

YOUNG ADULTS WITH CHILDHOOD-ONSET  
ASTHMA:  
THE SPOTLIGHT EFFECT, PSYCHOLOGICAL  
ADJUSTMENT, FEAR OF NEGATIVE EVALUATION  
AND SELF FOCUSED ATTENTION

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**Abstract:** The current study investigated the spotlight effect, self-focused attention, fear of negative evaluation and psychological distress among college students with and without a childhood diagnosis of asthma. It included an additional examination of the impact of disclosing one's health status on the variables of interest.

*Participants.* The first wave of participants included healthy (N = 530) and childhood-onset asthma (N = 148) young adults who completed measures from January to March of 2013. Participants with asthma were either told to not disclose (N = 93) or were forced to disclose (N = 55) their chronic illness. The second wave of participants included healthy (N = 209) young adults who completed measures from August to December of 2013.

*Methods.* Measures of self-focused attention (Self-Consciousness Scale, SCS; Fenigstein et al., 1975), fear of negative evaluation (Brief Fear of Negative Evaluation, BFNES; Leary, 1983), and psychological distress (Brief Symptoms Inventory, BSI; Derogatis, 1983) were completed. First wave participants wrote paragraphs and answered questions about inclusion in a social activity. Second wave participants completed measures and assessed first wave paragraphs.

*Results.* Health status did not impact spotlight effect, self-focused attention, or fear of negative evaluation. Young adults with asthma reported greater Somatization concerns and no other significant differences in psychological distress. Young adults who disclosed their asthma endorsed greater fear of negative evaluation and self-focused attention.

*Conclusions.* College students with and without a history of childhood-onset asthma did not differ in the majority of psychological adjustment variables in the present study. Interestingly, disclosure of an individual's chronic illness did result in significantly greater fear of negative evaluation and increased self-focused attention. While previous studies have included disclosure of illness, this is the first study to examine *forced* disclosure and thus added a new dimension to chronic illness models.

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## CHAPTER I

### INTRODUCTION

Although asthma has been a recognized diagnosis for hundreds of years, it remains the most common chronic disease among children, impacting over 300 million people worldwide (Masoli, Fabian, Holt, & Beasley, 2004). Asthma has historically been conceptualized as a childhood disorder. However, there are over three times more adults who have asthma in the United States (Moorman et al., 2007). Additionally, the direct cost associated with adult asthma expenditures is over double of that associated with children with asthma (Kamble & Bharmal, 2009). In addition to financial and occupational burdens (e.g., greater number of missed worked days; (Carpentier, Mullins, & Van Pelt, 2007) associated with asthma, older adolescents and young adults with asthma continue to experience many of the psychological difficulties and disorders that typically begin in childhood (e.g., McQuaid et al., 2001; Ségala et al., 2000). To elaborate, a significant association between asthma and numerous psychological disorders has been consistently found, including generalized anxiety disorder, social phobia, panic disorder, bipolar disorder (e.g., Goodwin, Jacobi, & Thefeld, 2003), depression and comorbid anxiety and depression (e.g., Richardson et al., 2006). However,



much of the research on association between asthma and psychosocial variables has been mixed, with variability regarding the impact of asthma on self-esteem (e.g., McCarroll, Lindsey, MacKinnon-Lewis, Chambers, & Frabutt, 2009 versus Padur et al., 1995) and quality of life (e.g., Fedele, Mullins, Eddington, Ryan, Junghans & Hullmann, 2009 versus Merikallio et al., 2005). In order to better understand the experiences of young adults with asthma, it is important to both refine our understanding of the aforementioned variables and diversify the constructs we study in this population.

One way to expand our study of pediatric and young adult chronic illness research is to consider constructs that are more commonly used in fields or sub-disciplines other than clinical psychology. The spotlight effect is a social psychology construct that occurs when “people tend to believe that the social spotlight shines more brightly on them than it really does” (Gilovich, Medvec, & Savitsky, 2000, p.211). In the scant research that has examined this construct, the spotlight effect has been associated with both social anxiety (Brown & Stopa, 2007) and fear of negative evaluation (Haikal & Hong, 2010) in young adults.

Existing research has yet to examine the spotlight effect in any chronic illness population. A study by Bruzzese and colleagues (2009) found that some individuals experience embarrassment about their asthma. Additionally, we know that children with a chronic illness may experience anxiety due to the possibility of experiencing illness symptoms, such as an asthma attack, when they are in social settings (La Greca, 1990) and that this anxiety may increase treatment non-adherence in front of peers (e.g., using an inhaler; (Randolph & Fraser, 1998). The combination of embarrassment and anxiety may result in a hyperawareness of the self in social settings. A better understanding of the spotlight effect on

individuals with asthma may allow clinicians to decrease feelings of judgment and increase treatment adherence in social settings in this population.

The current study examines the spotlight effect in a population of young adults with asthma. In addition to assessing for the presence of the spotlight effect, the strength of the spotlight effect will be compared in two conditions: “forced” and “invisible” asthma self-disclosure. In the forced condition, participants will be asked to discuss their asthma, whereas, in the invisible condition, participants will be asked to refrain from disclosing their asthma. Young adults who are required to divulge their chronic illness may experience the spotlight effect more than young adults who do not reveal their asthma as other chronic illness groups have reported negative psychological phenomena (e.g., fear of negative evaluation) in response to perceptions of others reactions to their illness (Leary et al., 1998).

In the sections that follow, a brief review of the nature of asthma, as well the treatment of asthma, will be provided. Next, research regarding the psychosocial and psychological impacts of asthma will be covered. Lastly, comprehensive reviews of the following constructs will be presented: fear of negative evaluation, self-focused attention, and the spotlight effect. Fear of negative evaluation, or the “sense of dread associated with being evaluated unfavorably while anticipating or participating in a social situation” (Weeks, Jakatdar, & Heimberg, 2010, p.69), has been associated with increased social anxiety in adolescents with asthma (Bruzzeze et al., 2009) and greater dating anxiety in female undergraduates with asthma (Eddington, Mullins, Fedele, Ryan & Junghans, 2010). Research has demonstrated that adolescents express fear and embarrassment about asthma and using medication in front of peers (Cohen, Franco, Motlow, Reznik, & Ozuah, 2003; Gibson, Henry, Vimpani, & Halliday, 1995) and it is possible that young adults with asthma

will express greater fear of evaluation in general and, specifically, when being required to self-disclose their asthma. Self-focused attention, defined as “an awareness of self-referent, internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors” (Ingram, 1990, p. 156), has been associated with greater attention paid to one’s cognitions and affect in young adults with asthma (Van Pelt, Mullins, Carpentier & Wolf-Christensen, 2006). Self-focused attention is a pertinent trait to examine in young adults with asthma due to the high degree of self-monitoring that is necessary to attend to the physiological signs of an upcoming asthma attack (Chaney et al., 1999). The current study therefore examined 1) if participants in the “forced” asthma self-disclosure group reported a greater spotlight effect than those in the “invisible” asthma self-disclosure group, 2) if participants with asthma who exhibit a high level of fear of negative evaluation reported a greater spotlight effect compared to those with a low level of fear of negative evaluation, 3) if participants with asthma demonstrated higher levels of negative affect, including anxiety and depression symptoms, than participants without asthma, 4) if participants with asthma demonstrated greater fear of negative evaluation than participants without asthma, and 5) if participants with asthma demonstrated greater self-focused attention, including both public and private self-focused attention, than participants without asthma.

## CHAPTER II

### REVIEW OF LITERATURE

#### The Nature of Asthma: Asthma Epidemiology and Characteristics: Prevalence, Morbidity, and Mortality.

Asthma has been recognized as a medical condition since approximately 100 A.D. (Marketos & Ballas, 1982) and its' symptom presentation has remained almost identical since John Floyer wrote "A treatise of the asthma" in 1698. Although asthma has been a known diagnosis for hundreds of years, it remains the most common chronic disease among children, affecting an estimated 300 million people worldwide (Masoli et al., 2004). In the United States, 24.6 million people have been diagnosed with asthma (CDC, 2011). Of these, about 17.5 million are adults and 7.1 million are children and adolescents (Akinbarni, Moorman, & Liu, 2011). Between 2001 and 2003, asthma prevalence was higher in females (8.1%) compared with males (6.2%); blacks (9.2%) compared with whites (6.9%); and those below the poverty line (10.3%) compared with those at or above the poverty line (6.4% to 7.9%); (Moorman et al., 2007). Among individuals currently diagnosed with asthma, 63.1% of children and 52.2% of adults

Although asthma prevalence is higher in boys than in girls in the first decade of life, new-onset asthma is more common in girls than boys in the teen years and early adulthood (Anderson, Pottier, & Strachan, 1992; de Marco, Locatelli, Sunyer, & Burney, 2000).

In addition to being the most common disease, asthma is also one of the most costly. According to the 2004 Medical Expenditure Panel Survey, the incremental direct costs of asthma per person was \$2,077.50 for adults and \$1,004.60 for children, totaling an estimated \$37.17 billion dollars in direct annual medical expenditures (Kamble & Bharmal, 2009). In addition to direct costs, the indirect costs of asthma are extensive. Notably, adults with asthma report an additional 2.62 days lost from work per year, resulting in, a loss of 14.41 million work days; an estimated combined loss of productivity of \$2.03 billion annually in the US (Barnett & Nurmagambetov, 2011). Although there was a decrease in asthma mortality and hospitalization from 1995 (1.53/100,000 of the population) to 2001 (1.03/100,000 of the population; Getahun, Demissie, & Rhodes, 2005), the mortality rate still remains high. In 2007 3,445 individuals died because of asthma related issues (Barnett & Nurmagambetov, 2011).

### Physical Characteristics

Asthma is characterized by variability in both symptoms and presentation over the disease course. The most common presentation of asthma includes episodes of airflow obstruction, airway hyper-responsiveness, chronic airway inflammation and symptoms such as wheezing, cough, shortness of breath and chest tightness. During an asthma attack, individuals will experience some or all of the symptoms. However, between

attacks, individuals may be asymptomatic, or they may have mild to moderate symptoms of breathlessness with exertion and nocturnal awakening due to airway obstruction (Weiss et al., 2006). Symptoms and lung function may change within and between days depending on the presence of chronic inflammation variables (e.g., allergens, viruses, pollution, cigarette smoke and stress). While inflammation can be both chronic and acute, structural changes occur in airways which exist in the absence of symptoms as well as after asthma treatment. Airway remodeling, including smooth muscle hypertrophy, collagen deposition, thickening of the membrane and reduced elasticity of the airway wall, as well as bronchial inflammation, nasal inflammation, airway obstruction and airway hyper-responsiveness, all contribute to asthmatic symptoms (Bracharier et al., 2008).

#### Etiology, Diagnosis and Treatment

Although the medical etiology of asthma is not fully understood, genetics and specific early environmental factors play a role in the pathobiology. Research using twin studies has shown that the heritability estimates of an asthma diagnosis range from about 36% to 75%. However, no single gene is causal (Tantisira & Weiss, 2009). Additionally, children with a family history of atopy, who are exposed to viral infections, indoor and outdoor allergens, tobacco smoke and poor air quality, are more prone to develop asthma. Respiratory viral infections are the most frequent triggers of childhood asthma. Importantly, they are the only trigger of wheezing and coughing, two of the key symptoms of asthma, and are associated with asthma persistence in later childhood (Bacharier et al., 2008). Stress, including childhood chronic stress and parental stress levels, has been linked to asthma exacerbation and avoidance of undue stress is often

recommended (Wright, Rodriguez, & Cohen, 1998; Wright, Cohen, Carey, Weiss, & Gold, 2002).

Out of all asthma cases, 90% develop during childhood (Bacharier et al., 2008). A diagnosis can usually be made by age 5; early diagnosis, monitoring and treatment of symptoms are associated with better managed asthma (Bacharier, et al., 2008). In clinical practice, diagnosis is usually based on symptom presentation, which can be difficult as the symptoms often overlap with other respiratory conditions (e.g., chronic obstructive pulmonary disease) and non-respiratory conditions (e.g., obesity) (Taylor et al., 2008). Adding to diagnostic difficulty, symptoms also vary by individual. Of the four patterns of wheezing--transient, nonatopic, persistent, and severe intermittent--only two can be discriminated retrospectively, and the mere presence of wheezing may not be an asthma indicator as up to half of all infants and children below age 3 years will exhibit wheezing at least once (Bacharier et al., 2008; Martinez et al., 1995). Generally, asthma is suspected if there are wheezing or coughing episodes, and is generally diagnosed only after long-term follow-up and a positive response to bronchodilator and/or anti-inflammatory treatment. Diagnosis includes a physical examination, in vivo testing for allergies, assessment of lung function using peak expiratory flow, and forced expiratory flow-volume loop and bronchodilator response (Bacharier et al., 2008). In the same vein as the many stages during asthma diagnosis, asthma treatment is also multistage and multimodal.

Asthma treatment has not substantially changed in the past 100 years. It occurs in three stages: acute rescue treatment, controller treatment, and prevention of long-term complications (Bacharier et al., 2008). Acute rescue or “reliever” medications include

short-acting beta<sub>2</sub>agonists and other bronchodilators (e.g., Ipratropium bromide). Inhaled corticosteroids are the mainstay of controller asthma treatment and are used to suppress airway inflammation, although they do not influence the progression of the disease (Holgate & Polosa, 2008). While inhaled corticosteroids have been used as controller therapies for 30 years, they have many adverse effects, such as decreased height, decreased bone mineralization, glaucoma, and cataracts (Chu & Drazen, 2005). Additionally, metered-dose inhalers and dry powder inhalers were developed for use by adults, but are used in pediatric asthma despite differences in efficiency, drug distribution, and the ability of the child to use the inhaler as instructed (Holgate et al., 2008). As poor asthma control is often due to poor compliance and poor inhaler technique, the lack of research supporting the current mainstay treatment of pediatric asthma is a prime area for further investigation.

Additionally, future treatment research may be changing, as the previously synonymous concepts of “severity” and “control” have been redefined. “Severity” now indicates the intensity of treatment required to treat a patient’s asthma and “control” now indicates the extent to which the clinical manifestations of asthma have been removed or reduced by treatment (Taylor et al., 2008). In assessing treatment of asthma, an understanding of both an individual’s severity and control are important. Mungan, Misirligil, and Gurbuz (1999) completed a meta-analysis of 32 studies of self-management education programs for asthmatic children and found improvement in a range of asthma outcomes as education increased. Education about medication management, changes in classification and diagnosis and psychosocial variables should be included in treatment in order to improve disease management and prevent long-term



complications. Since there is no cure for asthma, further research that will aid in treating the symptoms and understanding the impact and effects of the disease is critical, especially with respect to populations such as young adults, which have not been included in the majority of past research studies.

## Psychosocial and Psychological Factors Associated with Asthma

### Psychosocial outcomes in young adults with asthma

Youth with a chronic illness have a risk for adjustment problems that is 1.5 to 3 times greater than their healthy peers (Pless, 1984). Although there has been considerable empirical research on the psychological adjustment of children with asthma, there is limited research on young adults. Mullins, Chaney, Pace and Hartman (1997) found young adults with asthma experienced higher rates of psychological distress (37%) than healthy controls (10%); (Derogatis, 1994). In a meta-analysis conducted by McQuaid and colleagues (2001) examining 5,000 adolescents with asthma, adolescents had a higher prevalence of multiple psychological disorders, especially internalizing disorders, than their healthy peers. Several studies have confirmed the presence of internalizing psychological problems in these youth, which have been associated with an unfavorable course of asthma including more days of wheezing and lower general functioning (Tibosch, Verhaak, & Merkus, 2011), more days with general asthma symptoms (Richardson, Lozano, Russo, McCauley, & Bush, 2006), increased cigarette smoking (Bush et al., 2007), higher health care costs (Padur et al., 1995; Richardson et al., 2008), greater functional impairment (McCauley, Katon, Russo, Richardson, & Lozano, 2007), adversely affected cognitive processing (Badoux & Levy, 1994), and less

effective coping behaviors (Chaney et al., 1999). To summarize, it is evident that adjustment problems are connected with issues in multiple domains for young adults with asthma, including comorbid psychological disorders.

Asthma has been associated with multiple psychological disorders, including various internalizing disorders. Ortega and colleagues (2002) examined 1,285 youth with asthma and found higher rates of social phobia, separation anxiety disorder, and overanxious disorder in comparison to healthy controls and youths with other chronic health conditions. In another study of asthma in the community, Goodwin, Jacobi, & Thefeld (2003) used physician-reported asthma status and a structured diagnostic interview, rather than a self-report measure, to assess for psychological disorders. Lifetime asthma was associated with generalized anxiety disorder, social phobia, panic disorder, and bipolar disorder, especially when the asthma was severe. Vila, Nollet-Clemencon, de Blic, Mouren-Simeoni, and Scheinmenn (1999) also found higher rates of generalized anxiety disorder when comparing adolescents with asthma to adolescents with diabetes. The specific experience of anxiety has been associated with asthma in many studies (e.g., Bruzzese et al., 2009; Carpentier et al., 2007; Goodwin et al., 2003) and will be explored in greater depth in the following section of this document.

Depressive symptoms have also been consistently associated with asthma (e.g., Goodwin, Fergusson, & Horwood, 2004; Padur et al., 1995; Richardson et al., 2006). For instance, Richardson et al. (2006) found that the number of asthma symptoms and asthma symptom days reported by 767 adolescents with asthma was significantly associated with the number of anxiety and depression symptoms they reported. Adolescents with asthma not only have high rates of a single anxiety disorder (8.9%) and a single depressive

disorder (2.5%), but also comorbid anxiety and depressive disorders (4.8%; Richardson et al., 2006). In this study, even after controlling for asthma severity, youth with an anxiety and/or depressive disorder endorsed more asthma symptom days than youth without one of these disorders.

