). Average age at diagnosis of asthma was 5.68 years (range = 0 to 12 years). The AS subjects recruited from study sites one ($n$ = 13) and two ($n$ = 27) did not differ significantly in terms of gender, $\chi^2(1) = 1.58$, $p > .05$ and SES, $t(38) = .60$, $p > .05$.

A healthy comparison (HC) cohort was composed of 40 young adults (22 female; 18 male) without histories of childhood chronic illness. Participants were included in the HC group if they: 1) reported no history of a chronic illness diagnosis; 2) had never been treated by a physician for a medical condition for more than three consecutive months in

any given year; and 3) had never been hospitalized continuously for a medical condition for more than one month (e.g., Patterson, 1988). The HC groups subjects ranged in age from 18 to 25 years ($M$ = 19.42, $SD$ = 1.72), were predominantly Caucasian (88%, $n$ = 35), and were from middle to upper-middle SES classes ($M$ = 2.2, $SD$ = .91, Class II) (Hollingshead, 1957). The HC subjects recruited from study sites one ($n$ = 13) and two ($n$ = 27) did not differ significantly in terms of gender, $\chi^2(1) = 1.58$, $p > .05$ and SES, $t(38) = 1.27$, $p > .05$. The HC and AS groups were comparable across gender, $\chi^2(1) = 0$, $p > .05$, and socioeconomic, $F(1, 78) = .01$, $p > .05$, parameters.

Psychology class participants were recruited via experimenters giving oral presentations about the study to classes that are offering extra credit to research participants. Volunteers completed a sign-up sheet and were scheduled for individual appointment times. Fliers were placed around the Student Health Center and its accompanying Allergy Clinic promoting the study and encouraging the participation of patients with asthma.

Psychology class participants had the choice of receiving either two points of extra class credit or monetary compensation of $5. Subjects recruited from the Student Health Center fliers received monetary compensation for participation. All psychology students were eligible to participate, but only students with asthma that were recruited from the Student Health Center were included in the study.

Instruments

Background Information. The following information was obtained on this questionnaire: gender, age, year in studies, ethnic origin, parents' levels of education,

parents' type of employment, age of diagnosis, type of asthma (e.g., seasonal or perennial), current treatment status, and ratings of asthma severity and controllability (See Appendix A).

The Inventory to Diagnose Depression (IDD; Zimmerman & Coryell, 1987) is a 17-item self-report scale designed to diagnose Major Depressive Disorder according to DSM-III (American Psychiatric Association, 1980) and DSM-III-R (American Psychiatric Association, 1987) criteria. The version employed in this study is also consistent with the criteria for DSM-IV Major Depressive Disorder (American Psychiatric Association, 1994). In addition, items on the IDD can be summed to yield an overall severity rating for depressive symptoms.

The IDD has been demonstrated to be both highly reliable and valid. Test-retest reliability correlation coefficients range from .91 to .93 (Zimmerman & Coryell, 1987; Zimmerman, Coryell, Corenthal, & Wilson, 1986). The internal consistency (Cronbach's alpha=.92) and split-half reliability (Spearman-Brown coefficient=.90) of the IDD are high as well. According to Zimmerman and Coryell (1988), the IDD also has a high diagnostic concordance with the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) Internal consistency (Cronbach, 1951) for the IDD in the present sample was .76 (See Appendix B).

The Multiple Affect Adjective Checklist (MAACL). The MAACL (Zuckerman & Lubin, 1965) is a 132-item adjective checklist that assesses transient mood states. The MAACL contains words describing three different mood states: anxiety (e.g., afraid), depression (e.g., wilted), and hostility (e.g., angry). Respondents are given the

instructions: "Please check the words that you feel apply to you right now, at this moment." Mood adjective items are scored as one (present) or zero (absent); some items contain positive mood adjectives, which are scored if not endorsed. Items are summed and divided by the number of available words for each mood state (i.e., 21 for anxiety; 40 for depression; 28 for hostility). These scores represent the respondent's level of transient anxiety, depression, and hostility. Scores on the three MAACL mood states were utilized to examine the effectiveness of the experimental manipulation (i.e., contingent versus noncontingent feedback) on participants' moods. The MAACL has been shown to be sensitive to transient mood changes in previous studies utilizing experimental induction procedures (e.g., Cairns & Norton, 1988; Nagata & Trierweiler, 1988). The MAACL has also been shown to discriminate moods across varying levels of asthma severity (e.g., Silverglade et al., 1994). In the present study, Cronbach's (1951) alpha reliability was .88 (See Appendix C).

Visual Analog Scale (VAS). The VAS measure consisted of a single-item, 10 centimeter line that asked participants to indicate the extent to which they expected to succeed on an upcoming computer task. Subjects were instructed to, "Place an 'X' on the line that indicates how you expect to perform on the task." The scale ranged from zero (much worse than most people) to 10 (much better than most people). VAS performance ratings were also used to check the effects of the experimental manipulation on outcome expectancies as a function of experiencing contingent or noncontingent feedback on the computerized concept-formation task (See Appendices D and E). One study (Benson & Kenelly, 1976) using a similar measure showed that subjects that received response-

noncontingent feedback on a concept-formation task perceived their performance on a subsequent anagram solving task as due to something external to themselves. Subjects that received response-contingent feedback attributed their subsequent performance to internal factors. Ahearn's (1997) review of the use of visual analog scales in the study of mood disorders indicated that, in general, such measures have high reliability and validity, are easy to comprehend, and produce high rates of compliance by subjects.

Internal-External Attributions. A single item assessed subjects' internal versus external attributions for their performance on the computer task. Subjects were asked, "Do you think that your performance on the computer task (will be/was) due to something about you or due to other circumstances?" The design of this measure corresponds to items on the Attributional Style Questionnaire (Peterson et al., 1982). Responses could range from one (totally due to other circumstances) to seven (totally due to me). Higher scores indicated more internal attributions for computer task performance. This measure determined if the subject experienced a change in locus of control. In addition, it served as another indication of the effects of the experimental manipulation (See Appendices D and E).

Experimental Task. The experimental treatment procedure utilized was a computerized version of a standard concept-formation task (e.g., Levine, 1971), similar to the task originally used by Hiroto and Seligman (1975). Participants were seated at a computer terminal and were given the following standardized instructions:

"In this experiment, you will be presented with several problems. Each problem consists of a series of displays like the one in the bottom right-hand corner

of the screen. Each display has two patterns: one on top and one on bottom. Each pattern contains a letter A and a letter T. You will also notice that one letter is surrounded by a square and the other by a circle, and that one background is red and the other blue. Every display will be like this one except that the letters, the surrounding shapes, and the background colors will be combined in different ways.