In addition to experiencing psychological disorders, children and young adults with asthma can have lower self-esteem. Vila and colleagues (1999) found that adolescents with asthma who also had a psychological disorder had lower self-esteem and worse social competence than other adolescents with asthma. In a study comparing the psychosocial adjustment of children with asthma to children with diabetes, children with cancer and healthy children, Padur and colleagues (1995) found children with asthma had lower global self-esteem scores, lower self-concept and greater affective adjustment problems, including behavioral distress and depression, than children with cancer and healthy controls. Additionally, children with asthma had more functional impairment than the other three groups. In a study of adolescents with asthma, teachers rated these adolescents as having less prosocial behavior and less peer contact than their healthy schoolmates (McCarroll, Lindsey, MacKinnon-Lewis, Chambers, & Frabutt, 2009). Teachers did, however, rate them as having the same level of self-esteem as their healthy peers. Interestingly, adolescents with asthma who evidenced high self-esteem showed more prosocial behavioral and less overt and relational aggression even after controlling for family income and adolescent race and sex. Thus, it seems that while there is some variability in the impact of asthma on self-esteem and self-concept, both variables can impact relationships with peers, with high self-esteem serving as a protective factor. Additionally, McCarroll and colleagues (2009) opined that the reduced amount of

prosocial behavior reported by teachers may be associated with assumed physical limitations of children with a chronic illness and may, ultimately, pose a risk to the psychosocial well-being of chronically ill children.

Similar to self-esteem research, research examining academic and social functioning in young adults with asthma has been somewhat mixed. Carpentier and colleagues (2007) reported that college students with childhood-onset asthma missed more days of school and work for health reasons compared to college students without asthma. Van Pelt (2002) found college students with asthma had lower current semester and cumulative GPAs than their healthy peers, although Carpentier and colleagues (2007) did not replicate this finding. Although previous research showed impaired functioning in children with asthma was linked to integration in peer relationships, Eddington et al. (2010) found college students with asthma experienced similar levels of dating anxiety and fear of intimacy than healthy college students. However, dating anxiety in college students with asthma, but not healthy controls, was a significant predictor of mental health-related quality of life.

Quality of life has been frequently researched in this population, again with mixed findings. Archea and colleagues (2007) examined the association between quality of life and negative life events in 189 adults with asthma. Through a semi-structured phone interview and a follow-up home visit which included the administration of a life events questionnaire based on the Social Readjustment Ratings Scale (Holmes & Rahe, 1967), they found adults with asthma who experienced a stressful and negative life event (e.g., death of a family member or close friend) reported a lower quality of life. Kimura and colleagues (2009) looked at perceived stress, severity of asthma and quality of life in 695

young adults with asthma. They measured perceived stress, using a Japanese version of the Perceived Stress Scale (JPSS; Iwahashi, Tanaka, Fukudo, & Hongo, 2002), which assesses the degree to which a participant appraises situations in his or her life as stressful. Kimura and colleagues (2009) found a significant association between perceived stress and HRQOL in male young adults with asthma.

Another study on the quality of life of adolescents with asthma found a decreased quality of life in the domains of bodily pain and general health (Mohangoo, deKoning, Mangunkusumo, & Raat, 2007). Specifically, these adolescents reported more physical problems, poorer general health, and the belief that their health would get worse. Lower quality of life was endorsed by females and adolescents who experienced asthma symptoms over the past year. Merikallio and colleagues (2005) compared three groups of youth with asthma (symptoms experienced during the past month, past year, or lifetime) to healthy controls and also found more impairment in physical but not psychosocial domains in all three groups when compared to healthy controls. Interestingly, there were significantly lower scores in psychosocial domains in the group of youth who experienced asthma symptoms over the past year compared to the healthy controls. Other research has shown college students with asthma have significantly lower overall and mental health-related quality of life than healthy controls, but have not shown a difference in physical health-related quality of life (Fedele et al., 2009). As findings on the impact of childhood-onset asthma remain inconclusive, further research on the psychosocial impact and related psychological disorders appear to be necessary.

In summary, research has shown that adolescents and young adults with a chronic illness have greater psychosocial adjustment difficulties than their healthy peers in a wide

variety of domains, including anxiety disorders (e.g., Goodwin et al., 2003), depression (e.g., Richardson et al., 2006), self-esteem (Padur et al., 1995), and school attendance (Carpentier et al., 2007). Research on the construct of quality of life continues to result in mixed results (e.g., Merikallio et al., 2005 and Fedele et al., 2009). Additionally, it has been suggested that there is a significant association between social behavior, including participation in prosocial activities with peers, and psychological well-being, and that the physical challenges created by a chronic illness may impact this association (McCarroll et al., 2009). Based on the scant research among young adults with asthma, and the possible associations between social behavior, physical challenges posed by the individual's chronic illness and psychosocial well-being, further research will assist in more clearly understanding the associations between these variables.

### The Experience of Anxiety Disorders in Young Adults with Asthma

Although many psychological adjustment difficulties or disorders have been associated with having asthma, anxiety disorders have consistently been found to be prevalent in this population. Vila and colleagues (2000) reported that approximately 35% of children and adolescents with asthma met criteria for one or more anxiety disorder. Additionally, Ortega and colleagues (2002) found a greater rate of anxiety disorders in youth with a history of asthma (49.2%) compared to nonasthmatic controls (37.7%). The high prevalence rate of anxiety and asthma is also seen in young and older adults (e.g., Cordina, Fenech, Vassallo, & Cacciottolo, 2009). Carpentier and colleagues (2007) note that young adults with childhood-onset asthma consistently evidence higher levels of anxiety and general psychological distress compared to nonasthmatic peers. As it has been shown that young adults have higher odds of having an asthma exacerbation than

children (Smith, Warholak, Armstron, Leib, Rehfeld, & Malone, 2009), it is critical to better understand the anxiety-provoking experiences that lead to such symptom exacerbation in young adults.

Not only is the increased prevalence of anxiety concerning in youth and young adults with asthma, the impact of anxiety on quality of life and disease management is worthy of note. Adolescents with anxiety disorders exhibit more asthma symptoms (Richardson et al., 2006), poorer adherence to daily monitoring of their symptoms (Burkhart & Rayens, 2005), decreased health-related quality of life (Hommel, Chaney, Wagner, & McLaughlin, 2002; Lavoie et al., 2006), greater risk for cigarette smoking (Bush et al., 2007) higher doses of inhaled glucocorticoids, and necessitate more intensive asthma management strategies (Codrina et al., 2009). While there is agreement that individuals with asthma may experience greater social and disease-related difficulties, there continues to be discourse regarding the causal direction of that relationship.

Although there are a variety of anxiety disorders diagnosed in individuals with asthma, social anxiety disorder is of particular interest when considering the social experience of asthma. Children with a chronic illness may experience greater anxiety due to the possibility of experiencing illness symptoms, such as an asthma attack, when they are in social settings (La Greca, 1990). In a study by Bruzzese and colleagues (2009), adolescents with current asthma symptoms reported more generalized discomfort or inhibition in social situations and a greater fear of negative evaluation than their healthy peers. The authors state that adolescents with asthma may be especially at-risk for social anxiety because of feelings of being different from their peers, resulting in fear of

rejection (Fitzgerald, 2001), and poor social competence (Vila et al., 2000) due to reduced opportunity for social interaction because of actual or anticipated physical impairment. Anxiety initially caused by the asthma experience may increase treatment non-adherence in front of peers (e.g., using an inhaler; Randolph & Fraser, 1998) and may generalize to a hyperawareness of the self in social settings.

One theory that might explain the high co-morbidity of anxiety disorders and asthma focuses on the central role of respiratory factors in both disorders. Leher, Isenberg and Hochron (1993) posited that the frequent experience of hyperventilation may result in hyper-reactivity of central nervous system centers which control respiratory drive. Additionally, individuals with asthma have an initial higher airway resistance, therefore, any increase in airway resistance due to anxiety, stress or other factors (e.g., illness) would be evident quicker than it would be in healthy controls (Katon, Richardson, Lozano, & McCauley, 2004). The interplay of emotional factors, such as stress, and physiological systems, including autonomic airway control and the endocrine system, can result in a worsening of symptoms or an asthma attack (Wright et al., 1998). Biologic theories suggest that the frequent experiencing of hypoxia and hypercapnia may impact the neurological fear response (e.g., neurons in the amygdala and locus ceruleus) and cause an oversensitivity to situations which may result in symptoms or the perception of physiological changes that may mirror asthma symptoms (e.g., shortness of breath; Roy-Byrne & Stein, 2001).

In addition to physiological explanations for co-morbidity, asthma management techniques may play a role in this relationship. Asthma medications, including inhaled glucocorticoids, adrenoreceptor agonists and theophylline, have all been shown to



provoke anxiety (Milgrom & Bender, 1993). Cordina and colleagues (2009) found a positive correlation between the participant's number of medications and level of anxiety. Although they noted it was possible that physicians over-prescribed medications instead of identifying underlying anxiety problems, they did not have sufficient data to denote the causal relationship. Certainly, more research is required to better understand the causal direction of the relationship between anxiety and the amount of both prescribed and self-administered medication.

Although medications may play a role in the anxiety experience, other research has looked at the impact of negative affect on the experience of anxiety. Building on biologic theory, a focus on increased anxiety sensitivity highlights the influence of symptom over-perception and negative affectivity. Over-perception of asthma symptoms has been associated with, for example, excessive medication intake (Main, Moss-Morris, Booth, Kaptein, & Kolbe, 2003) and functional morbidity (Put et al., 2004). Over-perception has also been associated with negative affectivity, or the tendency to experience negative emotions (Watson & Pennebaker, 1989). Both of these phenomena are part of the psychomaintenance framework of asthma originated by Kinsman and colleagues (1980).

From this perspective, individuals who have high asthma-specific panic-fear (i.e., anxiety sensitivity) are more likely to experience overwhelming and disruptive anxiety during asthma symptoms. Asthma-specific anxiety sensitivity is related to overuse of as-needed medication and increased steroid prescriptions, which further exacerbate physiological symptoms that mirror anxiety symptoms. Asthma-specific anxiety sensitivity also increases subjective rating of shortness of breath independent of asthma

severity. In a study by De Peuter, Lemaigre, Van diest and Van der Bergh (2008), individuals with asthma participated in three activities, requiring mild, moderate and intense respiratory strain, which might elicit their asthma symptoms. It was found that patients with asthma who had a high level of catastrophic thinking reported an increase in symptoms even during an activity that did not exacerbate their symptoms. The authors posited that a high level of asthma-specific panic-fear leads to over-perception during ambiguous situations. Similarly, Janssens et al., (2009) further proposed that affective cues are important in attentional allocation and may impact the association between attentional and asthma perception.

In reviewing multiple theories as to the relationship between anxiety disorders and asthma, it seems that individuals with asthma may have a combination of physiological, psychological and social triggers to their increased anxiety and self-focused attention. Based on the psychomaintenance framework of asthma and the high frequency of co-morbid anxiety disorders, it is possible that individuals with asthma may also experience the *spotlight effect* to a greater degree than their healthy peers. Models of symptom perception state that perception of asthma symptoms stems from the merger of somatosensory (receptor) information and affective information (Janssens et al., 2009). Janssens and colleagues (2009) posit a working model of symptom perception in asthma that links affect, expectancy, symptoms and action. According to this model, somatic sensation, affective input and contextual input all act together on inhibitory control (allowing for flexible reactions to the changing environment), negative affectivity, and evaluation/integration of the self and the environment (which have a bi-directional relationship with mental representations of asthma symptoms). The interaction of these

factors influences asthma symptoms and motivation to action. The final step in the model is the impact on the individual's attentional processes which, once attended to, allows the individual to continue cycling through the model. The affective and contextual information utilized by the individual modifies the perception of asthma symptoms, and over-perception may then result in the onset or an increase of asthma symptoms, even without a bronchoconstriction (Put et al., 2004). Additionally, the tendency to allot attentional processes to contextual information, and possibly experience social anxiety, may result in an increased experience of the spotlight effect such that an individual with asthma pays greater attention to their physical response to interactions with others and their environment. While the increased self-focus may, unbeknownst to the individual, serve to increase asthma symptoms, anxiety and negative affectivity, the individual may experience this self-focus as rewarding when he or she assesses stimuli as having a high threat value. Once the individual is rewarded for perceiving their own symptoms (e.g., they used an emergency inhaler to stop an asthma attack), they may begin to over-perceive their symptoms and place great importance on self-focus, which may then be related to an increase in anxiety and an increase in the spotlight effect.

### Self-Focused Attention

#### Self-focused Attention

Self-focused attention has been defined as “an awareness of self-referent, internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors” (Ingram, 1990, p. 156).

Fenigstein and colleagues (1975, p.522) used a more general definition of self-focus: “when the person is focusing on his thoughts, feelings, behaviors or appearance; when he is reflecting, fantasizing, or daydreaming about himself; or when he is making decisions or plans that involve himself.” Although different in language, both researchers identified a phenomenon that includes a comparison between the self that is privately defined and the self that exists in an interpersonal context. The concept of self-focused attention originated as part of a model associating self-regulation and affect by Duval and Wicklund (1972). As part of an affective model, self-focused attention leads to self-evaluation where the self is compared to a personally idealized standard in the domain in question. If the self surpasses the idealized standard, positive affect is experienced. If the self falls short of the standard, negative affect is experienced.

#### Dispositional Self-Focused Attention

Mor and Winquist (2002) conducted a meta-analysis which examined 226 effect sizes reflecting the relationship between self-focused attention and affect. Results showed a moderate relationship between self-focused attention and general negative affect, which was stronger for female research participants than male participants. When looking at more specific types of negative affect, Mor and Winquist (2002) found negative mood, depression and anxiety were all significantly related to both temporary negative mood states and depression and anxiety symptomatology. Interestingly, the relationship between depression and self-focused attention was stronger than the relationship between anxiety and self-focused attention when looking at overall anxiety. When individuals attended to public self-focused attention they were more likely to experience social

anxiety, whereas, when individuals attended to private self-focused attention, they were more likely to experience depression.

Self-focused attention, also described as “self-consciousness” in the social psychology literature, has been examined using both trait and state paradigms. The trait paradigm views self-focused attention as chronic negative affect (e.g., Van Pelt et al, 2006), while the state paradigm examines the relationship between temporary self-focused attention and negative affectivity (Mor & Winquist, 2002). Researchers have posited that the experience of either type of self-focused attention may be an underlying mechanism in the experience of social anxiety and unrealistic self-schemas (e.g. Burgio, Merluzzi, & Pryor, 1986), helping behavior (Fransen, Fennis, Pryun, & Vohs, 2011) and health status (Chaney, Hommel, Uretsky & Mullins, 2000).

Dispositional self-focused attention can be further broken down into private and public self-focus. Private self-focused attention concerns attending to one’s inner thoughts and feelings, while public self-focused attention is defined as a general awareness of the self as a social object that has an effect on others (Fenigstein et al., 1975). Turner, Gilliland, and Klein (1981) built on Fenigstein and colleagues (1975) work by noting that private self-focused attention is concerned with nonsocial aspects of the self, whereas public self-focused attention is associated with ease of access to information about one’s publicly displayed physical characteristics. Based on Higgins’ (1987, 1999) self-discrepancy theory, a discrepancy between the ideal self (private self-focused attention) and the actual self leads to depression, whereas a discrepancy between the “ought self” (public self-focused attention) and the “actual self” leads to anxiety. Previous research has shown that paying attention to the self can assist in accessing

information related to the self, resulting in both positive and negative outcomes (e.g., Fenigstein, 1984; Fransen et al., 2011).

The research concerning the associations between the type of self-focused attention and the psychological and psychosocial outcomes has been mixed. Fenigstein (1984) reported that an individual who is publicly self-focused is more sensitive to egocentric beliefs and will overestimate being the target of other's attention, leading to self-presentational doubts (e.g., Schlenker & Leary, 1985) and social anxiety (e.g., Cheek & Buss, 1981). In a later study, Monfries and Kafer (1993) examined the associations between social avoidance and social distress, fear of negative evaluation, and self-consciousness in a sample of Australian adults. The results of the study indicated that public self-consciousness was positively correlated with fear of negative evaluation, social avoidance and social distress; however, while private self-consciousness was positively correlated with fear of negative evaluation, it had no relationship with social avoidance or social distress. Recently, Gendolla & Wicklund (2009) asked 126 undergraduate students to state their own opinion concerning a political topic and then estimate a fellow student's opinion. Results showed that public self-focused attention had no significant impact on perspective-taking or egocentrism while private self-focused attention was associated with enhanced perspective-taking and reduced egocentrism. They posited that private self-focused attention may thus be less responsive to concerns about the opinion of others (e.g., fear of negative evaluation) and more responsive to cognitions about the self.

#### Self-Focused Attention in Adolescents and Young Adults with a Chronic Illness

Few empirical investigations have been conducted to examine the role of self-focused attention in the context of a chronic illness. Self-focused attention is a pertinent trait to examine in adolescents and young adults with a history of childhood onset asthma because of the high degree of self-monitoring that is necessary to attend to the physiological signs of a forthcoming asthma attack (Chaney et al., 1999). Chaney and colleagues (1999) noted that self-focused attention may, therefore, be adaptive among individuals with asthma in situations where attentiveness to internal cues may result in behavior that prevents or controls an attack. Notably, increased self-focused attention in individuals with asthma appears not only to occur after success but also, unlike healthy controls, after failure (Chaney et al., 2000). While self-focused attention after a failure to control an asthma attack may result in increased attention to disease management; excessive attribution of general failures to the self may increase the risk for psychological distress.

Van Pelt and colleagues (2006) also examined dispositional self-focused attention in 42 adolescents and young adults with childhood-onset asthma. They found that individuals with asthma have a tendency to focus their attention on their own cognitions and affect (private self-focused attention) more often than age- and gender-matched controls. Additionally, individuals who were diagnosed at a younger age endorsed greater private self-focused attention than more recently diagnosed individuals. Lastly, private self-focused attention mediated the relationship between the cognitive affective variable of illness uncertainty and psychological distress. Illness uncertainty refers to an individual's inability to understand illness-related events and/or predict disease outcomes (Mishel, 1990). Asthma is, by nature, a variable chronic illness and that characteristic

may be related to an individual with asthma being more attentive to their internal state and physiology in order to prevent an asthma attack. The unpredictability of the illness may increase the tendency to self-focus attention, which, in turn, may increase the risk for psychological distress.

Although an increase in public self-focused attention was not shown in the research of Van Pelt and colleagues (2006), further examination of this relationship is warranted. Asthma attacks are triggered by both internal (e.g., increased mucus secretion) and external (e.g., cigarette smoke, environmental allergies) factors. Although individuals with asthma may benefit from being attentive to their physiological state, they may also benefit from paying attention to their surroundings. Creer and Bender (1993) note that it is adaptive to assess for both triggers in the environment and reactions of other persons to an individual's respiratory distress. It is thus possible that individuals with asthma may, in fact, show an increase in public self-focused attention during general or asthma salient situations.

## Fear of Negative Evaluation

### Fear of Negative Evaluation

Fear of negative evaluation as a construct has been defined as “apprehension about others’ evaluations, distress over their negative evaluation situations, and the expectation that others would evaluate oneself negatively” (Watson & Friend, 1969, p.449). More recently, Weeks and colleagues (2010) defined fear of negative evaluation as the “sense of dread associated with being evaluated unfavorably while anticipating or



participating in a social situation” (Weeks et al., 2010, p.69). By taking into account both definitions, fear of negative evaluation incorporates not only the affective reaction to actually experiencing a social interaction but also the reaction to imagining oneself in a social environment. Multiple maladaptive outcomes have been linked to fear of negative evaluation, including increased social interaction anxiety (e.g., Haikal & Hong, 2010; Wang, Hsu, Chiu & Liang, 2011; Weeks et al., 2010), greater sensitivity to criticism (Atlas, 1994), increased bulimic attitudes in women (Gilbert & Meyer, 2005), decreased physical exercise, lower levels of perceived physical health, higher body mass index scores (Hartmann et al., 2008) and higher ratings of embarrassment, trembling, and concern about physical symptoms of anxiety (e.g., blushing, sweating) during social evaluation situations (Chen & Drummond, 2008). While the research on psychosocial outcomes of fear of negative evaluation has been fairly conclusive, there has been mixed research regarding the associations between various demographic variables and fear of negative evaluation. For example, Ridgers et al. (2007) found that female children endorsed a greater fear of negative evaluation than did male children following a physical education class. However, Teachman and Allen (2007) found no gender differences in level of fear of negative evaluation in a 6-year longitudinal study of 13 to 18 year old adolescents.

### Fear of Negative Evaluation and Social Anxiety

A large body of research supports the role of fear of negative evaluation in the experience of social anxiety during social situations (e.g., Coles, Turk, Heimberg, & Fresco, 2001; Mansell & Clark, 1999). Recent research by Weeks and colleagues (2010) examined fear of negative evaluation and various dimensions of social anxiety in a group

of healthy college undergraduate students. They found that fear of negative evaluation was significantly associated with fear of public scrutiny and social interaction anxiety. Based on their findings, they argued that such associations may be related to a decreased positive affect in response to possible negative social feedback secondary to concern about creating an impression that he or she is not worthy of social investment. Interestingly, Weeks et al., (2010) notes that fear of negative evaluation may be adaptive in promoting the avoidance of either conflict or social exclusion within the context of socially-competitive environments.

From a psycho-evolutionary perspective, it may be adaptive to avoid conflict with others in order to decrease anxiety while simultaneously decreasing contact with more socially dominant others (Gilbert, 2001). Peterson and Ritz (2010) assessed affective evaluation of asthma and the effect of social comparison direction in both asthma patients and healthy controls using the Implicit Association Test (IAT; Greenwald, Nosek & Banaji, 2003). Social comparison is a multi-directional concept in that it can occur in an upward fashion with others who are known to be relatively better off and, conversely, in a downward fashion with those who are worse off or with others who are on similar levels. Results of this study showed that the affective evaluation of asthma was dependent on the social comparison context. Interestingly, a negative affective evaluation of asthma occurred in contexts where there was no salient social comparison standard or a standard on a similar level (e.g., diabetes). When a downward social comparison was made (e.g. to someone with HIV), however, individuals expressed a positive affective evaluation of asthma. The results of this study suggest that downward social comparisons and, possibly, avoidance of more socially dominant others may be associated with a decrease

in catastrophizing and anxiety which have been previously identified as important components in symptom perception and medical adherence in asthma (De Peuter et al., 2008). The authors also point out that upward comparisons with role models may motivate better asthma management and improved self-concept. Further, they discuss the importance of adding to the body of literature that compares individuals with asthma and healthy controls on dimensions of social comparisons.

#### Fear of Negative Evaluation in Adolescents and Young Adults with a Chronic Illness

Little research has been conducted concerning fear of evaluation in individuals who have a chronic illness. In 2004, Richards and colleagues examined the role of fear of negative evaluation in relation to psychological adjustment to systemic sclerosis in adults. Results showed no difference in level of fear of negative evaluation in adults with systemic sclerosis and a normative sample of undergraduate students; however, 27% of participants endorsed significant levels of social anxiety using cutoff score suggested by Stopa and Clark (2001). In another study, Leary et al. (1998) looked at the relationship between degree of fear of negative evaluation and psychosocial difficulties in individuals with psoriasis. Fear of negative evaluation scores were correlated with individual's perceptions of being stigmatized and treated negatively by others, distress about visible symptoms of the disease and other people's reactions to the disease. In addition, high fear of negative evaluation participants worked more diligently to conceal their disease (including avoidance behavior) and rated the quality of their social lives, family relationships, leisure, and emotional well-being lower than participants with a low level of fear of negative evaluation. Individual differences in fear of negative evaluation moderated the effects of disease severity.

Adding to previous fear of negative evaluation research, Bruzzese and colleagues (2009) examined the relationship between fear of negative evaluation and asthma in a non-clinical sample of adolescents and healthy controls. Fear of negative evaluation was measured by using the Fear of Negative Evaluation (FNE) subscale from the Social Anxiety Scale for Adolescents (SAS-A, La Greca, 1999). Students who reported current asthma symptoms endorsed significantly greater general social anxiety and greater fear of negative evaluation than their peers with no current symptoms and no asthma diagnosis. Specifically, adolescents with current symptoms feared being viewed negatively by peers and endorsed more generalized discomfort and inhibition in social situations; however, they did not fear new situations or unfamiliar peers to a greater extent than adolescents without asthma. The results of this study suggest that current asthma symptoms, rather than a history of asthma, may be more closely associated with fear of negative evaluation and anxiety. Bruzzese et al. (2009) pointed out that previous research has demonstrated that adolescents express fear and embarrassment about asthma and using medication in front of peers (Cohen et al., 2003; Gibson et al., 1995) and went on to posit that experiencing asthma symptoms that are visible to others (e.g., wheezing) may increase fear of negative evaluation.

Eddington and colleagues (2010) explored dating anxiety and fear of intimacy between undergraduate students with childhood-onset asthma and individuals without a chronic illness. Dating anxiety includes multiple dimensions including fear of negative evaluation in dating and hetero-social situations (La Greca & Mackey, 2007). Age- and gender-matched college students with and without asthma did not differ on self-reported levels of general dating anxiety. However, when looking more specifically at college

students with asthma, there were gender differences in dating anxiety such that females expressed greater overall dating anxiety, more distress related to dating, greater fear of negative evaluation, and social distress. In other words, females with asthma reported higher levels of dating-related distress due to thoughts of being negatively evaluated by their prospective partner. The authors posited that, as these gender differences were not found in the matched control population, there may be a different health-related quality of life course for males and females with asthma and that the impact of having asthma may have a more pronounced effect of females as compared to males. Further research is needed to elucidate the impact of gender on the experience of fear of negative evaluation in young adults with asthma.

#### Fear of Negative Evaluation and the Spotlight Effect

One study has been conducted to analyze the association between fear of negative evaluation and the spotlight effect. In 2010, Haikal and Hong examined fear of negative evaluation, anxiety and the spotlight effect in Singaporean undergraduate students. Haikal and Hong (2010) built on previous research which found that when individuals who are high in fear of negative evaluation are placed in high-anxiety situations, these individuals report a greater tendency to view their actions from an observer's perspective and to recall the situation as threatening (Coles et al., 2001). When Haikal and Hong (2010) placed their participants in a high-anxiety situation (e.g., give a speech about themselves in front of a video recorder), they found a significant main effect of fear of negative evaluation for the spotlight effect in a high social evaluation condition (e.g., the video would be evaluated by communication experts). In other words, the spotlight effect was elevated in participants who both endorsed high levels of fear of negative evaluation and

who were in a high social evaluation condition. Additionally, participants who endorsed high levels of fear of negative evaluation reported increased levels of anxiety. Thus, the Haikal and Hong (2010) study suggests that cognitively vulnerable individuals may overestimate the extent to which observers are aware of their internal dialogue and may thus increase their experience of anxiety.

### The Spotlight Effect

The spotlight effect is a newly researched phenomenon in the field of social psychology. Although it has similarities to other constructs such as self-focused attention, and egocentrism, it is uniquely defined by the amount of attention an individual feels they receive from other persons in their environment regardless of the positive or negative results of their actions. Additionally, it does not take into account the notion that an individual's internal state is being observed by others (illusion of transparency), rather it centers on the idea of behaviors being observed. As described by Gilovich et al., (2000, p.211), the spotlight effect occurs when “people tend to believe that the social spotlight shines more brightly on them than it really does.” The spotlight effect goes beyond the scope of the egocentric bias and includes not only the belief that the self is central to the environment, but also that others regard the individual as central to the environment.

Few studies have been conducted that examine the spotlight effect. The spotlight effect has been researched in the context of physical appearance (e.g., “bad hair days”), athletic performance, video game performance (Gilovich, Kruger, & Medvec, 2002),

clothing choice, group discussions (Gilovich et al., 2000) and memory tasks (Brown & Stopa, 2007). The relationship between the spotlight effect and social anxiety (Brown & Stopa, 2007), guilt by association (Fortune & Newby-Clark, 2008) and empathy neglect (Epley, Savitsky, & Gilovich, 2002) have been among the few variables examined, and these studies will be described below.

Gilovich and colleagues (2000) conducted five studies, the first two of which placed participants in t-shirts depicting an embarrassing celebrity (i.e., Barry Manilow) and used two control groups who were asked to estimate the number of people who could identify Barry Manilow on the target's t-shirt. Participants wore the embarrassing t-shirts in front of groups of people, and were then asked about the percentage of individuals in the group who would be able to identify the famous person on their t-shirt. The estimates of the group wearing the embarrassing t-shirt were significantly higher than the control group and the actual reports. The second study placed participants in t-shirts depicting a popular famous person (i.e., a movie star of their choosing). The affective experience of wearing the shirt changed in that they were allowed to pick an image they would feel good about wearing. While the predicted percentage of onlookers who noticed the shirt stayed about the same (Study #1 at 46%, Study #2 at 48%), the discrepancy between predicted attention and actual attention increased from the embarrassing condition (23%) to the positive condition (40%).

Gilovich and colleagues (2000) sought to generalize the spotlight effect beyond attire and introduced a group discussion setting to assess, generally, for acts of self-presentation and, specifically, for beliefs about other's perceptions of positive and negative discussion contributions. Participants were asked to partake in a group (3-7

individuals) discussion about “the problem of the inner cities in the United States” which included discussing the issue for 20 minutes and writing a group “policy statement” for 10 minutes. They were then instructed to individually answer questions regarding, first, how the group as a whole would rank all of the group members, themselves included, on a series of group dynamics (i.e., “how much they advanced the discussion”) and, second, how they would personally rate everyone on the same group dynamic dimensions. Participants believed group discussion members would rank their behavior higher than the group members actually did, although the correlations between the two were very high. While participant’s ratings of themselves were correlated with observer’s ratings, their estimates of the saliency of their behavior were higher than actual ratings. Thus, it seems an individual can remain somewhat anchored in reality, yet continue to overestimate their personal impact on his or her environment whether the impact is a negative, embarrassing contribution or a positive, collaborative contribution (Gilovich & Savitsky, 1999).

In their fourth study, Gilovich et al., (2000) examined the influence of the anchoring and adjustment phenomenon in the context of the spotlight effect. Again, a participant was asked how many constituents in a room noticed an embarrassing t-shirt (e.g., a t-shirt with a picture of Vanilla Ice with the lyrics “Ice, Ice, Baby” beneath the image) by; however, the participant was also asked if they thought of another number besides that which they initially reported. Gilovich and colleagues (2000) found 86% of participants reported about the number of people in the room who looked up, how the others were oriented, or how absorbed the others seemed to be in their work. Participants were also asked “before you came up with your answer, did you think of any other



numbers?” Based on anchoring and adjustment, the participant should exaggerate the number initially because it is rooted in their own subjective experience of the situation. The second number they report should be lower than the first based on the tendency to adjust our original anchor. While adjustment will occur, it will not be enough to counteract the inflated anchor and will still be an exaggerated figure. Results indicated that 73% of participants corrected their first number, of which 77% reported a number that was higher than their final answer.

The final study examined the impact of habituation to the Barry Manilow t-shirt used in Study 1 utilizing immediate exposure and delayed exposure groups. The immediate exposure group was sent to a room occupied by several people immediately after putting on the t-shirt, while the delayed exposure group was sent to the room after a 15 minute delay. Each participant was then asked to report how many individuals in the room could recall that Barry Manilow was pictured on the t-shirt. Significantly more participants in the immediate condition (51%) experienced the spotlight effect than in the delayed exposure condition (37%). It seemed that habituation reduced the experience of the spotlight effect by decreasing the initial anchoring effect.

People also overestimate the extent to which others perceive variability of behavior and appearance over time (Gilovich & Savitsky, 1999). An actor is often aware of his or her own behavioral norms and attends to deviations from these norms. In a social situation, the actor notices what they had done *differently* while the observer notices what was *done* (Gilovich et al., 2002). The anchoring and adjustment phenomenon is partially responsible for the spotlight effect in one’s hypervigilance to his or her own behavioral variability. All subsequent behaviors are anchored on the original

behavior and their variance from the original, while often adjusted by the actor, remains in the spotlight.

Gilovich and colleagues (2002) asked students to rate their views of the physical attractiveness of individuals in a reoccurring school seminar based on their relative attractiveness to previous seminars. Students were asked to rate each person in the seminar, including themselves, in terms of their physical appearance for the day. They were instructed to rate each person's physical attractiveness relative to how he or she typically looked in the seminar, not on their general level of physical attractiveness. Participants were surveyed during five separate seminars through-out the semester. The standard deviation of the participants' five estimates of how they would be rated by everyone else was compared to the actual average standard deviation of everyone else's ratings. The three combined replication studies resulted in a significant spotlight effect, in that participants expected their classmates to notice their appearance changes more often than they actually did. Gilovich and colleagues (2002) replicated this finding when asking about athletic performance among women volleyball players. Players overestimated the extent to which teammates would notice variability across eight randomly chosen practices. Additionally, players believed they would be judged more harshly than they actually were. In their final study, Gilovich et al. (2002) paired two videogame players with an observer and, after each round of videogames, asked each player to rate their own and their teammates performance. Additionally, they were asked to estimate how the observer would rate their performance and their teammate's performance. The observer noticed more performance variability than the teammate; however, a player's estimate of how their teammate versus the observer would rate their

variability did not differ. Participants did not take into account the attentional and perceptual burden placed on their teammate and failed to incorporate this into their decision making when reporting observer and teammate ratings.

Three studies have expanded upon Gilovich and colleagues work. Fortune and Newby-Clark (2008) found the guilt by association effect (GBAE), where individuals expect that they will be evaluated negatively by observers because of their relationship with an inept or otherwise undesirable person), occurs in both physically and emotionally close relationships. In essence, they are arguing that the spotlight effect occurs not only when an individual is “in the spotlight” but also when an associate of the individual is in a social spotlight. Fortune and Clark (2008) posited that individual’s high in public self-consciousness (Fenigstein et al., 1975) and/or fear of negative evaluation (Leary, 1983) could more strongly manifest the GB AE. It is therefore possible that those same individuals could more strongly manifest the spotlight effect. In a study by Brown & Stopa (2007), participants performed a memory task under either a low or a high socially-evaluative condition. Participants in the high socially-evaluative condition reported significantly higher levels of the spotlight effect than their counterparts in the low socially-evaluative condition. Additionally, socially anxious participants reported higher levels of the spotlight effect and evaluated their performance in a more negative manner in the high socially-evaluative condition. Higher levels of social evaluation may impact doubt about an individual’s public self, thus increasing the focus on the self and intensifying the experience of the spotlight effect (Brown & Stopa, 2007).

The third study on the spotlight effect included the experience of empathy neglect, in which individuals often overestimate how harshly they will be judged by

others (Epley et al., 2002). Epley and colleagues attempt to rectify the discrepancy between the spotlight effect and the correspondence bias by highlighting three major points. First, people adjust their impressions to accommodate situational factors (although the adjustment is often not sufficient). Second, the adjustment increases when observers can empathize with an actor. Third, people are fundamentally egocentric and have difficulty adopting another perspective when anticipating how they will be judged by another individual. Epley et al. (2002) found that individuals in an embarrassing moment overlook an observer's empathic orientation but that this oversight can be overcome by drawing attention to the observer's ability to empathize. While the actors possessed the knowledge that empathy may impact an observer's judgment, the knowledge was often forgotten while experiencing something embarrassing.

Preliminary research has shown the spotlight effect to be associated with, to name a few, social anxiety (Brown & Stopa, 2007), athletic performance, (Gilovich et al., 2002) and self-consciousness (Fortune & Clark, 2008). It has not, however, been studied in relation to certain psychological disorders (e.g., depression) or a chronic illness. Additional research is needed to better understand the associations between the spotlight effect and other psychological and psychosocial constructs.