One of the two patterns, either the top one or the bottom one, has been chosen to be correct. For each display I want you to indicate which of these two [top or bottom] you think is correct and I'll tell you whether you are right or wrong. Then, go on to the next display. Again, you make a choice, and again I'll tell you whether you are right or wrong.

In this way you can learn the reason for my saying 'right' or 'wrong'. The reason may be because of the position of the letter, the surrounding shape, or the background color. The object for you is to figure the pattern out as fast as possible so that you can choose correctly as often as possible. Press the keyboard letter T if you think the top pattern is correct, or press the keyboard letter B if you think the bottom pattern is correct."

Participants were given examples of how the task was to be performed. Then, they were presented with a series of 40 stimulus patterns on the computer screen; the patterns were grouped into four sets of problems, with 10 trials for each problem. At the end of each tenth trial, the stimulus dimension (e.g., the letter A) associated with a correct response changed automatically, requiring participants to ascertain the new correct stimulus dimension (e.g., the color blue).

As part of the standardized instructions, all subjects were given the perception that the task was solvable and that they would eventually determine the correct dimension (i.e., letter, color, shape) value of the stimulus pattern. However, only half of the subjects received true feedback on their responses (i.e., contingent condition). In other words, subjects in this experimental condition were given feedback that allowed them to eventually determine the correct stimulus pattern. Participants in the failure treatment group received partially correct and partially incorrect (i.e., noncontingent) feedback on their performance. Participants in this condition were unable to determine the correct stimulus pattern and, subsequently, could not correctly identify any of the patterns across the four blocks of 10 trials.

On completion of the concept formation task, the research assistant "scored" the test and remarked to the subjects regarding their performance. In the contingent condition, the research assistant said, "Hmm, it looks like you did very well. You got [x] correct. That's one of the highest scores I've seen. The average score is about [x-5] correct." In the noncontingent condition, the research assistant said, "Hmm, it looks like you didn't do very well. You got [x] correct. I guess you're just not very good at this sort of thing. The average score is about [x+5] correct." The research assistant was blind to the outcome manipulation until the test was scored.

Puzzle task. The dependent measure was a task in which the subjects were asked to work on a puzzle. The research assistant lead them to a second room (different from the room in which they worked on the experimental computer task) that had a sign attached to the door stating "Mirror Image Study." The research assistant remarked that

due to a shortage of space, the room had to be shared with another researcher. The room contained one table with the same puzzle set on each side of the table. One side of the table faced a large observation mirror. Above the mirror was a sign which read, "Please Do Not Move."

The puzzle was Perquackey (by Leisure). It was referred to as the "word puzzle." The puzzle required subjects to shake a set of dice and then form words from their set. Subjects were told that they must formulate as many words as possible and then reshake the dice and start again. In order to secure a gauge of their performance, subjects were asked to write down the words that they constructed on paper that was provided and to represent each new shake of the dice by drawing a line to separate each group of words. Although the two puzzles on each side of the table were identical, subjects were led to believe that each set of dice contained different distributions of letters.

The research assistant then explained that the subject would work on each of the puzzles for three-minute practice sessions. Next, they were given ten minutes to work on whichever puzzle set they chose. They were informed that they could work on either set for as much or as little of the ten-minute period as they wished and that they could move from one set to the other as often as they chose. All subjects were seated facing toward the mirror at the beginning of the ten-minute period. This guaranteed some exposure to the mirror for all subjects. The amount of time spent working on the mirror-associated puzzle was the dependent measure of seeking or avoiding self-focus.

The research assistant observed the subject working on the puzzles behind the one-way mirror. At the start of the ten-minute period, the research assistant began coding

(See Appendix F) the amount of time the subject spent on the puzzles during each one minute interval. The research assistant had two stopwatches which they started and stopped each time the subject switched puzzles. The total amount of time spent on each puzzle was calculated. Following the puzzle task, subjects completed a nine-point Likert-type scale which asked, "Which of the two puzzles did you like the most?" The mirror-associated puzzle was represented by one and the non-mirror-associated puzzle was nine. Lower scores indicated increased preference for self-focusing stimuli (See Appendix G).

Procedure

On arriving for the experiment, subjects were seated and asked to read and sign an informed-consent form (See Appendix H). Prior to their arrival, the research assistant had randomly assigned participants to one of the two treatment conditions (i.e., contingent versus noncontingent feedback) on the concept-formation task. The assessment procedure involved five phases: (1) Pre-treatment Phase - subjects completed the background information questionnaire, the IDD, the MAACL, the VAS, and the attribution question; (2) Treatment Phase - subjects were administered the computerized concept formation task in which they received either contingent or noncontingent feedback about their performance; (3) Post-treatment Phase - again, subjects completed the MAACL, the VAS, and the attribution measure; (4) Performance Phase - subjects completed the puzzle task and the measure of puzzle preference; (5) Debriefing (See Appendix I) - following the completion of the experiment, all subjects were escorted back to the alcove and seated at the desk. They were given an explanation regarding the deceptive aspects of this study and the expected results to be gained from this research.

The research assistant reviewed possible reactions and feelings that they might experience as a result of the study. Referral sources were provided in case follow-up for exacerbated emotional reactions was necessary (See Appendix J).

The pre-treatment phase was conducted at a small desk in the alcove of the laboratory. The subject were then lead to a small room in which the treatment phase took place on a computer. Next, the subject were taken to the alcove once again to complete the post-treatment measures. The performance phase of the study took place in the second room labeled "Mirror Image Study." Finally, the subject returned to the alcove, was debriefed, and dismissed.

The research assistant was an undergraduate psychology major who was trained in the protocol of the study. The research assistant was blind to the hypotheses of the study.

# CHAPTER V

# RESULTS

## Preliminary Analyses

A series of preliminary analyses were performed to: 1) evaluate the effectiveness of random assignment of subjects to contingent or noncontingent feedback conditions on the concept-formation task; 2) examine the effects of the experimental manipulation on MAACL mood states, VAS performance expectancy ratings, and experimental task attributions (ATTRIB) (see Tables 1 and 2); and 3) to validate the hypothesized depression X helplessness induction methodology.

A 2 X 2 (Group X Condition) MANOVA revealed no significant group [$F(5, 72) = 1.18$, $p > .05$], condition [$F(5, 72) = .62$, $p > .05$], or group X condition [$F(5, 72) = .34$, $p > .05$] effects on pre-treatment levels of MAACL anxiety, depression, and hostility, VAS performance expectancy ratings or task attributions.