### The Present Study

To build upon the current understanding of how individuals experience a chronic illness, it is important to expand the literature in two directions, including a focus on new populations and including new constructs. Internalizing disorders, such anxiety and

depression, have consistently been linked with asthma in children and adults (e.g., Goodwin et al., 2003; McQuaid et al., 2001; Richardson et al., 2006). Little research exists with the young adult population, and we are thus missing the transitional period between the asthma experience in childhood and adulthood. In addition, little research has been done to examine sub-clinical levels of anxiety in individuals with asthma. The spotlight effect is an avenue through which to better understand another component of anxiety and psychosocial adjustment in this population.

To date, there has been no research that looks at the spotlight effect in a chronic illness population. To build on the existing spotlight effect research on physical appearance, athletic performance (Gilovich et al., 2002), and social anxiety (Brown & Stopa, 2007), this study aims to examine the spotlight effect in young adults with a history of childhood onset asthma. As some individuals have expressed embarrassment about having asthma (Bruzese et al., 2009), the present study aims to explore the possible impact of being “forced” to identify as a young adult with asthma (as opposed to being told to keep their chronic illness “invisible”) and how that may impact the spotlight effect. It is possible that participants with asthma may forget about the possibility of an empathic observer and feel as though their asthma will be both noted and judged by others.

In addition to looking at a new construct in individuals with asthma, the present study will examine psychological and psychosocial adjustment in young adults with asthma. Previous research has found a consistent association between asthma and anxiety (e.g., Carpentier et al., 2007; Ortega et al., 2002) and depression (e.g., Richardson et al., 2006). The present study seeks to replicate these previous findings. In addition, few

empirical investigations have been conducted to examine the role of self-focused attention (e.g., Van Pelt et al., 2006) or fear of negative evaluation (Bruzzese et al., 2009) in the context of a chronic illness. The present study will add to the current literature by examining fear of negative evaluation and self-focused attention in young adults with asthma. According to an apriori independent t-test power analysis completed using G Power (Faul, Erdfelder, Buchner, & Lang, 2009), 88 participants will be needed in each group in order to achieve significance.

The following hypotheses are proposed.

1. Participants in the “forced” asthma self-disclosure group will report a greater spotlight effect than those in the “invisible” asthma self-disclosure group.
2. Participants with asthma who exhibit a high level of fear of negative evaluation will report a greater spotlight effect compared to those with a low level of fear of negative evaluation.
3. Participants with asthma will demonstrate higher levels of negative affect, including anxiety and depression symptoms, than participants without asthma.
4. Participants with asthma will demonstrate greater fear of negative evaluation than participants without asthma.
5. Participants with asthma will demonstrate greater self-focused attention, including both public and private self-focused attention, than participants without asthma.

## CHAPTER III

### METHODOLOGY

#### *Participants*

Two groups of participants, one with a history of childhood-onset asthma and one group without a history of childhood-onset asthma, were recruited from undergraduate classes at Oklahoma State University using an online research system (SONA). Participants were informed that the purpose of the study was to recruit students for an intramural soccer team. For the first wave of data collection, participants with asthma (APs) were told that they would be assessed as possible team members. For the second wave of data collection, healthy participants (HPs) were informed that they were to review another student's "application" for participation on an intramural soccer team. Standard recruitment procedures were used in accordance with the Oklahoma State University institutional review board and written informed consent was obtained from each participant. Completion of the study took approximately 30-45 minutes. Participants were compensated with research credit towards an undergraduate course. Eligibility requirements for the college students with asthma included having received an asthma diagnosis during childhood. Conversely, eligibility requirements for the healthy controls included not having a childhood diagnosis of asthma.

For the first wave of data collection, 693 participants were recruited. Fifteen participants failed to complete the study, leading to a total of 530 healthy participants (HP) and 148 participants with asthma (AP). Demographic statistics for both healthy participants and participants with asthma can be found in Table 1. The majority of participants with were female (64.9%), Caucasian (76.3%) followed by African American (5.5%), in their first year of undergraduate studies (51.8%), primarily 18- to 19-years old (59.6%), grew up in a household with a combined annual income of \$100,000 to \$124,999 (17.6%), and had a mother (36.4%) and a father (37.5%) with a bachelor's degree.

Illness characteristics for all participants with asthma can be found in Table 2.

For the second wave of data collection, 290 HPs were recruited. Forty-eight paragraphs were not used due to writer errors (e.g., not following instructions). One hundred and fifty seven of the 209 HPs fully completed all requirements of the protocol and thus only their responses were included in final analyses. Data from this wave of data collection was only used for spotlight effect purposes and no other analyses were run using data from these participants.

### *Procedure*

Participants in the asthma group participated in the first wave of data collection. They were randomly assigned to complete one of two versions of an application for participation on an intramural soccer team. The application varied according to either a “forced” asthma diagnosis disclosure group or an “invisible” or non-disclosure of asthma diagnosis. In the disclosure condition, participants were told to discuss their asthma in



their application paragraph. In the non-disclosure condition, participants were told to *not* self-disclose their asthma. All participants were asked to write a paragraph about themselves to be used by the team captain to determine if the participant would be a good fit for the soccer team. The instructions for the forced self-disclosure group read as follows:

“A group on campus is currently recruiting for a new intramural soccer team. They are looking for additional students to fill a few open slots. Please write a paragraph in the space below describing yourself. List any characteristics that may be helpful in determining if you would be a good addition to the team. You must disclose if you have asthma, to ensure that certain health conditions will be taken into account when choosing team members.”

The instructions for the non-self-disclosure group read as follows:

“A group on campus is currently recruiting for a new intramural soccer team. They are looking for additional students to fill a few open slots. Please write a paragraph in the space below describing yourself. List any characteristics that may be helpful in determining if you would be a good addition to the team. Do not disclose your history of asthma, to ensure that certain health conditions will not factor into choosing team members.”

Participants in both conditions were provided an area where they wrote their response to the prompt. Following the paragraph, participants were asked to respond to a series of self-report questions assessing asthma self-focus, egotism, and thought intrusion. Participants were asked to answer self-report measures assessing fear of negative evaluation, general self-focus and global psychological functioning.

Healthy AYAs were also asked to follow the same procedure. They were provided with an area in which to write their response to the prompt and were then asked to respond to the same series of self-report questions as the participants with asthma. While the paragraph written by the healthy AYAs was not utilized in data analysis; however, it was included in the procedure in order to keep the methodology as similar as possible across groups. The instructions for the healthy participants read as follows:

“A group on campus is currently recruiting for a new intramural soccer team.

They are looking for additional students to fill a few open slots. Please write a paragraph in the space below describing yourself. List any characteristics that may be helpful in determining if you would be a good addition to the team.”

The second wave of data collection involved only healthy participants. Two healthy participants were matched to each participant with asthma who participated in wave one. Healthy participants were told they would be starting a new intramural soccer team and would be responsible for picking team members. Asthma participant vignettes were then randomly assigned to healthy participants for them to read. The instructions for each healthy participant read as follows:

“You are captain of a new intramural soccer team and need to choose your team members. A number of students are interested in joining the team so you must read through vignettes they wrote about themselves in order to pick your roster.

After you read through the following vignette submitted by an OSU student, I will ask you to answer a few questions about him or her and have you decide if you want them on your team.”

Following the instructions, participants were provided a vignette previously written by an asthma participant. After reading the vignette, participants were asked to respond to a series of self-report questions assessing their recollection of general information about the individual from the vignette, any reported health conditions and their decision whether or not to pick the individual for their team. Participants then answered self-report measures assessing fear of negative evaluation, general self-focus and global psychological functioning.

### *Measures*

Background Information Questionnaire. A questionnaire was created for the purpose of this study to collect information regarding the participant’s gender, age, year in school, ethnicity, parent’s level of education, parent income, and parent’s occupational status. In addition, participants with asthma were asked to report about their age at diagnosis, type of asthma, current treatment status, and rating of asthma severity, symptoms (i.e., wheezing, shortness of breath) and controllability. Questions were based on the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire

(Asher et al. 1995), a standard survey which has been widely used to assess the prevalence and severity of asthma in populations and has been shown to have high specificity (94.4%) when identifying a lifetime asthma diagnosis (Lukradka, Ruchs, Moreira, Picon, Fischer, & Fuchs, 2010).

Brief Symptom Inventory. (BSI; Derogatis, 1983). The participants completed the BSI, a 53-item questionnaire used to assess global psychological functioning in nine domains: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Respondents rated the degree of their distress over the past 7 days using a Likert scale, ranging from 0 (*not a lot*) to 4 (*extremely*). The global severity index (GSI), as well as the nine dimensions, was examined to determine level of distress. The BSI has been used in previous studies with illness populations (Durá et al., 2006; Galdón et al., 2008; & Recklitis et al., 2006) and college populations (Meijer, Vries, & van Bruggen, 2011). It has been shown to have good internal consistency with alpha coefficients ranging from 0.71 to 0.90 (Derogatis, 1983; Derogatis, 2001; Recklitis et al., 2006). Cronbach's alpha for the current sample was 0.98.

Brief Fear of Negative Evaluation Scale. (BFNES; Leary, 1983). The BFNES is a 12-item self-report measure used to assess the fear of receiving negative social evaluation. The items included in this version have been adapted from Watson & Friend's (1969) Fear of Negative Evaluation version in order to decrease completion time and incorporate a broader Likert scale. Participants rated items on a 1-5 Likert scale, ranging from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*), instead of the true-false format of the FNE. A total sum score was calculated with greater scores

indicating greater fear of negative evaluation. The BFNES has been shown to have a high correlation with the FNE ( $r = 0.96$ ) and high internal consistency ( $\alpha = 0.90-0.91$ ) in undergraduate samples (Leary, 1983). Recent work using item response theory analysis suggests that the reverse-worded items on the BFNES caused participant response errors and resulted in a two-factor structure (Rodebaugh et al., 2004; Weeks et al., 2005). Marsh (1996) and Weeks et al., (2005) suggest keeping but not scoring the reverse-worded items. Carleton and colleagues (2006) suggest rewording reverse-worded items to be straightforward in order to risk a reduction in sensitivity that may accompany removal of or not scoring items (BFNE-II). The BFNE-II has demonstrated excellent internal consistency ( $\alpha = 0.95-0.97$ ), sensitivity and validity (Carleton et al., 2006; Collins, et al., 2005). Additionally, participants endorsed the reversed items significantly more than the unchanged items in two repeated measures studies [ $F(1, 200) = 12.535, P < .001$ ] and [ $F(1, 183) = 179.977, P < .001$ ] (Carleton et al., 2006). Based on the work of Carleton and colleagues (2006), and the use of the BFNE-II by Brown & Stopa (2007), the BFNE-II was used in this study to determine the level of fear of negative evaluation. Cronbach's alpha for the current sample was 0.97.

The Self-Consciousness Scale (SCS). The SCS (Fenigstein et al., 1975) is a 23-item scale used to assess individual differences in the tendency to focus one's attention on oneself (i.e., dispositional self-focusing). Participants rated how much each statement is characteristic of them using a Likert scale, ranging from 0 (*extremely uncharacteristic of me*) to 4 (*extremely characteristic of me*). The SCS includes three factor analytically derived scale scores (private self-consciousness, public self-consciousness, and social anxiety) and a total score. Private self-consciousness is the process of attending to one's

inner thoughts and feelings (e.g., “I reflect about myself a lot”), public self-consciousness reflects a general awareness of oneself as a social object that may affect others (e.g., “I’m very concerned about the way I present myself”) and social anxiety is defined as discomfort in the presence of others (e.g., “I feel anxious when I speak in front of a large group”) (Fenigstein et al., 1975). The SCS has demonstrated discriminant validity, construct validity, and good internal consistency reliabilities, with alphas ranging from .63 to .80, (Bernstein, Teng, & Garbin, 1986; Carver & Glass, 1976; Nystedt & Ljungberg, 2002; Smith & Greenberg, 1981; Van Pelt et al., 2006), and has been used with undergraduate populations (Berstein et al., 1986; Carver & Glass, 1976; Monfries & Kafer, 1994; Van Pelt et al., 2006). Cronbach’s alpha for the current sample was 0.85.

Spotlight Effect Questions. The participants with asthma in both the disclosure and non-disclosure groups answered a series of self-report questions after writing their descriptive paragraph. Self-focus of a participant on their asthma was measured using two questions. Participants in both conditions answered the question “What are three things people will remember about you?” Participants in the forced condition answered the question “What is the likelihood that others will remember that you have asthma when they review your paragraph?” Participants in the invisible condition answered “What is the likelihood that others will know that you have asthma when they review your paragraph?”

The first self-focus question was open ended and participants were provided three blank spaces in which to write their answers. The second self-focus question was answered using a percentage (0 to 100%) system. Egotism was measured using the question “Will they pick you for the team?” In order to assess for thought intrusion and

thought suppression, an index of thought intrusion was created. The index was calculated using the ratio of the rating on the question “How often did thoughts of your asthma “pop” into mind?” to the sum of ratings on this question and the question “How often did you try to not think about your asthma while thinking about your response and then writing?” Both Smart and Wegner (1999) and Lane and Wegner (1995) found that both intrusive and intentional thinking tend to be correlated, and a ratio can be more effective in identifying the relative intrusiveness of thoughts. However, due to updated research pointing to benefits of separating these two constructs, thought intrusion and suppression were also looked at individually (e.g., Wismeijer, 2012). The questions used to assess thought intrusion were measured using a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*very often*). The reviewers were asked to list three things they recalled from the paragraph. The healthy participants were provided with three blank spaces in which to answer the question “List three things you recall about the person from the vignette.” Second, they were asked if the individual who wrote the paragraph has asthma. Lastly, they were asked 1) if they would pick the individual for their soccer team and 2) why they decided to pick or not pick the individual for their team.

## CHAPTER IV

### FINDINGS

#### Preliminary Analyses

Preliminary analyses were conducted to identify the relationship of demographic variables (age, race, gender, education level) to measures of self-focused attention, fear of negative evaluation, psychological distress, and asthma characteristics. Demographic characteristics of participants stratified by healthy or illness group are presented in Table 1. Medical characteristics of asthma participants are presented in Table 2. Bivariate correlations were calculated for demographic variables, illness characteristics, the SCS, the B-FNE, and the BSI. Correlations among demographic and criterion variables for all participants are presented in Table 3. Correlations among demographic and criterion variables (e.g., the SCS, the B-FNE, and the BSI) for participants with asthma are presented in Table 4. Correlations among demographic and criterion variables for participants with asthma are presented in Table 5. Correlations among illness characteristics and criterion variables for participants with asthma are presented in Table 6.



## Primary Analyses

Hypothesis 1: The first hypothesis of the present study predicted that APs in the “forced” asthma self-disclosure group would report a greater spotlight effect than those in the “invisible” asthma non-disclosure group. In order to test this hypothesis, the average of “does the person who wrote the paragraph have asthma” was calculated using the ratings each HP who read a paragraph written by a participant with asthma. The average of the reader’s responses was compared to the forced disclosure scenario question, “what is the likelihood that others will remember that you have asthma when they review your paragraph?” or to the non-disclosure scenario question, “what is the likelihood that others will know that you have asthma when they review your paragraph.” In the forced disclosure group, 62.09% of APs predicted the HP reader would know they have asthma, while 98.84% of HP readers identified the AP had asthma. Participants who were forced to disclose underestimated how many readers would recall their asthma disclosure. In fact, readers were 1.5 times more likely to recall that writers had asthma than writers anticipated. In the non-disclosure group, 2.4% of APs predicted the HP reader would know they have asthma while 5.3% of HP readers predicted the AP had asthma. Participants who were instructed to not disclose their asthma underestimated how many readers would know they had asthma after reading their paragraph. Readers were over twice as likely to identify that the writer had asthma after reading the paragraph. Thus, the spotlight effect was not shown in either group. In both groups, the HP reader identified the participant had asthma more often than the AP writer actually predicted would occur.

Hypothesis 2: The second hypothesis of the present study predicted APs who exhibit a high level of fear of negative evaluation will report a greater spotlight effect. In order to examine this hypothesis, a linear regression was conducted, controlling for year in school. In order to calculate the spotlight effect, the HP reader's actual rating of the likelihood of the AP having asthma was subtracted from the AP predicted rating. In calculating the spotlight effect in this manner, the experience of the effect is either a positive or negative number representing the magnitude of the effect. If APs thought the reader *would* identify their asthma and the reader *did not*, the AP would experience the spotlight effect and the magnitude would be positive. If the APs thought the reader *would not* identify their asthma but the reader *did* identify that the AP has asthma, the magnitude would be negative. The spotlight effect was calculated for the present sample and was entered on the second step of the linear regression. The analysis showed no significant impact of fear of negative evaluation on the spotlight effect,  $F(2, 89) = .497, p = .610$ .

Hypothesis 3: The third hypothesis of the present study predicted that APs would have higher Brief Symptom Inventory (BSI) scores than HCs. In order to test this hypothesis, ten independent sample t-tests were conducted using each subscale from the BSI. Relevant means, standard deviations, and results of *t* tests are presented in Table 7. Analyses utilizing Levene's test of equality of error variances indicated that homogeneity of variance could be assumed for all subscales. Due to the large number of comparisons being performed, a Bonferroni correction was used to account for error. A corrected alpha value of .005 was calculated and used to assess significance.

Independent sample t tests showed that the AP and HP groups did not differ in their mean scores on the Global Severity Index, ( $t(1, 669) = -1.19, p = .24$ ). Additionally, they did not differ in their means on the majority of the subscales: Depression ( $t(1, 669) = .21, p = .83$ ), Obsessive Compulsiveness ( $t(1, 669) = -.55, p = .59$ ), Interpersonal Sensitivity ( $t(1, 669) = -.80, p = .42$ ), Anxiety ( $t(1, 669) = -1.16, p = .25$ ), Hostility ( $t(1, 669) = -.70, p = .49$ ), Phobic Anxiety ( $t(1, 669) = -1.66, p = .10$ ), ( $t(1, 671) = -1.28, p = .20$ ), and Psychotism ( $t(1, 669) = -.81, p = .42$ ), Paranoid Ideation ( $t(1, 669) = -1.21, p = .23$ ). There was a significantly different mean on the Somatization subscale than did participants in the HP group, ( $t(1, 669) = -3.07, p = .002$ ). This result indicates that AP participants endorse greater distress related to perceptions of bodily dysfunction.