The AS group was also examined for differences on asthma-related pre-treatment variables. The AS subjects assigned to the contingent ($n = 21$) and noncontingent feedback conditions ($n = 19$) did not differ significantly in terms of their age at the time of their first asthma attack [$t(34) = -.81$, $p > .05$], the age they were diagnosed with asthma [$t(35) = -1.04$, $p > .05$], the type of asthma they suffer from (e.g., seasonal or perennial) [$\chi^2(1) = 1.64$, $p > .05$], the severity of their asthma [$t(38) = -.08$, $p > .05$], or the controllability of their asthma [$t(38) = -.25$, $p > .05$]. The AS subjects were about 5.5-years-old when they had their first asthma attack ($M = 5.58$, $SD = 3.59$) and they were diagnosed with the illness at about the same age ($M = 5.68$, $SD = 3.58$). The majority of

Table 1

Means for MAACL Mood States, VAS Performance Expectancy Ratings, and Task Attributions by Experimental Condition in Asthma Group

| | Experimental Condition | | | |
|---|---|---|---|---|
| | Contingent | | Noncontingent | |
| Measures | Pre Tx | Post Tx | Pre Tx | Post Tx |
| MAACL | | | | |
| Anxiety | 6.81 | 6.71 | 6.53 | 7.63 |
| Depression | 12.43 | 13.24 | 13.37 | 16.21 |
| Hostility | 7.67 | 8.62 | 7.53 | 9.32 |
| VAS | | | | |
| Expectancy | 5.81 | 6.24 | 6.13 | 4.50 |
| ATTRIB | | | | |
| Internal | 4.71 | 4.38 | 5.21 | 5.37 |

Note. Tx = Treatment; MAACL = Multiple Affect Adjective Checklist; VAS = Visual Analog Scale; ATTRIB = Task Attributions.

Table 2

Means for MAACL Mood States, VAS Performance Expectancy Ratings, and Task Attributions by Experimental Condition in Healthy Control Group

| | Experimental Condition | | | |
|---|---|---|---|---|
| | Contingent | | Noncontingent | |
| Measures | Pre Tx | Post Tx | Pre Tx | Post Tx |
| MAACL | | | | |
| Anxiety | 7.60 | 5.70 | 7.29 | 9.00 |
| Depression | 12.70 | 9.95 | 13.29 | 16.76 |
| Hostility | 8.00 | 7.30 | 8.05 | 10.33 |
| VAS | | | | |
| Expectancy | 5.00 | 6.48 | 5.33 | 3.02 |
| ATTRIB | | | | |
| Internal | 4.90 | 4.90 | 4.71 | 4.60 |

Note. Tx = Treatment; MAACL = Multiple Affect Adjective Checklist; VAS = Visual Analog Scale; ATTRIB = Task Attributions.

the AS group assessed their asthma as perennial (75%, n = 30), mild to moderate in severity (M = 2.40, SD = 1.57), and somewhat controllable to mostly controllable (M = 3.75, SD = 2.19). Furthermore, the AS subjects in the contingent and noncontingent feedback conditions did not differ significantly in their number of visits to a physician in the last six months [t(22) = .82, p > .05], nor in the number of school or work days missed in the last six months due to their asthma [t(38) = .71, p >.05]. Over a six-month period of time, the number of visits to their physician (M = 1.88, SD = 3.18) and the number of school or work days missed (M = 2.39, SD = 5.06) were both quite low.

A series of five 2 X 2 X 2 (Group X Condition X Time) repeated measures ANOVAs were conducted to examine the effects of the experimental manipulation on transient moods and task specific cognition appraisals (see Table 3). Univariate tests indicated significant condition X time effects for MAACL anxiety, depression, hostility, and VAS performance expectancies. There was not a significant condition X time effect for ATTRIB task attributions nor were there any main effects involving group.

Follow-up univariate analyses revealed that except for ATTRIB [F(1,38) = .02, p > .05], AS and HC participants in the noncontingent experimental condition manifested increases in all of the negative MAACL mood states and decreased VAS expectancies following exposure to unsolvable feedback (all p's < .01). Some opposite findings were observed in the contingent experimental condition. Subjects receiving contingent feedback exhibited decreases in MAACL anxiety [F(1, 38) = 4.40, p < .05] and increased VAS expectancies [F(1, 38) = 10.17, p, < .01] after receiving contingent feedback. The increase in depression observed in the contingent condition can be attributed to

Table 3
ANOVAs Examining Effects of Experimental Manipulation on Transient Moods and Task Specific Cognition Appraisals

| | F values with DF (1, 76) | | | | | | |
|---|---|---|---|---|---|---|---|
| Measures | Group (G) | Condition (C) | Time (T) | G X C | G X T | C X T | G X C X T |
| MAACL | | | | | | | |
| Anxiety | .43 | 2.55 | .88 | 1.16 | .42 | 12.12*** | 2.56 |
| Depression | .56 | 6.88* | 7.48** | .90 | 1.35 | 16.03*** | 3.37 |
| Hostility | .01 | 2.64 | 15.03*** | 1.36 | .63 | 9.37** | 2.68 |
| VAS Expectancy | 3.61 | 9.15** | 4.93* | 1.29 | .22 | 43.48*** | 3.94 |
| ATTRIB (Internal) | .29 | .82 | .48 | 2.68 | 0.00 | .72 | 1.24 |

Note. MAACL = Multiple Affect Adjective Checklist; VAS = Visual Analog Scale; ATTRIB = Task Attributions.

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

participants in the AS group as revealed by a significant group X time effect [$F(1, 38) = 7.17$, $p < .05$]. In other words, after receiving contingent feedback, only the AS participants exhibited a significant increase in depression. Likewise, the increase in hostility seen in the contingent experimental condition can be credited to the AS group as demonstrated by a group X time effect that approached conventional significance [$F(1, 38) = 3.98$, $p = .053$].

An attempt to validate the experimental method was conducted through the use of a 2 X 2 (depression X condition) ANOVA to examine the effects of low versus high depression and treatment condition on self-focus (mirror-associated puzzle). High-low depression groups were determined by performing a median split on the IDD scores. Analyses revealed no depression (low versus high) [$F(1,76) = .57$, $p > .05$], condition [$F(1,76) = .02$, $p > .05$], or depression X condition [$F(1,76) = .25$, $p > .05$] effects on self-focus.

Thus, preliminary analyses indicated that random assignment of participants to experimental conditions resulted in no differences between AS and HC groups on pre-treatment levels of mood, performance expectancies, or experimental task attributions. Furthermore, the experimental induction was generally effective in producing transient mood states and in modifying performance expectancies at the time of the post-test for all groups and conditions except for the AS participants in the contingent feedback condition. However, preliminary analyses also indicated no depression main effect or depression X condition interaction effect on mirror time (i.e., self-focus).