Due to the possibility of physiological symptoms of asthma confounding this finding, the Somatization subscale was further examined at the item level. Again, Bonferroni corrections were used post hoc to test for significance and a  $p$  value of .007 was used. Levene's test of equality of error variances indicated that homogeneity of variance could be assumed for all scores except for "pains in heart or chest," "trouble getting your breath," and "hot or cold spells." The following Somatization items were not significantly different among HP and AP groups: "faintness or dizziness" ( $t(1, 667) = -1.61, p = .19$ ), "nausea or upset stomach" ( $t(1, 667) = -.691, p = .40$ ), "hot or cold spells" ( $t(1, 668) = -2.69, p = .08$ ), "numbness or tingling in parts of your body" ( $t(1, 669) = -2.12, p = .034$ ), and "feeling weak in parts of your body" ( $t(1, 669) = -1.69, p = .09$ ). The following Somatization items were significantly different among HP and AP groups: "pains in heart or chest" ( $t(1, 668) = 3.51, p = .001$ ) and "trouble getting your breath" ( $t(1, 669) = -3.91, p = .000$ ). Overall, these results suggest very few differences between

the AP and HP groups on any dimension of distress. Relevant statistical analyses are presented in Table 8.

In order to fully test the hypothesis that APs would have higher Brief Symptom Inventory (BSI) scores than HCs, a hierarchical multiple regression analysis was also conducted to determine if health status was a significant predictor of psychological distress. Health status was not a significant predictor for any subscales ( $p < .05$ ) but the Somatization subscale. Based on the preliminary analyses, father's education was entered in the first step of the regression and the predictor of interest (Somatization) was entered in the second step. Results revealed that father's education was a significant predictor ( $\beta = -.092, p < .01$ ), asthma diagnosis was a significant predictor ( $\beta = .127, p < .001$ ), and the overall model was significant  $F(1, 668) = 8.350, p = .000$ . Relevant statistical analyses are presented in Table 9.

A hierarchical multiple regression analysis was conducted to determine if experimental group (AP disclosure versus non-disclosure) was a significant predictor of psychological distress. Relevant statistical analyses are presented in Table 10. Based on the preliminary analyses, no covariates were entered for the Global Severity Index. Results revealed the overall model was not significant ( $F(1, 143) = .475, p = .49$ ). Based on the preliminary analyses, no covariates were entered for the Depression subscale. Results revealed the overall model was not significant ( $F(1, 143) = .584, p = .45$ ). Based on the preliminary analyses, no covariates were entered for the Obsessive Compulsive subscale. Results revealed the overall model was not significant ( $F(1, 143) = 2.191, p = .14$ ). Based on the preliminary analyses, times visited the doctor due to asthma in the past 12 months and times visited the hospital due to asthma in lifetime were entered in the

first step of the regression and the predictor of interest (Interpersonal Sensitivity subscale) was entered in the second step. Results revealed the overall model was significant ( $F(1, 141) = 4.266, p = .006$ ). Based on the preliminary analyses, no covariates were entered for the Hostility subscale. Results revealed the overall model was not significant ( $F(1, 143) = .805, p = .37$ ). Based on the preliminary analyses, times visited the doctor due to asthma in the past 12 months was entered in the first step of the regression and the predictor of interest (Phobic anxiety subscale) was entered in the second step. Results revealed the overall model was significant ( $F(1, 142) = 3.432, p = .035$ ). Based on the preliminary analyses, no covariates were entered for the Psychoticism subscale. Results revealed the overall model was not significant ( $F(1, 143) = .365, p = .55$ ). Based on the preliminary analyses, days of school missed in the past 12 months due to asthma was entered in the first step of the regression and the predictor of interest (Paranoid Ideation subscale) was entered in the second step. Results revealed the overall model approached significance ( $F(1, 142) = 3.027, p = .052$ ). Based on the preliminary analyses, wheezing severe enough to limit breath in the past 12 months, dry cough at night during the past 12 months, and number of times sleep was disturbed by wheezing in the past 12 months were entered in the first step of the regression and the predictor of interest (Somatization subscale) was entered in the second step. Results revealed the overall model was significant ( $F(1, 139) = 3.545, p = .009$ ).

Hypothesis 4: The fourth hypothesis of the present study predicted that participants with asthma (AP) would have a higher total Brief Fear of Negative Evaluation Scale (BFNE) score than participants without asthma (HP). In order to test this hypothesis, an

independent sample t-test was conducted. Levene's test of equality of error variances indicated that homogeneity of variance could be assumed. Relevant means, standard deviations and results of *t*-tests are presented in Table 11. The analysis showed that the AP and HC groups did not differ in their mean scores on the BFNE ( $t(1, 672) = -.621, p = .54$ ).

Exploratory analyses were conducted to explore difference in the asthma forced disclosure versus non-disclosure groups. It was hypothesized that individuals in the disclosure group would experience greater levels of fear of negative evaluation due to current empirical research on the impact of disclosure of possibly stigmatized conditions (Leary & Allen, 2011). To test the hypothesis that experimental group (AP disclosure versus non-disclosure) would be associated with fear of negative evaluation, two independent sample t tests were utilized to examine mean differences by experimental condition. The analyses indicated that AYAs who were in the asthma disclosure group endorsed greater fear of negative evaluation ( $M = 2.98, SD = 1.35$ ) than those in the non-disclosure group, ( $M = 2.48, SD = 1.29$ ),  $t(1, 144) = 2.20, p = .03$ .

A hierarchical multiple regression analysis was next conducted to determine if experimental group (AP disclosure versus non-disclosure) was a significant predictor of fear of negative evaluation. Based on the preliminary analyses, gender was entered on the first step of the regression and the predictor of interest (experimental group) was entered on the second step of the regression. Results revealed the overall model was significant ( $F(2, 143) = 6.81, p < .01$ ). Disclosure versus non-disclosure group condition explained 8.7% of the variance in fear of negative evaluation in APs. Experimental group was a significant predictor ( $\beta = -.187, p < .05$ ) of fear of negative evaluation in that APs who

were forced to disclose their asthma endorsed a greater fear of negative evaluation. Relevant means, standard deviations and results of *t*-tests by disclosure group are presented in Table 12 and hierarchical regression analyses are presented in Table 13.

Hypothesis 5: The fifth hypothesis of the present study predicted that APs would have greater self-focused attention, as measured by the Self-Consciousness Scale (SCS), than HPs. In order to test this hypothesis, four independent samples *t*-tests were conducted so that the mean SCS score and each of the subscales could be examined. Exploratory analyses utilizing Levene's test of equality of error variances indicated that homogeneity of variance could be assumed for the SCS total score and all SCS subscale scores.

The analyses showed there was no difference in mean scores on the total SCS score, ( $t(1, 671) = -.50, p = .62$ ). Additionally, there were no group differences in mean scores for the three SCS subscales: Private Self Consciousness, ( $t(1, 671) = .34, p = .73$ ), Public Self Consciousness, ( $t(1, 671) = -.21, p = .84$ ), and Social Anxiety, ( $t(1, 671) = -1.45, p = .15$ ). Relevant means and standard deviations are presented in Table 14.

Exploratory analyses were conducted to explore difference in the asthma forced disclosure versus non-disclosure groups. It was hypothesized that individuals in the disclosure group would experience greater levels of self-focused attention due to current empirical research on the impact of social distress on levels of self-focused attention (Monfries & Kafer, 1993). To test the hypothesis that asthma participants in the disclosure group would have higher SCS scores than those in the non-disclosure groups, four independent sample *t* tests were conducted. Relevant means, standard deviations, and *t*-tests are presented in Table 15. Analyses revealed a significant difference in Total

SCS score,  $t(1, 143) = 2.014, p = .046$ , indicating participants in the disclosure group reported somewhat greater self-focused attention ( $M = 2.40, SD = .55$ ) than those in the non-disclosure group ( $M = 2.21, SD = .55$ ). Analyses revealed a difference approaching significance in the mean SCS score,  $t(1, 144) = 1.95, p = .05$ , indicating participants in the disclosure group reported somewhat greater average self-focused attention ( $M = 2.26, SD = .59$ ) than those in the non-disclosure group ( $M = 2.04, SD = .68$ ). Participants in the disclosure group also reported significantly higher Public SCS subscale scores ( $M = 2.43, SD = .71$ ) than those in the non-disclosure group ( $M = 2.17, SD = .74$ ),  $t(1, 144) = 2.12, p = .04$ . Disclosure versus non-disclosure participants did not differ in their Private SCS subscale scores ( $p = 0.10$ ) or their Social Anxiety SCS subscale scores ( $p = 0.23$ ).

Hierarchical regressions were then conducted to determine if experimental group was a predictor of self-focused attention. Relevant statistical analyses are presented in Table 16. A hierarchical multiple regression analysis was conducted to determine if experimental group (i.e., disclosure versus non-disclosure) was a significant predictor of mean SCS score. Based on the preliminary analyses, no covariates were entered on the first step and experimental group was entered on the second step. Results revealed the model approached significance, ( $F(1, 144) = 3.79, p = .054$ ).

A hierarchical multiple regression analysis was conducted to determine if experimental group was a significant predictor of Private SCS. Based on the preliminary analyses, medication use was entered on the first step and the predictor of interest (experimental group) was entered on the second step. Results revealed the overall model was significant, ( $F(2, 142) = 5.15, p = .007$ ), and explained 6.8% of the variance in Private SCS subscale scores. Medication use ( $\beta = .204, p < .05$ ) and experimental group



( $\beta = -.163, p < .05$ ) emerged as a significant predictors, meaning participants who used mediation reported greater levels of private self-focused attention and participants in the disclosure group reported greater levels of private self-focused attention.

A hierarchical multiple regression analysis was also conducted to determine if experimental group was a significant predictor of Public SCS. Based on the preliminary analyses, medication use was entered on the first step and the predictor of interest (experimental group) was entered on the second step. Results revealed the overall model was significant, ( $F(2, 142) = 6.88, p = .001$ ), and explained 8.8% of the variance in Public SCS subscale scores. Medication use ( $\beta = .220, p < .01$ ) and experimental group ( $\beta = -.201, p = .014$ ), emerged as a significant predictors, meaning participants who used mediation reported greater levels reported greater levels of public self-focused attention and participants in the disclosure group reported greater levels of public self-focused attention.

A linear regression was conducted to determine if experimental group was a significant predictor of Social Anxiety SCS. Experimental group was not a significant predictor, ( $F(2, 142) = 1.46, p = .230$ ).

## CHAPTER V

### CONCLUSION

The present study examined various aspects of the spotlight effect, self-focused attention, fear of negative evaluation and psychological distress among college students with and without a childhood diagnosis of asthma. Five specific hypotheses were made: 1) participants in the “forced” asthma self-disclosure group will report a greater spotlight effect than those in the “invisible” asthma non-disclosure group, 2) participants with asthma who exhibit a high level of fear of negative evaluation will report a greater spotlight effect compared to those with a low level of fear of negative evaluation, 3) participants with asthma will demonstrate higher levels of negative affect than participants without asthma, 4) participants with asthma will demonstrate greater fear of negative evaluation than participants without asthma, and 5) participants with asthma will demonstrate greater self-focused attention than participants without asthma.

#### Spotlight Effect

Hypothesis one predicted college students with a history of childhood-onset asthma in the forced disclosure group would exhibit a greater spotlight effect than those in the non-disclosure group. Contrary to expectation, no spotlight effect was shown in

either group. In fact, almost two thirds more healthy participant readers thought the paragraph writer had asthma compared to what asthma participants in the disclosure group anticipated. Twice as many healthy participant readers assigned to the non-disclosure group reported believing the asthma participant had asthma as was anticipated. Additionally, no spotlight effect difference was shown between groups. In questioning what may be responsible for these null results, multiple theories arise. It is possible that the design itself used in the present study may account for the non-significant findings. In prior studies examining the spotlight effect, participants were asked to identify the percentage of *people out of a group* who would be able to recall (e.g., Barry Manilow on a t-shirt; Gilovich et al., 2000) or rate (e.g., athletic performance; Gilovich, Kruger, & Medvec, 2002; how much they advanced a discussion; Gilovich et al., 2000) something about the participant. In the present study, APs were asked about the likelihood of an *individual* recalling something (i.e., asthma diagnosis) about the participant. The difference in this design could possibly account for the non-significant findings in that individuals with asthma believed an individual would be more likely than a group to hone in on a detail to recall. While one study of the spotlight effect utilized a similar structure to the current study (i.e., three ratings used to identify the spotlight effect; Gilovich et al., 2002), future studies would do well to include a larger number of readers so that the spotlight effect may be more accurately measured. It is also possible that readers were primed to recall asthma and thus recalled it at a higher rate. When readers began taking the study, they were asked if they had ever been diagnosed with asthma in order to ensure

participants with asthma were not participating in the second wave of data collection. By being asked this question, readers may have assumed that the paragraphs that were previously written were written by individuals with asthma. A final explanation of the null results may be a difference of type of memory assessed. While some previous studies of the spotlight effect used recognition memory (Gilovich, Kruger, & Medvec, 2002), others used recall memory (Gilovich et al., 2000). It is possible that asking readers to identify the chronic illness that was disclosed (i.e., recall memory) instead of asthma specifically (i.e., recognition memory) may have impacted the findings. Future studies may benefit from a less transparent research design in regards to the item/condition being assessed.

It is possible that an asthma diagnosis alone does not have a large enough effect on the experience of the spotlight effect, independent of other variables. In other words, the impact of asthma *alone* may not be large enough, on top of other things going on in the participant's lives and previous experiences, to be a significant factor in experiencing the spotlight effect. It is also possible that a significant relationship between asthma diagnosis and the spotlight effect does exist, but the current sample size was too small to detect it. Future studies would do well to include a larger sample of adolescents and young adults with asthma, and to target individuals with more severe asthma.

Hypothesis 2 predicted participants with asthma who exhibit a high level of fear of negative evaluation would report a greater spotlight effect compared to participants with a low level of fear of negative evaluation. However, no difference in spotlight effect

was shown in participants who reported either a high or low level of fear of negative evaluation. Prior studies showed individuals in high socially-evaluative conditions reported higher levels of the spotlight effect and higher negative evaluation than individuals in low socially-evaluative conditions (Brown & Stopa, 2007). Thus, it is possible that the current experimental design did not sufficiently create the experience of a highly socially-evaluative condition in the forced disclosure group. No previous studies have examined fear of negative evaluation specifically using a self-report questionnaire but rather a participant's report of their negative evaluation of their own performance. As the fear of negative evaluation measure used in the present study assessed a global fear of negative evaluation, it is possible that there is not an association between the general fear negative evaluation and an individual's experience of the spotlight effect as it directly relates to asthma. Future studies may benefit from examining the association between fear of negative evaluation and the spotlight effect in a healthy population. Alternately, future studies with a chronic illness population may benefit from utilizing a measure that is more closely related to health status.

### Psychological Distress

Hypothesis three predicted college students with a history of childhood-onset asthma would exhibit greater psychological distress than college students without asthma. Contrary to expectation, no significant differences were found for the global distress score. Although speculative, it may be that asthma severity was a factor in these results.

Previous literature has shown an association between the ability to control asthma and psychological adjustment (e.g., Dean et al., 2010). While asthma is characterized by variability in both symptoms and presentation over the disease course (McQuaid & Abramson, 2009), the majority of APs in the current study endorsed mild or mild-moderate asthma severity. It is possible that the mild severity of most participants with asthma in the present study was not severe enough to impact psychological distress, especially in areas that were not directly related to chronic illness. Mild asthma severity has been previously associated with few internalizing symptoms (Goodwin et al., 2003) and well-controlled asthma has been associated with limited behavioral impairment (McQuaid, Kopel, & Nassau, 2001). Individuals with mild asthma severity, or who appropriately use medications to control their asthma as prescribed by their physicians, have been shown to generally be able to engage in social and physical activity without impairment (Barnes, 1998; van der Molen et al., 1997).

Additionally, certain psychological variables and environmental variables, such as protection from chronic stressors associated with poverty and disadvantage (Miller & Chen, 2007), have been shown to be protective factors when examining prosocial behavior and adjustment. It is possible that AYAs with asthma in this college sample had similar protective factors to their healthy peers, and thus did not differ in their level of psychological distress.

Interestingly, while there was no difference in the global distress score, participants with a history of asthma endorsed significantly greater Somatization domain

scores than participants without asthma. The Somatization domain reflects psychological distress arising from perception of bodily dysfunction. Generally, an individual with a higher score in this domain will complain about cardiovascular, gastrointestinal, respiratory or other systems with strong autonomic mediation. The finding that participants with asthma had a greater Somatization score than those without asthma is consistent with the physiological characteristics of the disease. The most common presentation of asthma includes episodes of airflow obstruction, airway hyperresponsiveness, chronic airway inflammation and symptoms such as wheezing, cough, shortness of breath and chest tightness. Although symptoms and lung function may change within and between days depending on the presence of chronic inflammation variables, structural changes can occur in the absence of symptoms and may impact distress about an individual's respiratory system even during an absence of asthma symptoms.

Notably, no significant differences in psychological distress were found in participants with asthma who disclosed or did not disclose their asthma. It is possible that the broad areas of psychological distress measured by the Brief Symptom Inventory were closely tied to an individual's general functioning and this general functioning was not tapped into using the present experimental paradigm. Future studies may benefit from looking at changes in psychological distress following a number of social interactions in a longitudinal study.

## Self-Focused Attention

Hypothesis four posited participants with childhood-onset asthma would exhibit greater self-focused attention, as measured by the Self Consciousness Scale (Fenigstein et al., 1975), than participants without asthma. Results of the present study showed there was no difference between APs and HPs in general self-focus or in any of the three domains of self-focus: private self-consciousness (the process of attending to one's inner thoughts and feelings), public self-consciousness (a general awareness of oneself as a social object that may affect others) and social anxiety (discomfort in the presence of others). Although previous studies have shown increased levels of self-focused attention in AYAs with asthma (Chaney et al., 2000), it is possible that the participants in the current study did not have a level of asthma severity great enough to warrant a higher degree of self-monitoring of physiological signs of a forthcoming asthma attack. Van Pelt and colleagues (2006) reported greater private self-focus in AYAs with asthma when compared with their healthy peers. The present study required APs to answer questions about a team captain's evaluation of them and it is possible that their private self-focus, which may have otherwise been elevated, was dampened. While no significant differences in self-focused attention were shown in the present study, additional research in this area in the future may help to help clarify mixed findings in the current literature.

Exploratory analyses did reveal significant differences in self-focused attention between the two experimental conditions (disclosure versus non-disclosure). Participants in the asthma disclosure condition had greater levels of general self-focused attention and



significantly greater levels of public and private self-consciousness than participants in the asthma non-disclosure group. Such findings are consistent with the extant literature on experiencing asthma as a chronic illness sometimes accompanied by stigma. While paying attention to the self can result in both positive and negative outcomes in regards to self-esteem and motivation (e.g., Fenigstein, 1984; Fransen et al., 2011), the present study revealed that paying attention to one's asthma diagnosis was associated with a negative self-focus outcome. When a participant was forced to disclose their asthma, it is possible that this resulted in greater awareness of the self as a social object. The increased awareness was paired with the knowledge that the individual would be judged, based on their social and physical desirability, by the reader. Viewing asthma as having a negative impact on the reader's perception of the writer could have resulted in social distress, which has been previously associated with greater public self-consciousness (Monfries & Kafer, 1993). The pairing of increased social awareness and knowledge of judgment may be related to significantly greater levels of general, private and public self-consciousness.

### Fear of Negative Evaluation

The fifth hypothesis of the present study predicted that participants with asthma would exhibit greater fear of negative evaluation, as measured by the Brief Fear of Negative Scale (BFNES; Leary, 1983) than participants without asthma. The results of the study indicated that participants with and without asthma did not significantly differ in their level of fear of negative evaluation. Although there have been few studies

examining the fear of negative evaluation among individuals with a chronic illness, findings have been mixed. Although no differences were found in levels of fear of negative evaluation among healthy undergraduate students and young adults with systemic sclerosis (Richards et al., 2004), higher dating-related fear of negative evaluation was endorsed by females with childhood-onset asthma (Eddington et al., 2010) and higher general fear of negative evaluation was endorsed by adolescents with asthma when compared to healthy peers (Bruzzeese et al., 2009). Bruzzeese and colleagues (2009) demonstrated a heightened fear of negative evaluation among adolescents with asthma when compared to healthy peers. They reported greater distress in regards to being viewed negatively by peers and higher levels of social inhibition. However, the same AYAs with asthma reported no difference in fear of new situations or unfamiliar peers as compared to their peers without asthma. It is thus possible that the present study assessed a dimension of fear of negative evaluation that was more similar to the second dimension (i.e., fear of new situations or unfamiliar peers) of the Bruzzeese and colleague study and thus no significant difference was observed. It is also possible that the present study did not assess a fear of negative evaluation that was salient to the participants in this study, such as fear of negative evaluation about being chosen to participate in a social activity.

Interestingly, participants in the asthma disclosure group endorsed greater fear of negative evaluation than participants in the asthma non-disclosure group. Such results may be due to the possible experience of asthma as a potentially stigmatizing chronic

illness. It is therefore possible that APs who disclosed information about themselves (i.e., their asthma diagnosis) then spent time assessing how they would be perceived by the reader due to their asthma. Not only were APs who disclosed required to disclose their chronic illness status, they were also required to make a case for why they should be chosen for the intramural team. Previous research has shown an association between an attempt at managing one's impressions and fear of negative evaluation (Leary & Allen, 2011). In the present study, APs were encouraged to present themselves in a positive light and, in essence, attempt to manage the impression the HP reader would have of them through how they presented themselves in their paragraph. It is plausible that participants in the disclosure group endorsed significant self-presentation concerns (e.g., fear of negative evaluation) following a self-presentation experience over which they had no control.

#### Strengths, Areas of Improvement and Future Directions

The present study includes multiple areas of strength. First, the current study was theoretically-driven and sought to not only replicate previous research but to add new methodologies and constructs to our current understanding of the possible psychosocial and psychological impact of asthma. The majority of studies on psychological adjustment to asthma utilize only self-report questionnaires whereas the current study included an experimental manipulation in the attempt to increase external validity and more closely mirror a real-world experience. Additionally, the current study included a population,

adolescents and young adults, who are often not included in studies of individuals with childhood-onset asthma. Lastly, the present study used a unique experimental design by incorporating both asthma disclosure and non-disclosure groups. In a chronic illness model posited by Joachim and Acorn (2000), the authors discussed visible and invisible chronic conditions and outlined the possible results of disclosing an invisible chronic illness. However, they only included two types of disclosure in their model: protective and spontaneous. Protective and spontaneous disclosures are types of disclosures that are *chosen* by the individual with a chronic illness. If stigma is experienced after protective or spontaneous disclosure, discreditation (when an individual shows visible signs of being different and is viewed as “damaged goods;” Phillips, 1990), rejection or isolation can result. The current study included the examination of a *forced* disclosure and thus added a new dimension to Joachim and Acorn’s model.

Although there are a number of strengths in the current study, there are also multiple weaknesses. The relatively small sample size resulted in slightly low power which may have resulted in the inability to detect the effects of asthma diagnosis and disclosure on the spotlight effect, and thus a type I error. Small sample size can be an inherent difficulty in conducting research with chronic illness groups and in the future, a larger sample size would be beneficial. Additionally, the experimental design may not have accurately created a situation in which the spotlight effect would be experienced. Future studies may benefit from a design that would physically place an individual with asthma in front of a larger audience (e.g., physically participate in an intramural soccer

team try-out) and then address the spotlight effect after exposure to the audience. Lastly, the current research used global indexes of fear of negative evaluation (BFNE) and self-focused attention (SCS), both measures which have been previously used with AYAs who have asthma (Van Pelt et al., 2006). However, in the future, it may be beneficial to use measures that highlight more specific aspects of the asthma experience as it relates to these constructs to further determine any possible relationship to asthma diagnosis.

Previous research has demonstrated the association between asthma diagnosis and psychological distress (e.g., Carpentier et al., 2007; Tibosch, Verhaak, & Merkus, 2011; Vila et al., 2000), fear of negative evaluation (Bruzzese et al., 2009), and self-focused attention (Chaney et al., 2000). Clinically, it would still seem important to address issues related to the experience of physical symptoms of psychological distress that maybe related to an individual's asthma diagnosis, including "pains in heart or chest" and "trouble catching your breath," as these are common physiological experiences of anxiety and were reported as distressing by APs in the present study. When treating an individual who has been diagnosed with asthma and who also experiences anxiety, it may be beneficial to engage in psychoeducation about the overlap of these physiological experiences in both their medical diagnosis and psychological disorder. It is also important to continue to look for psychosocial and psychological variables that may impact the adjustment and functioning of individuals with asthma compared to their healthy peers. Due to the unique findings of the current study, it will be beneficial for future studies to continue to examine the difference in adjustment among individuals with

asthma who are forced to disclose their illness versus individuals with asthma who are told to keep their illness “invisible.”

## REFERENCES

- Akinbami, L. J., Moorman, J. E., Liu, X. (2011). Asthma prevalence, health care use, and mortality: United States, 2005-2009. *National Health Statistics Reports*, 32. Hyattsville, MD: National Center for Health Statistics.
- Anderson, H.R., Pottier, A.C., & Strachan, D.P. (1992). Asthma from birth to age 23: Incidence and relation to prior and concurrent atopic disease. *Thorax*, 47, 60-65.
- Andreu, Y., Galdón, M.J., Durá, E., Ferrando, M., Murgui, S., García, A., & Ibáñez, E. (2008). Psychometric properties of the Brief Symptoms Inventory-18 (BSI-18) in Spanish sample of outpatients with psychiatric disorders. *Psicotherma*, 20, 844-850.
- Archea, C., Yen, I.H., Chen, H., Eisner, M.D., Katz, P.P., Masharani, U.,... Blanc, P.D. (2007). Negative life events and quality of life in adults with asthma. *Thorax*, 62, 106-108.
- Asher, M.I., Keil, U., Anderson, H.R., Beasley, R., Crane, J., Martinez, F.,... & Williams, H.C. (1995). International Study of Asthma and Allergies in Childhood (ISAAC): Rationale and methods. *European Respiratory Journal*, 8, 483-491.
- Atlas, G.D. (1994). Sensitivity to criticism: A new measure of responses to everyday criticisms. *Journal of Psychoeducational Assessment*, 12, 241-253.
- Bacharier, L.B., Boner, A., Carlsen, K.-H., Eigenmann, P.A., Frischer, T., Götz, M., et al. (2008). Diagnosis and treatment of asthma in childhood: a PRACTALL consensus report. *Allergy*, 63, 5-34.
- Badoux, A., & Levy, D.A. (1994). Psychologic symptoms in asthma and chronic urticaria. *Annals of Allergy*, 72, 229-234.
- Barnett, S.B., & Nurmagambetov, T.A. (2011). Costs of asthma in the United States: 2002-2007. *Journal of Allergy and Clinical Immunology*, 60, 1014-1017.

- Bernstein, I.H., Teng, G., & Garbin, C.P. (1986). A confirmatory factoring of the self-consciousness scale. *Multivariate Behavioral Research*, 21,
- Brown, M.A. & Stopa, L. (2007). The spotlight effect and the illusion of transparency in social anxiety. *Journal of Anxiety Disorders*, 21, 804-819.
- Bruzzese, J., Fisher, P.H., Lemp, N., & Warner, C.M. (2009). Asthma and social anxiety in adolescents. *Journal of Pediatrics*, 155, 398-403.
- Bruzzese, J., Paige, D., Lemp, N., & Warner, C.M. (2009). Asthma and social anxiety in adolescents. *The Journal of Pediatrics*, 155, 398-403.
- Burgio, K.L., Merluzzi, T.I., Pryor, J.B. (1986). Effects of performance expectancy and self-focused attention on social interaction. *Journal of Personality and Social Psychology*, 1216-1221.
- Burkhart, P.V. & Rayens, M.K. (2005). Self-concept and health locus of control: Factors related to children's adherence to recommended asthma regimen. *Pediatric Nursing*, 31, 404-409.
- Bush, T., Richardson, L., Katon, W., Russo, J., Lozano, P., McCauley, E., & Oliver, M. (2007). Anxiety and depressive disorder are associated with smoking in adolescents with asthma. *Journal of Adolescent Health*, 40, 425-432.
- Carleton, R.N., McCreary, D.R., Norton, P.J., & Gordon-Asmundson, G.J.G. (2006). Brief fear of negative evaluation scale-revised. *Depression and Anxiety*, 0, 1-7.
- Carpentier, M.Y., Mullins, L.L., & Van Pelt, J.C. (2007). Psychological, academic, and work functioning in college students with childhood-onset asthma. *Journal of Asthma*, 44, 119-124.
- Carver, C.S. & Glass, D.G. (1976). The self-consciousness scale: A discriminant validity study. *Journal of Personality Assessment*, 40, 169-172.
- Centers for Disease Control. (2011b). Vital Signs: Asthma prevalence, disease characteristics, and self-management education – United States, 2001-2009. *Morbidity and Mortality Weekly Report*, 60, 17, 547-552.
- Chaney, J.M., Hommel, K.A., Uretsky, D.C., & Mullins, L.L. (2000, August). *Experimentally induced emotional arousal and self-focus in individuals with asthma*. Poster Presented at the Annual Meeting of the American Psychological Association, Washington, D.C.
- Chaney, J.M., Mullins, L.L., Uretsky, D.L., Pace, T., Weden, D. & Hartman, V. (1999).



An experimental examination of learned helplessness in older adolescents and young adults with long standing asthma. *Journal of Pediatric Psychology*, 24, 259-270.

Cheek, J.M., & Buss, A.H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology*, 41, 330-339.

Chen, V. & Drummond, P.D. (2008). Fear of negative evaluation augments negative affect and somatic symptoms in social-evaluative situations. *Cognition and Emotion*, 22, 21-43.

Chu, E.K. & Drazen, J.M. (2005). Asthma: One hundred years of treatment and onward. *American Journal of Critical Care and Medicine*, 171, 1202-1208.

Cohen, R., Franco, K., Motlow, F., Reznik, M., & Ozuah, P. (2003). Perceptions and attitudes of adolescents with asthma. *Journal of Asthma*, 40, 207-211.

Coles, M.E., Turk, C.L., Heimberg, R.G., & Fresco, D.M. (2001). Effects of varying levels of anxiety within social situations: Relationship to memory and perspective and attributions in social phobia. *Behavioral Research and Therapy*, 39, 651-665.

Collins, K.A., Westra, H.A., Dozois, D.J.A., & Stewart, S.H. (2005). The validity of the brief version of the fear of negative evaluation scale. *Anxiety Disorders*, 19, 345-359.

Cordina, M., Fenech, A.G., Vassallo, J., & Cacciottolo, J.M. (2009). Anxiety and the management of asthma in an adult outpatient population. *Therapeutic Advances in Respiratory Disease*, 3, 227-233.

Creer, T.L., & Bender, B.G. (1994). Asthma. In R.J. Gatchel & E.B. Blanchard (Eds.), *Psychophysiological Disorders: Research and Clinical Applications* (pp. 151-203). Washington, DC: American Psychological Association.

De Marco, R., Locatelli, F., Sunyer, J., & Burney, P. (2000). Differences in incidence of reported asthma related to age in men and women. A retrospective analysis of the data of the European Respiratory Health Survey. *American Journal of Respiratory and Critical Care Medicine*, 162, 68-74.

De Peuter, S., Lemaigre, V., Van diest, I., & Van den Bergh, O. (2008). Illness-specific catastrophic thinking and overperception in asthma. *Health Psychology*, 27, 93-99.

Derogatis, L. (1994). *SCL-90-R: Administration, scoring, and procedures manual*. Minneapolis, MN: National Computer Systems.

Derogatis, L.R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An

- introductory report. *Psychological Medicine*, 13, 595-605.
- Derogatis, L.R. (2001). *Brief Symptom Inventory (BSI)-18: Administration, scoring and procedures manual*. Minneapolis, MN: NCS Pearson.
- Durá, E., Andreu, U., Galdón, M.J., Ferrando, M., Murgui, S., Poveda, R., & Jimenez, Y. (2006). Psychological assessment of patients with temporomandibular disorders: Confirmatory analysis of the dimensional structure of the Brief Symptom Inventory 18. *Journal of Psychosomatic Research*, 60, 365-370.
- Duval, S., & Wicklund, R. (1972). *A theory of objective self-awareness*. New York: Academic Press.
- Eddington, A.R., Mullins, L.L., Fedele, D.A., Ryan, M.A., & Junghans, A.N. (2010). Dating relationships in college students with childhood-onset asthma. *Journal of Asthma*, 47, 14-20.
- Epley, N., Savisky, K., & Gilovich, T. (2002). Empathy neglect: Reconciling the spotlight effect with the correspondence bias. *Journal of Personality and Social Psychology*, 83, 300-312.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160.
- Fedele, D.A., Mullins, L.L., Eddington, A.R., Ryan, J.L., Junghans, A.N., & Hullmann, S.E. (2009). Health-related quality of life in college students with and without childhood-onset asthma. *Journal of Asthma*, 46, 835-840.
- Fenigstein, A. (1984). Self-consciousness and the overperception of self as a target. *Journal of Personality and Social Psychology*, 47, 860-870.
- Fenigstein, A., Scheier, M.F., & Buss, A.H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43, 522-527.
- Fitzgerald, D. (2001). Non-compliance in adolescents with chronic lung disease: Causative factors and practical approach. *Pediatric Respiratory Review*, 2, 260-267.
- Floyer, J.A. (1698). *A treatise of the asthma*. Divided into four parts printed for Richard Wilkin at St. Paul's Churchyard, London.
- Fortune, J.L., & Newby-Clark, I.R. (2008). My friend is embarrassing me: Exploring the guilty by association effect. *Journal of Personality and Social Psychology*, 95, 1440-1449.

- Fransen, M.L., Fennis, B.M., Pruyn, A.T.H., & Vohs, K.D. (2011). When fit fosters favoring: The role of private self-focus. *Journal of Experimental Social Psychology, 47*, 202-207.
- Galdón, M.J., Durá, E., Andreu, U., Ferrando, M., Murgui, S., Pérez, S., & Ibañez, E. (2008). Psychometric properties of the Brief Symptom Inventory-18 in a Spanish breast cancer sample. *Journal of Psychosomatic Research, 63*, 27-39.
- Gendolla, G.H.E., & Wicklund, R.A. (2009). Self-focused attention, perspective-taking, and false consensus. *Social Psychology, 40*, 66-72.
- Getahun, D., Demissie, K., & Rhoads, G. (2005). Recent trends in asthma hospitalization and mortality in the United States. *Journal of Asthma, 42*, 373-378.
- Gibson, P.G., Henry, R.L., Vimpani, G.V., & Halliday, J. (1995). Asthma knowledge, attitudes and quality of life in adolescents. *Archives of Disease in Childhood, 73*, 321-326.
- Gilbert, P. (2001). Evolution and social anxiety: The role of attraction, social competition, and social hierarchies. *The Psychiatric Clinics of North America, 24*, 723-751.
- Gilbert, N. & Meyer, C. (2005). Fear of negative evaluation and the development of eating psychopathology: A longitudinal study among nonclinical women. *International Journal of Eating Disorders, 37*, 307-312.
- Gilovich, T., Kruger, J., & Medvec, V.H. (2002). The spotlight effect revisited: Overestimating the manifest variability of our actions and appearance. *Journal of Experimental Social Psychology, 38*, 93-99.
- Gilovich, T., Medvec, V.H., & Savitsky, K. (2000). The spotlight effect in social judgment: An egocentric bias in estimates of the salience of one's own actions and appearance. *Journal of Personality and Social Psychology, 78*, 211-222.
- Gilovich, T., & Savitsky, K. (1999). The spotlight effect and the illusion of transparency: Egocentric assessments of how we are seen by others. *Current Directions in Psychological Science, 8*, 185-168.
- Goodwin, R.D., Jacobi, F., & Thefeld, W. (2003). Mental disorders and asthma in the community. *Archives of General Psychiatry, 60*, 1125-1130.
- Greenwald, A.G., Nosek, B.A., & Banaji, M.R. (2003). Understanding and using the implicit association test: An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*, 197-216.