**Primary Analyses**

Rates of DSM-IV major depression and depression severity on the IDD were examined as a potential covariate in the primary analyses. Subjects with asthma and healthy control subjects did not differ significantly in rates of DSM-IV major depression [$\chi^2(1) = 2.05$, $p > .05$]. In the asthma group ($n = 40$), both the overall IDD severity total ($M = 7.7$, $SD = 4.95$), and the rate of DSM-IV Major Depressive Disorder (0%) were low. In the healthy group ($n = 40$), the overall IDD severity total ($M = 7.87$, $SD = 5.01$) was consistent with that of the AS group while the rate of DSM-IV Major Depressive Disorder (5%) was slightly, but not significantly higher. Therefore, because rates of DSM-IV Major Depressive Disorder or depression severity did not differ significantly between the HC and AS groups, depression was not examined as a covariate in a 2 x 2 (Group X Condition) ANCOVA to determine if depression mediated the effects of illness status and task condition on self-focus.

The primary analyses focused on mean differences between groups on the length of time spent on the mirror-associated puzzle versus the non-mirror puzzle. A 2 x 2 (Group X Condition) ANOVA assessed mean differences in the tendency to self-focus following noncontingent feedback. The ANOVA did not demonstrate significant Group [$F(1, 76) = 2.01$, $p > .05$], Condition [$F(1, 76) = .01$, $p > .05$], or Group X Condition [$F(1, 76) = 0$, $p > .05$] effects indicating that subjects with asthma exposed to noncontingent feedback did not spend more time self-focusing (mirror-associated puzzle) than their healthy cohorts. In other words, subjects with asthma did not have an increased proclivity toward self-

focusing after receiving noncontingent feedback. Furthermore, subjects with asthma that received contingent feedback did not spend less time self-focusing (non-mirror associated puzzle) than their healthy peers [$F(1,76) = 0$, $p > .05$]. Follow-up univariate analyses also revealed no significant group [$F(1,76) = 1.39$, $p > .05$], condition [$F(1,76) = .26$, $p > .05$], or group X condition [$F(1,76) = .40$, $p > .05$] effects for puzzle preference. Thus, regardless of health status and experimental condition, subjects liked the mirror-associated puzzle and the non-mirror associated puzzle equally well.

**Exploratory Analyses**

Due to the unusual pattern of increased MAACL depression and hostility observed for AS participants regardless of experimental condition, zero-order correlations were performed to ascertain whether increased negative emotional responses following the experimental task were related to self-focus (mirror-associated puzzle). Results did not reveal any significant relationships between MAACL anxiety, depression, hostility, VAS performance expectancies, or ATTRIB task attributions and self-focus for either the AS or HC participants (all $p$'s $> .05$) (see Tables 4 and 5).

Table 4
Zero-Order Correlations for MAACL Mood States, VAS Performance Expectancy Ratings, Task Attributions, and Self-Focus in Asthma Group

| Variables | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. MAACL Anxiety | -- | | | | |
| 2. MAACL Depression | .71*** | -- | | | |
| 3. MAACL Hostility | .75*** | .86*** | -- | | |
| 4. VAS Expectancy | -.14 | -.33* | -.18 | -- | |
| 5. ATTRIB (Internal) | .06 | .06 | .01 | .07 | -- |
| 6. MIRTIME | .21 | .03 | .16 | .26 | -.03 |

Note. MAACL = Multiple Affect Adjective Checklist; VAS = Visual Analog Scale; ATTRIB = Task Attributions; MIRTIME = Self-focus.

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

Table 5
Zero-Order Correlations for MAACL Mood States, VAS Performance Expectancy Ratings, Task Attributions, and Self-Focus in Healthy Control Group

| Variables | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. MAACL Anxiety | -- | | | | |
| 2. MAACL Depression | .81*** | -- | | | |
| 3. MAACL Hostility | .81*** | .81*** | -- | | |
| 4. VAS Expectancy | -.61*** | -.67*** | -.58*** | -- | |
| 5. ATTRIB (Internal) | .16 | .15 | .16 | .03 | -- |
| 6. MIRTIME | -.09 | .00 | -.07 | -.17 | -.14 |

Note. MAACL = Multiple Affect Adjective Checklist; VAS = Visual Analog Scale; ATTRIB = Task Attributions; MIRTIME = Self-focus.

***$p \leq .001$.

## Discussion

The present study was devised to experimentally examine the relationship between self-focused attention, as measured by the amount of time engaged in a task involving self-focusing stimuli, and asthma. The experimental treatment procedure was generally effective in producing transient mood states and in altering performance expectancies in both AS and HC participants in the noncontingent condition and in HC subjects in the contingent condition at the time of the post-test.

Results of the primary analyses revealed AS subjects exposed to noncontingent feedback did not spend more time self-focusing (mirror-associated puzzle) than their healthy cohorts. In other words, participants with asthma did not demonstrate an increased propensity toward self-focusing after receiving noncontingent feedback. In addition, AS subjects that received contingent feedback did not spend less time self-focusing (non-mirror associated puzzle) than their healthy peers. It should be noted that there was not a significant difference in the rates of DSM-IV Major Depressive Disorder between the AS and HC groups. Thus, depression diagnosis could not have mediated the influence of health status on self-focus. Furthermore, zero-order correlations did not reveal any significant relationships between mood states or performance expectancies and self-focus at post-test. In other words, despite the AS participants' increased negative emotional response to the computerized concept-formation task, regardless of condition, this increased negative emotion was unrelated to self-focus.

One explanation of the findings may be due to characteristics of the sample employed in the study. It has been shown that the AS group perceived their asthma as

mild to moderate in severity and largely controllable. According to Silverglade et al. (1993), adolescents with mild asthma were similar to their healthy peers in terms of cognitive and emotional adjustment. It is also possible that this sample of people with asthma is a more homogeneous group than that which is typically seen. This study, which employed a small sample size, may not have included a representative sample of individuals with asthma and their associated problems. The AS participants in this sample may have experienced less variability in their symptoms and disease course (both as a group and as individuals) and therefore, may have been less uncertain about their asthma and more emotionally stable than most individuals with asthma (Renne & Creer, 1985). Asthma does not appear to have negatively impacted the ability of these individuals to attend work or school, nor did it require an extensive number of visits to their physicians. The fact that their illness did not impose many restrictions on these individuals may account for the low level of depression which was observed (Ireys, Werthamer-Larsson, Kolodner, & Gross, 1994). None of the subjects in the AS group met the DSM-IV criteria for a diagnosis of Major Depressive Disorder.

Another indication that this may not be a representative sample is the fact that all the subjects, including those with asthma, were college students. This may have posed a selection bias in that by virtue of the fact that they have made it to college, these individuals may already be hardier than most individuals with asthma. In addition, the participants in this study were primarily Caucasian and of a middle to upper-middle SES background. Given the high rates of asthma with corresponding morbidity and mortality in ethnic minorities in poor (Weiss, Gergen, & Crain, 1992), urban environments, it is

likely that the individuals that participated in this study do not represent the typical young adult with asthma.

It is also possible to view the results in terms of chronic stressors. Historically, stress has been viewed as a chronic aversive component of chronic illnesses. Elliot and Eisdorfer (1982) make a distinction between chronic intermittent stressors and chronic stressors. Chronic intermittent stressors occur once a day, once a week, or once a month, whereas chronic stressors, which may or may not be launched by a distinct event, persist continuously for a long time. Therefore, it is possible that chronic illnesses, such as asthma, do not, in fact, pose chronic stressors, but rather chronic intermittent stressors.

According to Lazarus and Folkman (1984):

> A chronic intermittent pattern, gives the individual time off to the extent that the event is put out of mind between occasions [e.g., between flare-ups]. A chronic persistent pattern, on the other hand, does not easily allow time off, and we would expect a more persistent level of threat. (p. 101)

The distinction between the two types of stressors is important because it can lead to two different types of coping. The chronic intermittent pattern gives the individual time off from the stressor to regroup coping efforts and to brace oneself for the next confrontation. It has been suggested that this kind of stressor pattern results in mastery types of coping because the time off between stressors allows the person a chance to process and learn from each consecutive exposure to the stressor. A chronic stressor, on the other hand, leads to failed coping. The individual never learns appropriate ways to deal with the stressor (Elliot & Eisdorfer, 1982).

Both AS and HC subjects in the noncontingent feedback group were equally susceptible to the stress of the experimental induction. Yet, there were no significant differences between AS and HC subjects in the amount of time spent self-focusing. Thus, individuals with asthma exposed to noncontingent feedback were not more vulnerable to the effects of noncontingent feedback, nor did they exhibit increased preferences for self-focusing stimuli when compared to their healthy peers. In fact, the AS subjects in the noncontingent feedback condition performed the same as their healthy peers. It is possible that the amount of time between the experimental induction and the self-focusing task was sufficient for all of the subjects (both AS and HC) to regroup cognitively and move on to the next task and that the negative emotions produced by the experimental induction were truly transient. Thus, both groups may have viewed the induction as an intermittent stressor rather than a chronic stressor. This supports the idea that asthma may pose a series of chronic intermittent stressor for individuals and suggests that individuals with asthma may not be more prone to developing a depressive self-focusing style.

Another potential avenue for interpreting the results is the concept of duration of illness. All of the AS subjects were diagnosed with asthma at about age five. It is possible that the long illness duration is related to the low level of depression (Chaney et al., 1996) and absence of a depressive self-focusing style. It is plausible that, over time, the individuals with asthma learned how to deal with the physical consequences of their illness. As a result, the negative affect (i.e., depression) related to the illness has

dissipated over time (Devins, Edworthy, Guthrie, & Martin, 1992; Newman, Fitzpatrick, Lamb, & Shipley, 1989).

According to self-regulatory perseveration theory, individuals who have recently experienced the loss of an important source of self-esteem will demonstrate high levels of self-focus in an attempt to recover the lost object. In order to remove oneself from the downward spiral of a depressive self-focusing pattern, the individual must surrender the lost object and find alternative sources of identity and self-esteem (Pyszczynski et al., 1987). It is possible, given the duration of time since the diagnosis of asthma in these individuals, that the lost source of self-esteem occurred far enough in the past that it did not cause the AS subjects to engage in high levels of self-focus. Furthermore, it is plausible that these individuals have discovered substitute sources of self-esteem which have allowed them to extricate themselves from the perseveratory cycle which would result in a depressive self-focusing style.

Viewing the findings in terms of controllability may be an additional means of explaining the results. As stated earlier, the AS group deemed their asthma as mild to moderate in severity and somewhat controllable to mostly controllable. According to Affleck, Tennen, Pfeiffer, Fifield (1987), perceived control over the symptoms of one's illness was associated with less mood disturbance. Due to the long duration of their illness, the AS participants may have already developed the essential ability to use self-management techniques to cope with the daily aspects of their illness while at the same time cultivating the knowledge that is necessary to propel them to seek the assistance of their physician or the emergency room when necessary. Therefore, the relatively high

level of controllability perceived by the AS subjects may account for their low levels of depression and absence of a depressive self-focusing style. Furthermore, given the low level of disease severity experienced by these subjects, perceived control over their illness may be adaptive (Burish et al., 1984).

Locus of control (LOC) is another concept that may assist the interpretation of the findings. In a study conducted by Heermann and Wills (1992), teaching problem-solving instruction to children under the age of 15 and their parents as part of the self-management aspect of an asthma education program did not result in increased internal health LOC. Those that benefitted most from the program demonstrated a low internal health LOC prior to instruction. It has also been found that individuals with a strong internal general LOC are less affected by external sources (Phares, 1980). It is possible that the AS participants in the present study already have a high internal LOC and thus, have not become more internally focused as a result of asthma self-management programs. It also follows that the noncontingent experimental manipulation may have been viewed as an external factor by the AS participants, thereby having no effect on their internal LOC and not producing a subsequent display of increased self-focus. Including a measure of general or health LOC in future studies may help delineate this relationship.

In the present study, increases in hostility were demonstrated across illness groups following noncontingent feedback in the experimental task. It may be that the individuals in this study experienced hostility (e.g., outward expression of emotion) when presented with a novel situation. As a result, this externally-focused emotion may have interfered with any subsequent tendency to self-focus.

An examination of the methodology utilized in this experiment, may shed light on the lack of significant findings for the primary analyses. The present study employed a behavioral measure of self-focus similar to the format of Pyszczynski and Greenberg's (1985, 1986) studies. However, in another study, Greenberg and Pyszczynski (1986) used Exner's (1973) Self-Focus Sentence Completion (SFSC) as the measure of self-focus. The Private Self-Consciousness subscale of the Self-Consciousness Scale is also another instrument which is credited with being a valid measure of self-focusing tendencies (Ingram, Johnson, Bernet, Dombeck, & Rowe, 1992). It is feasible that a self-report measure of self-focus may have been more sensitive than behavioral observation and may have revealed increased tendencies to self-focus following noncontingent feedback.

Ingram et al. (1992) have also criticized the use of mood induction strategies, similar to those used in this study, because they do not provide information with respect to how self-focused individuals react to stressful events in their personal lives. It is conceivable that the use of a more naturalistic event (e.g., medically- related helplessness situation) may have resulted in increased levels of self-focused attention. Furthermore, the lack of significant findings may have been due to short-term nature of the experiment. A longitudinal design may have been more apt to demonstrate increases in self-focused attention over time. Ingram et al. (1992) found that although self-focused and non-self-focused individuals initially demonstrated equal levels of negative affect, over time only the self-focused subjects increased in levels of negative emotion.