- Griffin, K.W., Friend, R., Kaell, A.T., Bennett, R.S., & Wadhwa, N.K. (1999). Negative affect and physical symptom reporting: A test of explanatory models in two chronically ill populations. *Psychology and Health, 14*, 295-307.
- Haikal, M. & Hong, R.Y. (2010). The effects of social evaluation and looming threat on self-attentional biases and social anxiety. *Journal of Anxiety Disorders, 24*, 345-352.
- Hartmann, T., Zahner, L., Pühse, U., Schneider, S., Puder, J.J. & Kriemler, S. (2009). Physical activity, bodyweight, health and fear of negative evaluation in primary school children. *Scandinavian Journal of Medicine & Science in Sports, 20*, 1-8.
- Higgins, E.T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*, 319-340.
- Higgins, E.T. (1999). When do self-discrepancies have specific relations to emotions? The second-generation question... *Journal of Personality and Social Psychology, 77*, 1313-1317.
- Holgate, S.T., Bisgaard, H., Bjermer, L., Haahtela, T., Haughney, J., Horne, R., et al. (2008). The Brussels Declaration: The need for change in asthma management. *European Respiratory Journal, 32*, 1433-1442.
- Holgate, S.T. & Polosa, R. (2008). Treatment strategies for allergy and asthma. *Nature Reviews Immunology, 8*, 218-230.
- Holmes, T.H. & Rahe, R.H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research, 11*, 213-218.
- Hommel, K.A., Chaney, J.M., Wagner, J.L., & McLaughlin, M.S. (2002). Asthma-specific quality of life in older adolescents and young adults with long-standing asthma: The role of anxiety and depression. *Journal of Clinical Psychology in Medical Settings, 9*, 185-192.
- Ingram, R.E. (1990). Self-focused attention in clinical disorders: Review and conceptual model. *Psychological Bulletin, 107*, 156-176.
- International Study of Asthma and Allergies in Childhood. Worldwide variations in the prevalence of asthma symptoms: the International Study of Asthma and Allergies in Childhood (ISAAC). *European Respiratory Journal, 12*, 315-335.
- Iwahashi, S., Tanaka, Y., Fukudo, S., & Hongo, M. (2002). The development of the Japanese version of the Perceived Stress Scale. *Japanese Journal of Psychosomatic Medicine. 42*, 459-466.
- Janssens, T., Verleden, G., De Peuter, S., Van Diest, I., Van den Bergh, O. (2009).

- Inaccurate perception of asthma symptoms: A cognitive-affective framework and implications for asthma treatment. *Clinical Psychology Review*, 29, 317-327.
- Katon, WJ., Richardson, L., Lozano, P., & McCauley, E. (2004). The relationship of asthma and anxiety disorders. *Psychosomatic Medicine*, 66, 349-355.
- Kamble, S., & Bharmal, M. (2009). Incremental direct expenditure of treating asthma in the United States. *Journal of Asthma*, 46, 73-80.
- Kimura, T., Yokoyama, A., Kohno, K., Nakamura, H., & Eboshida, A. (2009). Perceived stress, severity of asthma, and quality of life in young adults with asthma. *Allergy International*, 58, 71-79.
- Kruger, D.J. & Valerio, M.A. (2009). Association between psychosocial factors and asthma in demographically representative adult sample. *Journal of Asthma*, 46, 708-711.
- La Greca, A.M. (1990). Social consequences of pediatric conditions: Fertile area for future investigation and intervention. *Journal of Pediatric Psychology*, 15, 285-307.
- La Greca, A.M. (1999). The social anxiety scales for children and adolescents. *The Behavior Therapist*, 22, 133-138.
- La Greca, A.M. & Mackey, E.R. (2007). Adolescents' anxiety in dating situations: The potential role of friends and romantic partners. *Journal of Clinical Child and Adolescent Psychology*, 36, 522-533.
- Lane, J.D. & Wegner, D.M. (1995). The cognitive consequences of secrecy. *Journal of Personality and Social Psychology*, 39, 861-873.
- Lavoie, K.L., Bacon, S.L., Barone, S., Cartier, A., Ditto, B., & Labrecque, M. (2006). What is worse for asthma control and quality of life: Depressive disorders, anxiety disorders or both? *Chest*, 130, 1039-1047.
- Leary, M.R. (1983). A brief version of the fear of negative evaluation scale. *Journal of Personality and Social Psychology Bulletin*, 3, 371-375.
- Leary, M.R., Rapp, S.R., Herbst, K.C., Exum, M.L., & Feldman, S.R. (1998). Interpersonal concerns and psychological difficulties of psoriasis patients: Effects of disease severity and fear of negative evaluation. *Health Psychology*, 17, 530-536.
- Lehrer, P.M., Isenberg, S. & Hochron, S.M. (1993). Asthma and emotion: A review. *Journal of Asthma*, 30, 5-21.

- Lukradka, J.L., Ruchs, S.C., Moreira, L.B., Picon, R.V., Fischer, G.B., & Fuchs, F.D. (2010). Performance of the ISAAC Questionnaire to establish the prevalence of asthma in adolescents: A population-based study. *Journal of Asthma, 47*, 166-169.
- Mahonagoo, A., de Konig, H., Mangunkusumo, R., & Raat, H. (2007). Health-related quality of life in adolescents with wheezing attacks. *Journal of Adolescent Health, 41*, 464-471.
- Main, J., Moss-Morris, R., Booth, R., Kaptein, A.A., Kolbe, J. (2003). The use of reliever medication in asthma: The role of negative mood and symptom reports. *Journal of Asthma, 40*, 357-365.
- Mansell, W., & Clark, D.M. (1999). How do I appear to others? Social anxiety and processing of the observable self. *Behavior Research and Therapy, 37*, 419-434.
- Marketos, S.G. & Ballas, C.N. (1982). Historical perspectives: Bronchial asthma in the medical literature of Greek antiquity. *Journal of Asthma, 19*, 263-269.
- Marsh, H.W. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifactors. *Journal of Personality and Social Psychology, 70*, 810-819.
- Martinez, F.D., Wright, A.L., Taussig, L.M., Holberg, C.J., Halonen, M., & Morgan, W.J. (1995). Asthma and wheezing in the first six years of life. *New England Journal of Medicine, 332*, 133-138.
- Masoli, M., Fabian, D., Holt, S., & Beasley, R. (2004). The global burden of asthma: Executive summary of the GINA Dissemination Committee report. *Allergy, 59*, 469-478.
- McCarroll, E., Lindsey, E., MacKinnon-Lewis, C., Chambers, J., & Farbutt, J. (2009). Health status and peer relationships in early adolescence: The role of peer contact, self-esteem, and social anxiety. *Journal of Child and Family Studies, 18*, 473-485.
- McCauley, E., Katon, W., Russo, J., Richarson, L., & Lozano, P. (2007). Impact of anxiety and depression on functional impairment in adolescents with asthma. *General Hospital Psychiatry, 29*, 214-222.
- McQuaid, E.L., & Abramson, N.W. (2009). Pediatric Asthma. In M.C. Roberts & R.G. Steele (Eds.), *Handbook of Pediatric Psychology* (pp. 254-270). Guilford Press: New York, NY.
- McQuaid, E.L., Kopel, S., & Nassau, J.H. (2001). Behavioral adjustment in children with asthma: A meta-analysis. *Journal of Developmental and Behavioral Pediatrics, 22*. 430-439.

- Meijer, R.R., Vries, R.M., & van Bruggen, V.V. (2011). An evaluation of the Brief Symptom Inventory-18 using item response theory: Which items are most strongly related to psychological distress. *Psychological Assessment, 23*, 193-202.
- Milgrom, H. & Bender, B. (1993). Psychologic side effects of therapy with corticosteroids. *American Review of Respiratory Diseases, 147*, 471-473.
- Mishel, M.H. (1990). Reconceptualization of the uncertainty in illness theory. *IMAGE-The Journal of Nursing Scholarship, 22*, 256-262.
- Merikallio, V.J., Mustalahti, K., Remes, S.T., Valovirta, E.J., & Kaila, M. (2005). Comparison of quality of life between asthmatic and healthy school children. *Pediatric Allergy & Immunology, 16*, 332-340.
- Monfries, M.M. & Kafer, N.F. (1994). Private self-conscious and fear of negative evaluation. *The Journal of Psychology, 128*, 447-454.
- Moorman, J. E., Rudd, R. A., Johnson, C. A., King, M., Minor, P., Bailey, C.,... Akinbami, L. (2007). National surveillance for asthma—United States, 1980-2004. *Morbidity, & Mortality Weekly Report, 56*, 1-54.
- Mor, N. & Winquist, J. (2002). Self-focused attention and negative affect: A meta-analysis. *Psychological Bulletin, 128*, 638-662.
- Mullins, L.L., Chaney, J.M., Pace, T.M., & Hartman, V.L. (1997). Illness uncertainty, attributional style, and psychological adjustment in older adolescents and young adults with asthma. *Journal of Pediatric Psychology, 22*, 871-880.
- Mungan, D., Misirligil, Z., & Gurbuz, L. (1999). Comparison of the efficacy of subcutaneous and sublingual immunotherapy in mite-sensitive patients with rhinitis and asthma – A placebo controlled study. *Annals of Allergy, Asthma and Immunology, 82*, 485-490.
- Nisbett, R.E., & Wilson, T.D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84*, 231-259.
- Nystedt, L. & Ljungberg, A. (2002). Facets of private and public self-consciousness: Construct and discriminant validity. *European Journal of Personality, 16*, 143-159.
- Ortega, A., Huertas, S., Coniro, G., Ramirez, R., & Rubio-Stipec, M. (2002). Childhood asthma, chronic illness and psychiatric disorders. *Journal of Nerve and Mental Disorders, 190*, 275-281.
- Peterson, S., & Ritz, T. (2010). Dependency of illness evaluation on the social comparison context: Findings with implicit measures of affective evaluation of

- asthma. *British Journal of Health Psychology*, 15, 401-416.
- Pless, I.B. (1984). Clinical assessment: Physical and psychological functioning. *Symposium on Chronic Disease in Children*, 32, 33-41.
- Put, C., Van den Bergh, O., Van Ongeval, E., De Peuter, S., Demedts, M. & Verleden, G. (2004). Negative affectivity and the influence of suggestion on asthma symptoms. *Journal of Psychosomatic Research*, 57, 249-255.
- Randolph, C.C. & Fraser, B. (1998). Stressors and concerns in teen asthma. *Allergy and Asthma Proceedings*, 19, 193-203.
- Recklitis, C.J., Parsons, S.K., Shih, M., Mertens, A., Robison, L.L., & Zeltzer, L. (2006). Factor structure of the Brief Symptom Inventory-18 in adult survivors of childhood cancer: Results from the Childhood Cancer Survivor Study. *Psychological Assessment*, 18, 22-32.
- Richards, H.L., Herrick, A.L., Griffin, K., Gwilliam, P.D.H., & Fortune, D.G. (2004). Psychological adjustment to systemic sclerosis – exploring the association of disease factors, functional ability, body related attitudes and fear of negative evaluation. *Psychology, Health & Medicine*, 9, 29-39.
- Richardson, L.P, Lozano, P., Russo, J., McCauley, E., Bush, T., & Katon, W. (2006). Asthma symptom burden: Relationship to asthma severity and anxiety and depression symptoms. *Pediatrics*, 118, 1042-1051.
- Ridgers, N.D., Fazery, D.M.A., & Fairclough, S.J. (2007). Perceptions of athletic competence and fear of negative evaluation during physical education. *British Journal of Educational Psychology*, 77, 339-349.
- Rodebaugh, T.L., Woods, C.M., Thissen, D.M., Heimberg, R.G., Chambless, D.L., & Rapee, R.M. (2004). More information from fewer questions: The factor structure and item properties of the original and brief fear of negative evaluation scale. *Psychological Assessment*, 16, 169-181.
- Roy-Byrne, P. & Stein, M. (2001). Inspiring panic. *Archives of General Psychiatry*, 58, 223-224.
- Savitsky, K., Epley, N., & Gilovich, T. (1999). *The spotlight effect revisited: Overestimating the extremity of how we are judged by others*. Unpublished manuscript, Cornell University, Ithica, NY.
- Schlenker, B.R. & Leary, M.R. (1985). Social anxiety and communication about the self. *Journal of Language and Social Psychology*, 4, 171-192.
- Ségala, C., Priol, G., Soussan, D., Liard, R., Neukirch, F., Touron D., & Lepage, T.



- (2000). Asthma in adults: Comparison of adult-onset asthma with childhood-onset asthma relapsing in adulthood. *Allergy*, *55*, 634-640.
- Smart, L., & Wegner, D.M. (1999). Covering up what can't be seen: Concealable stigma and mental control. *Journal of Personality and Social Psychology*, *77*, 474-486.
- Smith, T.W., & Greenberg, J. (1981). Depression and self-focused attention. *Motivation and Emotion*, *5*, 323-331.
- Smith, K., Warholak, T., Armstrong, E., Leib, M., Rehfeld, R., & Malone, D. (2009). Evaluation of risk factors and health outcomes among persons with asthma. *Journal of Asthma*, *46*, 234-237.
- Stopa, L. & Clark, D.M. (2001). Social Phobia: Comments on the variability and validity of an analogue research strategy and British norms for the Fear of Negative Evaluation questionnaire. *Behavioral and Cognitive Psychotherapy*, *29*, 423-430.
- Tantisira, K., & Weiss, S. (2009). The pharmacogenetics of asthma treatment. *Current Allergy and Asthma Reports*, *9*, 10-17.
- Taylor, D.R., Bateman, E.D., Boulet, L-P., Boushey, H.A., Busse, W.W., Casale, P, et al. (2008). A new perspective on concepts of asthma severity and control. *European Respiratory Journal*, *32*, 545-554.
- Teachman, B.A. & Allen, J.P. (2007). Development of social anxiety: Social interaction predictors of implicit and explicit fear of negative evaluation. *Journal of Abnormal Child Psychology*, *35*, 63-78.
- Tibosch, M., Verhaak, C.M., & Merkus, P.J.F.M. (2011). Psychological characteristics associated with the onset and course of asthma in children and adolescents: A systematic review of longitudinal effects. *Patient Education and Counseling*, *82*, 11-19.
- Turner, R.G., Gilliland, L., & Klein, H.M. (1981). Self-consciousness, evaluation of physical characteristics and physical attractiveness. *Journal of Research in Personality*, *15*, 182- 190.
- Van Pelt, J.C., Mullins, L.L., Carpentier, M.Y., & Wolfe-Christensen, C. (2006). Brief report: Illness uncertainty and dispositional self-focus in adolescents and young adults with childhood-onset asthma. *Journal of Pediatric Psychology*, *31*, 840-845.
- Vila, G., Nollet-Clemencon, D., de Blic, J., Mouren-Simeoni, M.C., & Scheinmann, P. (2000). Prevalence of DSM IV anxiety and affective disorders in a pediatric population of asthmatic children and adolescents. *Journal of Affective Disorders*, *58*, 223-232.

- Wang, W., Hsu, W., Chiu, Y. & Liang, C. (2011). The hierarchical model of social interaction anxiety and depression: The critical roles of fears of negative evaluation. *Journal of Anxiety Disorders*, 26, 215-224.
- Watson, D. & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology*, 33, 448-457.
- Watson, D., & Pennebaker, J.W. (1989). Health complaints, stress, and distress: Exploring the central role of negative affectivity. *Psychological Review*, 96, 234-254.
- Weeks, J.W., Heimberg, R.G., Fresco, D.M., Hart, T.A., Turk, C.L., Schneier, F.R., et al. (2005). Empirical validation and psychometric evaluation of the brief fear of negative evaluation scale in patients with social anxiety disorder. *Psychological Assessment*, 17, 179-190.
- Weeks, J.W., Jakatdar, T.A., & Heimberg, R.G. (2010). Comparing and contrasting fears of positive and negative evaluation as facets of social anxiety. *Journal of Social and Clinical Psychology*, 29, 68- 94.
- Weiss, K.B., Gergen, P.J., & Hodgson, T.A. (1992). An economic evaluation of asthma in the United States. *The New England Journal of Medicine*, 264, 1683-1687.
- Weiss, S.T., Litonjua, A.A., Lange, C., Lazarus, R., Liggett, S.B., & Bleecker, E.R. (2006). Overview of the pharmacogenetics of asthma treatment. *The Pharmacogenomics Journal*, 6, 311-326.
- Wicklund, R.A., & Gollwitzer, P.M. (1987). The fallacy of the private-public self-focus distinction. *Journal of Personality*, 55, 491-523.
- Wright, R.J., Cohen, S., Carey, V., Weiss, S.T., & Gold, D.R. (2002). Parental stress as a predictor of wheezing in infancy: A prospective birth-cohort study. *American Journal of Respiratory and Critical Care Medicine*, 165, 358-365.
- Wright, R.J., Rodriguez, M., & Cohen, S. (1998). Review of psychosocial stress and asthma: An integrated biopsychosocial approach. *Thorax*, 53, 1066-1074.