Another methodological flaw may have been the failure to include disease-specific measures beyond single-item ratings of controllability and severity. It has been suggested that cross-situational consistency may not exist for certain attributional domains such as health-related concerns (Cutrona, Russell, & Jones, 1984). This may be especially true for persons with asthma, given the salience of their health concerns. The addition of physiological measures (e.g., pulmonary functioning) may also have substantiated the low level of illness severity and uncertainty as perceived by the AS participants. Finally, the AS individuals were assumed to have been taught self-management techniques as part of their medical regimens; however, none of the instruments utilized addressed this issue or defined the type of asthma/self-management education these individuals may have received. It is possible that during the course of their illness, an emphasis was not placed on self-management and subsequently, increased levels of self-focused attention did not develop.

Although the results of the present study did not further delineate the process by which certain cognitive appraisal styles develop in asthma, they also did not provide information suggesting the need to modify standardized self-management programs in the care and treatment of individuals with asthma. In other words, it appears that the individuals in this study engaged in appropriate levels of both external focus and self-focus as required by self-management programs. It also appears as if these individuals had realistic expectations regarding their abilities to control their asthma (Creer & Bender, 1993). The perceptions of low disease severity and relatively high controllability appear to have benefitted these individuals and contributed to improved disease

management. These individuals may have already learned to distinguish between the controllable (e.g., daily symptoms) and uncontrollable (e.g., disease course) aspects of their illness thereby diminishing the potential deleterious emotional effects of asthma and improving their health status. One implication of these findings is that the majority of individuals with asthma are resilient, despite their illness. Future research should attempt to determine more clearly the factors that contribute to optimum levels of self-focus, emotional functioning, and appropriate self-management. In other words, it would be beneficial to ascertain what is unique about well-adjusted individuals with asthma and how they function in order to assist persons with asthma who experience greater difficulty managing their illness and emotional well-being.

Future research on the role of self-focused attention in young adults with asthma should incorporate larger, more ethnically and socioeconomically diverse samples, assessments of illness uncertainty and perceived control, physiological measurements of disease status and severity, and self-report instruments of self-focused attention. Future studies may also benefit from paying closer attention to severity measures in determining both levels of depression and self-focus perseveration. This would allow future investigations to assign participants to high and low depression groups, guaranteeing depression in some of the subjects, and possibly eliminating the need for a healthy comparison group. This would allow for closer examination of differences between persons with asthma who are better adjusted compared to those who struggle to a greater extent with their illness. The present findings suggest that when

asthma severity is low and depression is not present, persons with asthma are not distinguishable from their healthy peers.

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# Appendix A

## BACKGROUND INFORMATION

Subject # _____

BACKGROUND INFORMATION

1. Age: _____

2. Sex: M F
1 2

3. Race:
1 African-American
2 Native American/American-Indian
3 Caucasian
4 Hispanic
5 Asian
6 Biracial; Specify:_____
7 Other; Specify:_____

4. Highest Level: of Education Attained
1 Middle School
2 High School
3 Some College; Specify number of years:_____
4 College Degree
5 Post-Graduate Degree

5. Marital Status:
1 Never married
2 Married
3 Divorced
4 Cohabitating/Living with Partner
5 Widowed
6 Other: _____

6. If married, spouse's occupation_____

7. Parents' Occupation: Father_____ Mother_____

8. Parents' Highest Level of Education: Father_____ Mother_____

9. Do you live with your parents even part-time (including weekends)? _____

10. Are you currently taking any psychoactive medication (e.g., antidepressants, anti-anxiety)?
YES NO
1 2

11. Have you ever been treated by a physician for a medical condition for more than three consecutive months in any given year? (i.e., May, June, and July, 1995) YES NO
1 2

12. Have you ever been hospitalized continuously for a medical condition for more than one month? YES NO
1 2

13. Do you have a chronic illness? YES NO
1 2

**IF NO, PLEASE STOP HERE AND GO ON TO THE NEXT QUESTIONNAIRE IN YOUR PACKET. THANK YOU.**

14. Do you have asthma? YES NO
1 2

If you have another chronic illness in addition to asthma, please specify type(s) of condition(s):_____

15. Have you or another family member ever received any type of psychological counseling/therapy? YES NO
1 2

If you have asthma, was counseling related to you illness? YES NO
1 2

16. Are you currently taking any medications for your asthma? YES NO
1 2

IF YES, please specify type of medication:_____

17. At what age did you have your first asthma attack? _____

18. At what age were you diagnosed with asthma? _____

19. Are you presently receiving any medical treatment from a physician for your asthma?
YES NO
1 2

IF YES, please indicate the number of visits to your physician due to your asthma in the past 6 months. _____

20. Do you have asthma attacks only during a certain season (SEASONAL) or all-year round (PERENNIAL)?

| SEASONAL | PERENNIAL |
|---|---|
| 1 | 2 |

21. How severe do you think your asthma has been in the past year?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Mild | | Moderate | | Severe | | Respiratory Failure |

**Mild** = 1 or 2 attacks a week; as many as two episodes of nighttime cough a month; good exercise tolerance; no symptoms between attacks; bronchospasm responds to bronchodilator

**Moderate** = More than 2 attacks a week; symptoms between attacks; symptoms affect sleep, activity level, or work performance; bronchospasm responds to bronchodilator; reduced exercise tolerance; coughing; chest tightness; wheezing; seeking emergency treatment more than 3 times a year

**Severe** = Daily wheezing; sudden, severe attacks; limited exercise tolerance and activity level; sleep is disrupted; bronchospasm does not always respond to bronchodilator; poor work attendance; mild tachycardia (excessively rapid heartbeat); tachypnea (excessively rapid breathing); difficulty speaking in complete sentences; seeking emergency care more than 3 times a year

**Respiratory failure** = Increased tachycardia (excessively rapid heartbeat); tachypnea (excessively rapid breathing); wheezing; reduced, poor air exchange; uses accessory muscles (e.g., arms) to sit up, with perspiration; confusion; lethargy; altered consciousness

22. How controllable do you think your asthma is?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Entirely Uncontrollable | | Somewhat Controllable | | Mostly Controllable | | Entirely Controllable |

23. Please estimate the number of school and/or work days you have missed in the last 6 months due to your asthma. _____

# Appendix B

## INVENTORY TO DIAGNOSE DEPRESSION (IDD)

Subject # _____

## INSTRUCTIONS

**1. On this questionnaire are groups of 5 statements.**

**2. Read each group of statements carefully. Then pick out the one statement in each group that best describes the way you have been feeling the PAST TWO WEEKS. Circle the number next to the statement you picked.**

**********

| | | |
|---|---|---|
| **1.** | **0** | **I do not feel sad or depressed.** |
| | **1** | **I occasionally feel sad or down.** |
| | **2** | **I feel sad most of the time, but I can snap out of it.** |
| | **3** | **I feel sad all the time, and I can't snap out of it.** |
| | **4** | **I am so sad or unhappy that I can't stand it.** |
| **2.** | **0** | **My energy level is normal.** |
| | **1** | **My energy level is occasionally a little lower than normal.** |
| | **2** | **I get tired more easily or have less energy than usual.** |
| | **3** | **I get tired from doing almost anything.** |
| | **4** | **I feel tired or exhausted almost all of the time.** |
| **3.** | **0** | **I have not been feeling more restless and fidgety than usual.** |
| | **1** | **I feel a little more restless or fidgety than usual.** |
| | **2** | **I have been very fidgety, and I have some difficulty sitting still in a chair.** |
| | **3** | **I have been extremely fidgety, and I have been pacing a little bit almost every day.** |
| | **4** | **I have been pacing more than an hour per day, and I can't sit still.** |
| **4.** | **0** | **I have not been talking or moving more slowly than usual.** |
| | **1** | **I am talking a little slower than usual.** |
| | **2** | **I am speaking slower than usual, and it takes me longer to respond to questions, but I can still carry on a normal conversation.** |
| | **3** | **Normal conversations are difficult because it is hard to start talking.** |
| | **4** | **I feel extremely slowed down physically, like I am stuck in mud.** |
| **5.** | **0** | **I have not lost interest in my usual activities.** |
| | **1** | **I am a little less interested in 1 or 2 of my usual activities.** |
| | **2** | **I am less interested in several of my usual activities.** |
| | **3** | **I have lost most of my interest in almost all of my activities.** |
| | **4** | **I have lost all interest in all of my usual activities.** |

| | | |
|---|---|---|
| 6. | 0 | I get as much pleasure out of my usual activities as usual. |
| | 1 | I get a little less pleasure from 1 or 2 of my usual activities. |
| | 2 | I get less pleasure from several of my usual activities. |
| | 3 | I get almost no pleasure from most of the activities which I usually enjoy. |
| | 4 | I get no pleasure from any of the activities which I usually enjoy. |
| 7. | 0 | I have not been feeling guilty. |
| | 1 | I occasionally feel a little guilty. |
| | 2 | I often feel guilty. |
| | 3 | I feel quite guilty most of the time. |
| | 4 | I feel extremely guilty most of the time. |
| 8. | 0 | I do not feel like a failure. |
| | 1 | My opinion of myself is occasionally a little low. |
| | 2 | I feel I am inferior to most people. |
| | 3 | I feel like a failure. |
| | 4 | I feel I am totally a worthless person. |
| 9. | 0 | I haven't had any thoughts of death or suicide. |
| | 1 | I occasionally think life is not worth living. |
| | 2 | I frequently think of dying in passive ways (such as going to sleep and not waking up), or that I'd be better off dead. |
| | 3 | I have frequent thoughts of killing myself, but I would not carry them out. |
| | 4 | I would kill myself if I had the chance. |
| 10. | 0 | I can concentrate as well as usual. |
| | 1 | My ability to concentrate is slightly worse than usual. |
| | 2 | My attention span is not as good as usual and I am having difficulty collecting my thoughts, but this hasn't caused any problems. |
| | 3 | My ability to read or hold a conversation is not as good as it usually is. |
| | 4 | I cannot read, watch TV, or have a conversation without great difficulty. |
| 11. | 0 | I make decisions as well as I usually do. |
| | 1 | Decision making is slightly more difficulty than usual. |
| | 2 | It is harder and takes longer to make decisions, but I do make them. |
| | 3 | I am unable to make some decisions. |
| | 4 | I can't make any decisions at all. |
| 12. | 0 | My appetite is not less than normal. |
| | 1 | My appetite is slightly worse than usual. |
| | 2 | My appetite is clearly not as good as usual, but I still eat. |
| | 3 | My appetite is much worse now. |
| | 4 | I have not appetite at all, and I have to force myself to eat even a little. |

13. 0 I haven't lost any weight.
1 I've lost less than 5 pounds.
2 I've lost between 5-10 pounds.
3 I've lost between 11-25 pounds.
4 I've lost more than 25 pounds.

14. 0 My appetite is not greater than normal.
1 My appetite is slightly greater than normal.
2 My appetite is clearly greater than usual.
3 My appetite is much greater than usual.
4 I feel hungry all the time.

15. 0 I haven't gained any weight.
1 I've gained less than 5 pounds.
2 I've gained between 5-10 pounds.
3 I've gained between 11-25 pounds.
4 I've gained more than 25 pounds.

16. 0 I am not sleeping less than normal.
1 I occasionally have slight difficulty sleeping.
2 I clearly don't sleep as well as usual.
3 I sleep about half my normal amount of time.
4 I sleep less than 2 hours per night.

17. 0 I am not sleeping more than normal.
1 I occasionally sleep more than normal.
2 I frequently sleep at least 1 hour more than usual.
3 I frequently sleep at least 2 hours more than usual.
4 I frequently sleep at least 3 hours more than usual.

Appendix C

MULTIPLE AFFECT ADJECTIVE CHECKLIST (MAACL)

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ gay
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98 ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understanding
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☑ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

Appendix D

VISUAL ANALOG SCALE
AND INTERNAL-EXTERNAL ATTRIBUTIONS TIME 1 (VAS-T1)

VAS-T1

1. The scale below asks you to rate the extent to which you expect to succeed on the computer task that will be administered. The scale ranges from "Much worse than most people" to "Much better than most people." Please place an "X" on the line that indicates how you expect to perform on the task.

Much worse than most people — Much better than most people

---

**(Please circle <u>one number</u> for the question; <u>Do not</u> circle the words)**

2. Do you think that your performance on the upcoming task will be due to something about you or something about other circumstances?

Totally due to other circumstances 1 2 3 4 5 6 7 Totally due to me

Appendix E

VISUAL ANALOG SCALE
AND INTERNAL-EXTERNAL ATTRIBUTIONS TIME 2 (VAS-T2)

VAS-T2

1. The scale below asks you to rate the extent to which you expect to succeed on the next task that will be administered. The scale ranges from "Much worse than most people" to "Much better than most people." Please place an "X" on the line that indicates how you expect to perform on the task.

Much worse than most people — Much better than most people

---

**(Please circle <u>one number</u> for the question; <u>Do not</u> circle the words)**

2. Do you think that your performance on the upcoming task will be due to something about you or something about other circumstances?

Totally due to other circumstances — 1 2 3 4 5 6 7 — Totally due to me

Appendix F

OBSERVATION OF PUZZLE TASK

OBSERVATION OF PUZZLE TASK

Started observation period at: _____Mirror (M) _____No Mirror(NM)

| Started at: | Amount of Time at Mirror(M) | Amount of Time at No Mirror(NM) |
|---|---|---|
| ____ Minute 1. | | |
| ____ Minute 2. | | |
| ____ Minute 3. | | |
| ____ Minute 4. | | |
| ____ Minute 5. | | |
| ____ Minute 6. | | |
| ____ Minute 7. | | |
| ____ Minute 8. | | |
| ____ Minute 9. | | |
| ____ Minute 10. | | |
| | Total Amount of Time at Mirror(M) | Total Amount of Time at No Mirror(NM) |

Appendix G

PUZZLE PREFERENCE

Subject # _____

PUZZLE PREFERENCE

1) Which of the two puzzles did you like the most?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Word puzzle 'A' very much more | | | | both equal | | | | Word puzzle 'B' very much more |

Appendix H

CONSENT FORM

Consent Form

I, _____ (name of participant), voluntarily consent to participate in the investigation of cognitive abilities, the purposes of which have been explained to me by Debra Uretsky or associates or assistants of her choosing. I thereby authorize Debra Uretsky or her associates or assistants to perform the following treatments or procedures:

I understand that the research requires the completion of several paper-and-pencil measures that address my perceptions of life events. In addition, I will be asked to complete computer and puzzle tasks.

I understand that any data collected as part of my participation in this experiment will be treated as confidential and will receive a code number so that they will remain anonymous. In no case will any use be made of these data other than as research results. If data from my participation are ever displayed, my identity will remain anonymous.

I understand that I will receive either one (1) research credit or the sum of $5 for one hour of participation. I understand that, although my participation may not be personally beneficial to me, the information derived from this project may have important implications for others. I realize that the information gained may contribute to a better understanding of the cognitive abilities in individuals with and without asthma.

I understand that my participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty, after notifying the project director.

I may contact Dr. John Chaney, Psychology Department, 215 North Murray Hall, Oklahoma State University, at (405)-744-5703 should I wish further information about the research. I may also contact Jennifer Moore, IRB Executive Secretary, 305 Whitehurst, Oklahoma State University, Stillwater, Oklahoma 74078, (405)-744-5700. Should any problems arise during the course of the study, I may take them to Dr. David Thomas, Psychology Department Head, 215 North Murray Hall, Oklahoma State University, at (405)-744-6027.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date:_____ Time:_____ (a.m./p.m.)

Signed:_____
(Signature of Subject)

Witness(es) if required:_____

I certify that I have personally explained all elements of this form to the subject before requesting the subject to sign it.

Signed:_____
(Project director or his/her authorized representative)

NOTE: There are circumstances under which (a) some or all of the elements in the above form may be altered or waived and/or (b) the requirement for the consent form to be signed may be waived. See 45 CFR, Sections 46.116 and 46.117, or contact the IRB Executive Secretary at 744-5700.

# Appendix I

## DEBRIEFING

# DEBRIEFING

The preceding experiment examined the relationship between self-focused attention and health status. During the computer task, some subjects did not have control over solving the problems. Subjects were manipulated to believe that they were capable of solving what was actually an unsolvable task. Any frustration or negative perceptions you may have experienced in response to the task were purely a function of the deceptive nature of the experiment. Your performance is not a reflection of your ability to perform this, or related, tasks.

Some of the questionnaires, in addition to the computer task, may have touched upon sensitive issues such as depression. The scores you received on any of the questionnaires are not available to me. Thus, I do not know how you performed on any of these measures. Since these tasks might have elicited some introspection on your part, we are handing out a list of the services available in the area to everyone, in case they are interested in speaking to someone.

Finally, we ask that you do not tell anyone about any portion of this experiment. Do you have any questions?

Appendix J

CAMPUS SERVICES

CAMPUS SERVICES

**Psychological Services Center**-118 North Murray Hall, 744-5975

The center provides assistance to any interested individual, from Oklahoma State University or the Stillwater area. The center is open Monday, Tuesday, and Thursday from 8 a.m. to 9 p.m. and Wednesday and Friday from 8 a.m. to 5 p.m.. There is a graduated fee for those using this service. All appointments are confidential.

**Personal Counseling Services**-310 Student Union, 744-5472 or 002 Student Health Center, 744-7007

The Personal Counseling Services supports the personal, social, and intellectual growth of members of the University community. They provide a broad spectrum of services to OSU students.

Counseling services include individual and group counseling relating to areas of career/life planning, study skills, and personal concerns including stress, anxiety, depression, relationships, eating disorders, and substance abuse. Counseling sessions are provided at a minimal fee. All appointments are confidential.

**Reach-out Hotline**-Oklahoma City, 1-800-522-9054

Crisis hotline in Oklahoma City.

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**INSTITUTIONAL REVIEW BOARD**
**HUMAN SUBJECTS REVIEW**

**Date: 04-23-97** **IRB#: AS-97-059**

**Proposal Title: THE ROLE OF SELF-FOCUSED ATTENTION IN ASTHMA**

**Principal Investigator(s):** Debra Uretsky, John Chaney

**Reviewed and Processed as:** Full Board

**Approval Status Recommended by Reviewer(s):** Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

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Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature: _____ Date: May 5, 1997

Chair of Institutional Review Board

cc: Debra Uretsky

# VITA

Debra L. Uretsky

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE ROLE OF SELF-FOCUSED ATTENTION IN ASTHMA

Major Field: Clinical Psychology

Biographical:

Personal Data: Born in New York, New York, on May 25, 1969, the daughter of Jerrold Uretsky and Francine Kamlet-Becker.

Education: Graduated from Freehold Township High School, Freehold, New Jersey in June, 1987; received a Bachelor of Arts degree in Psychology from the State University of New York at Binghamton in May, 1991; received a Master of Science Degree from Oklahoma State University in December, 1992; completed requirements for the Doctor of Philosophy Degree at Oklahoma State University in December, 1999.

Professional Experience: Predoctoral Fellow in Pediatric Psychology, Children's Seashore House of the Children's Hospital of Philadelphia, August, 1998 - June, 1999; Predoctoral Intern in Pediatric Psychology, Children's Seashore House, July, 1997 - June, 1998; Research Associate, Behavioral Health Research Laboratory, Oklahoma State University, Department of Psychology, August, 1991 - June, 1997; Intake Counselor, Personal Counseling Service, Oklahoma State University, August, 1995 - May, 1997; Therapist, Marriage and Family Clinic, Oklahoma State University, June, 1994 - July, 1995 and August, 1996 - May, 1997; Practicum Student, Pediatric Psychology Department, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, September, 1993 - August, 1995; Psychological Associate, Psychological Services Center, Oklahoma State University, August, 1992 - July, 1995.

Professional Memberships: American Psychological Association, Society of Pediatric Psychology