## APPENDICES

### Background Information Questionnaire

1. Please check your gender  
 Male                       Female
  
2. Please list your age  
\_\_\_\_\_
  
3. Please list your year in school  
\_\_\_\_\_
  
4. Please list your ethnicity  
  
 African American     Asian American                       Caucasian  
 Hispanic/Latino     Native American      Other    \_\_\_\_\_
  
5. Please list your mother's level of education  
 Less than 7<sup>th</sup> grade  
 Junior high school (9<sup>th</sup> grade)  
 Partial high school (10<sup>th</sup> or 11<sup>th</sup> grade)  
 High school graduate  
 Partial college (at least one year) or specialized training  
 Standard college or university graduation  
 Graduate professional training (graduate degree)
  
6. Please list your father's level of education  
 Less than 7<sup>th</sup> grade  
 Junior high school (9<sup>th</sup> grade)  
 Partial high school (10<sup>th</sup> or 11<sup>th</sup> grade)  
 High school graduate  
 Partial college (at least one year) or specialized training  
 Standard college or university graduation  
 Graduate professional training (graduate degree)
  
7. Please list your mother's occupation  
\_\_\_\_\_
  
8. Please list your father's occupation  
\_\_\_\_\_

9. Please list your parent's household income
- Up to \$10,000
  - \$10,001 - \$20,000
  - \$20,001 - \$30,000
  - \$30,001 - \$40,000
  - \$40,001 - \$50,000
  - \$50,001 - \$60,000
  - \$60,001 - \$70,000
  - \$70,001 - \$80,000
  - \$80,001 - \$90,000
  - \$90,001 and above

Illness Questions

1. Have you ever had wheezing or whistling in the chest at any time in the past?  Yes  No

IF YOU HAVE ANSWERED "NO" PLEASE SKIP TO QUESTION 6

2. Have you had, wheezing or whistling in the chest in the last 12 months?  Yes  No

IF YOU HAVE ANSWERED "NO" PLEASE SKIP TO QUESTION 6

3. How many attacks of wheezing have you had in the last 12 months?  None  1 to 3  4 to 12  More than 12

4. In the last 12 months, how often, on average, has your sleep been disturbed due to wheezing?  Never woken with wheezing   Less than one night per week   One or more nights per week

5. In the last 12 months, has wheezing ever been severe enough to limit your speech to only one or two words at a time between breaths?  Yes  No

6. Have you ever had asthma?  Yes  No

7. In the last 12 months, has your chest sounded wheezy during or after exercise?  Yes  No

8. In the last 12 months, have you had a dry cough at night, apart from a cough associated with a cold or chest infection?  Yes  No

9. What was your age of diagnosis with asthma? \_\_\_\_\_

10. How long have you had asthma? \_\_\_\_\_
11. Do you use medication for your asthma?  Yes  
 No
12. If you use medication for your asthma, what medication do you use? \_\_\_\_\_
13. How many times per year do you go to the doctor *because of your asthma?*  None  
 1-3  
 4-12  
 More than 12
14. How many times in the past year have you been to the hospital *because of your asthma?*  None  
 1-3  
 4-12  
 More than 12
15. How many times in your life have you been to the hospital *because of your asthma?*  None  
 1-3  
 4-12  
 More than 12
16. How many days of school have you missed this year *because of your asthma?*  None  
 1-3  
 4-12  
 More than 12
17. How would you rate your asthma severity?  Mild  
 Mild-Moderate  
 Moderate  
 Moderate-Severe
18. Do you have any other chronic illnesses?  Yes  
 No
19. If yes, please list your other chronic illnesses. \_\_\_\_\_

## *Brief Fear of Negative Evaluation Scale*

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Please read each item carefully and then indicate how well each statement describes you. Use the 0-5 response scale for your answers. Answer each item as honestly and accurately as possible.

Response scale: For each item, please choose the number from 0 to 5 that best indicate how well the item characterizes you. The choices are:

1	2	3	4	5
Not at all characteristic of me		me		Extremely characteristic of

- \_\_\_\_\_ 1. I worry about what other people will think of me even when I know it doesn't make any difference.
- \_\_\_\_\_ 2. It bothers me when I know people are forming an unfavorable impression of me.
- \_\_\_\_\_ 3. I am frequently afraid of other people noticing my shortcomings.
- \_\_\_\_\_ 4. I worry about what kind of impression I am making on someone.
- \_\_\_\_\_ 5. I am afraid that others will not approve of me.
- \_\_\_\_\_ 6. I am afraid that people will find fault with me.
- \_\_\_\_\_ 7. Other people's opinions of me bother me.
- \_\_\_\_\_ 8. When I am talking to someone, I worry about what they may be thinking about me.
- \_\_\_\_\_ 9. I am usually worried about what kind of impression I make.
- \_\_\_\_\_ 10. If I know someone is judging me, it has big effect on me.
- \_\_\_\_\_ 11. Sometimes I think I am too concerned with what other people think of me.
- \_\_\_\_\_ 12. I often worry that I will say or do the wrong things.

## The Self-Consciousness Scale

To take the SCS, read each item carefully and then indicate how well each statement describes you. Use the 0-4 response scale for your answers. Answer each item as honestly and accurately as possible.

Response scale: For each item, please choose the number from 0 to 4 that best indicate how well the item characterizes you. The choices are:

0= extremely uncharacteristic (not at all like me)

1= uncharacteristic (somewhat unlike me)

2= neither characteristic nor uncharacteristic

3= characteristic (somewhat like me)

4= extremely characteristic (very much like me)

- \_\_\_\_\_ 1. I'm always trying to figure myself out.
- \_\_\_\_\_ 2. I'm concerned about my style of doing things.
- \_\_\_\_\_ 3. Generally, I'm not very aware of myself.
- \_\_\_\_\_ 4. It takes me time to overcome my shyness in new situations.
- \_\_\_\_\_ 5. I reflect about myself a lot.
- \_\_\_\_\_ 6. I'm concerned about the way I present myself.
- \_\_\_\_\_ 7. I'm often the subject of my own fantasies.
- \_\_\_\_\_ 8. I have trouble working when someone is watching me.
- \_\_\_\_\_ 9. I never scrutinize myself.
- \_\_\_\_\_ 10. I get embarrassed very easily.
- \_\_\_\_\_ 11. I'm self-conscious about the way I look.
- \_\_\_\_\_ 12. I don't find it hard to talk to strangers.
- \_\_\_\_\_ 13. I'm generally attentive to my inner feelings.
- \_\_\_\_\_ 14. I usually worry about making a good impression.
- \_\_\_\_\_ 15. I'm constantly examining my motives.
- \_\_\_\_\_ 16. One of the last things I do before I leave my house is look in the mirror.
- \_\_\_\_\_ 17. I sometimes have the feeling that I'm off somewhere watching myself.
- \_\_\_\_\_ 18. I feel anxious when I speak in front of a group.
- \_\_\_\_\_ 19. I'm concerned about what other people think of me.
- \_\_\_\_\_ 20. I'm alert to changes in my mood.
- \_\_\_\_\_ 21. I'm usually aware of my appearance.
- \_\_\_\_\_ 22. I'm aware of the way my mind works when I work through a problem.
- \_\_\_\_\_ 23. Large groups make me nervous.

Oklahoma State University Institutional Review Board

Date: Friday, December 21, 2012  
IRB Application No AS12144  
Proposal Title: Young Adults with Childhood-Onset Asthma: The Spotlight Effect, Psychological Adjustment, Fear of Negative Evaluation and Self Focused Attention  
Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 12/20/2013

Principal Investigator(s):  
Ashley N. Junghans                      Larry L. Mullins  
116 N Murray Hall                      116 North Murray  
Stillwater, OK 74078                      Stillwater, OK 74078

---

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI, advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,



Shelia Kennison, Chair  
Institutional Review Board



**Oklahoma State University Institutional Review Board**

Date: Tuesday, September 10, 2013 Protocol Expires: 12/20/2013  
IRB Application No: AS12144  
Proposal Title: Young Adults with Childhood-Onset Asthma: The Spotlight Effect,  
Psychological Adjustment, Fear of Negative Evaluation and Self Focused  
Attention  
Reviewed and Processed as: Exempt  
**Modification**  
Status Recommended by Reviewer(s) **Approved**  
Principal Investigator(s):  
Ashley N. Junghans Larry L. Mullins  
116 N Murray Hall 116 North Murray  
Stillwater, OK 74078 Stillwater, OK 74078

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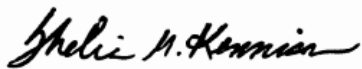
The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office **MUST** be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB.

- The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

Minor modification to increase number of participants from 528 to 1350

Signature :



Shelia Kennison, Chair, Institutional Review Board

Tuesday, September 10, 2013  
Date

## **INFORMED CONSENT**

Project Title: Young Adults with Childhood-Onset Asthma: The Spotlight Effect, Psychological Adjustment, Fear of Negative Evaluation and Self Focused Attention

### Investigators:

Ashley N. Junghans, M.S. & Larry L. Mullins, Ph.D.  
Department of Psychology  
Oklahoma State University

### Purpose:

This project investigates adjustment among college students with asthma compared to college students who do not have a chronic illness. It will look at social relationships, attention and anxiety. You are being asked to participate because you previously reported that you are either 1) a college student with asthma, or 2) a health college student.

### Procedures:

You will be asked to complete several questionnaires online that ask you questions about your health, anxiety, attention, and fears in social settings. You will also be asked to write a paragraph about being picked for an intramural sports team. Additionally, there will be questions that inquire about your demographic information (e.g., gender, ethnicity, age). Your answers will not be shared and will remain confidential throughout the study. Your participation is expected to last less than 1 hour.

### Risks of Participation:

You will be asked to tell us information about your chronic illness (if applicable). Because you might feel like information about your illness (if applicable) is sensitive, you may also feel like it is too personal for you to tell us about in a research study. At any time, you may choose to skip questions that seem too personal. All questions are voluntary and there will be no penalty for skipping questions. Overall, the information being requested will put you at no greater risk than would typically be encountered during a routine psychological examination.

### Benefits:

While you may not personally benefit from participation in this study, the information we gather from this project may help others. Specifically, the information gained may help us learn more about the impact of a chronic illness on college students.

### Confidentiality:

Any data collected as part of participating in this study will be treated as confidential and will receive a code number so that responses will remain confidential. The records will be kept private. Any written results will be about group findings and will not include information that could be used to identify you. Your data will be stored for up to one year on an online data collection system. After that time, the data will be downloaded and stored on a secure campus drive where it will be kept indefinitely. Only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

### Compensation:

You will receive 1 hour of SONA course credit your participation in the study. No one will be allowed to participate in the study more than once. Anyone who completes the study for students with asthma will be ineligible for the study for students without asthma, and vice versa.

Contacts:

Questions about this research project should be directed to Ashley Junghans or Dr. Larry Mullins, Psychology Department, 116 North Murray Hall, Oklahoma State University, 405-744-6027. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu).

Participant Rights:

Participation is voluntary; there is no penalty for refusal to participate. You are free to withdraw consent and participation from this project at any time without penalty, after notifying the researcher.

Signatures:

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

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

I certify that I have personally explained this document before requesting that the participant sign it.

\_\_\_\_\_  
Signature of Researcher

\_\_\_\_\_  
Date

Table 1.  
Demographic characteristics of participants stratified by healthy or illness grouping ( $N = 678$ )

	Healthy Participants ( $n = 530$ )	Asthma Participants ( $n = 148$ )
Gender - Female	64.5% (342)	66.2% (98)
Age	19.82 $\pm$ 2.44	19.43 $\pm$ 1.57
Ethnicity		
Caucasian	76.4% (405)	75.7% (112)
Native American	5.1% (27)	6.1% (9)
African American	4.9% (26)	7.4% (11)
Bi-Racial	4.7% (25)	5.4% (8)
Asian American	3.8% (20)	2.7% (4)
Year in school	1.95 $\pm$ 1.19	1.83 (1.21)
Parental household income – Avg. \$100,000 - \$124,999	17.6% (119)	25.7% (38)
Maternal education – at least some college	80.8% (428)	85.2% (126)
Paternal education – at least some college	76.8% (407)	83.7% (124)

\*Values are shown as % ( $n$ ) or mean  $\pm$  SD.

Table 2.  
 Medical characteristics of asthma participants (*N* = 148 )

	Asthma Participants ( <i>n</i> = 148)
Age of diagnosis	8.30 ± 4.73
Asthma severity	
Mild	76.2% (113)
Mild-Moderate	12.8% (19)
Moderate	6.8% (10)
Moderate-Severe	2.7% (4)
Severe	1.4% (2)
Use asthma medication – Yes	45.3% (67)
Rescue inhaler	27.4% (17)
Prevention inhaler	27.4% (17)
Inhaler – Type unspecified	25.8% (16)
Multiple methods	14.5% (9)
Visited doctor for asthma in past 12 months	35.1% (53)
Times visited doctor for asthma in past 12 months	
None	64.9% (96)
1 to 3	33.1% (46)
4-12	1.4% (2)
More than 12	0.7% (1)
Hospitalized for asthma in past 12 months	2.7% (4)
Times hospitalized for asthma in past 12 months	
None	97.3% (144)
1 to 3	2.7% (4)
Hospitalized for asthma during lifetime	35.1% (52)
Times hospitalized for asthma in lifetime	
None	64.9% (96)
1 to 3	29.7% (44)
4 to 12	4.7% (7)
More than 12	0.7% (1)
Missed school due to asthma in past 12 months	15.5% (23)
Days missed school due to asthma in past 12 months	
None	84.5% (125)
1 to 3	10.8% (16)
4 to 12	3.4% (5)
More than 12	1.4% (2)
Wheezing in lifetime	91.9% (136)
Wheezing within past 12 months	32.8% (93)
Times wheezed I past 12 months	
None	43.2% (64)
1 to 3	41.9% (62)
4 to 12	11.5% (17)
More than 12	3.4% (5)
Sleep disturbed by wheezing in lifetime	30.4% (45)
Times sleep disturbed by wheezing in past 12 months	
Never	69.6% (103)
About 1 night per month	22.3% (33)
Less than one night per week	5.4% (8)
One or more nights per week	2.7% (4)
Wheezing severe enough to limit breath past 12 months	16.9% (25)

Wheezing severe enough to limit physical activity past 12 mo	28.4% (42)
Type of limited physical activity	
Running	6.1% (9)
Basketball	3.4% (5)
General exercise/Working out	4.7 (7)
Other	1.4 (2)
Multiple types	9.5% (14)
Chest felt wheezy after exercise in past 12 months	63.5% (94)
Dry cough at night in past 12 months	39.2% (58)
Do you have a chronic illness?	31.1% (46)
What chronic illness do you have?	
None	68.9% (102)
Asthma	20.3% (30)
Allergies	2.0% (3)
Other	1.4% (2)
Multiple including asthma	6.8% (10)
Multiple not including asthma	0.7% (1)

---

\*Values are shown as % (*n*) or mean ± SD.

Table 3.  
Correlations among predictor and criterion variables for participants with and without asthma

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Gender	-	-.045	-.095*	.053	-.046	.065	.034	-.088	-.046	.016	-.101**
2. Age	-	-	.622**	.009	-.079*	-.107**	-.070	.026	.085*	-.007	-.080*
3. Year in School	-	-	-	-.060	-.043	-.041	-.015	.076*	.156**	.050	-.008
4. Ethnicity	-	-	-	-	-.179**	-.103**	-.177**	.048	.051	.057	.016
5. Mother's Education	-	-	-	-	-	.384**	.285**	.020	.043	.033	.013
6. Father's Education	-	-	-	-	-	-	.464**	.021	-.005	.018	.018
7. Household Income	-	-	-	-	-	-	-	-.051	-.049	-.045	-.047
8. Mean SCS	-	-	-	-	-	-	-	-	.690**	.785**	.620**
9. SCS Private	-	-	-	-	-	-	-	-	-	.626**	.389**
10. SCS Public	-	-	-	-	-	-	-	-	-	-	.542**

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.
1. Gender	-.052	-.029	-.043	-.062	-.041	-.128**	-.049	.014	-.042	-.041	-.046	-.050
2. Age	.003	-.027	.000	.043	-.012	-.019	.019	.055	-.009	.002	-.039	-.014
3. Year in School	.083*	.035	.041	.077*	.025	.055	.053	.024	.029	.041	.028	.010
4. Ethnicity	.051	-.010	.064	.062	.066	.046	.034	.007	.078*	.061	.077*	.054
5. Mother's Education	.037	.010	-.007	.007	-.014	.023	.018	-.024	-.002	-.001	.016	-.054
6. Father's Education	.011	.047	-.080*	-.082*	-.038	-.052	-.059	-.066	-.079*	-.097*	-.054	-.092*
7. Household Income	-.057	-.008	-.053	-.067	-.074	-.066	-.026	-.016	-.023	-.074	-.047	-.046
8. Mean SCS	.848**	.491**	.367**	.375**	.383**	.435**	.341**	.218**	.353**	.385**	.336**	.225**
9. SCS Private	.827**	.404**	.254**	.294**	.277**	.347**	.234**	.120**	.196**	.302**	.251**	.113**
10. SCS Public	.877**	.580**	.361**	.379**	.366**	.472**	.309**	.209**	.338**	.399**	.351**	.223**
11. SCS Social Anxiety	.768**	.430**	.341**	.367**	.342**	.440**	.332**	.172**	.372**	.347**	.291**	.224**

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.
12. SCS Total	-	.571**	.384**	.419**	.397**	.507**	.352**	.201**	.362**	.422**	.360**	.224**
13. Mean BFNE	-	-	.445**	.452**	.444**	.571**	.402**	.254**	.432**	.477**	.436**	.285**
14. BSI GSI	-	-	-	.903**	.831**	.840**	.912**	.821**	.878**	.928**	.879**	.864**
15. BSI Depression	-	-	-	-	.718**	.848**	.775**	.671**	.743**	.903**	.773**	.713**
16. BSI Obsessive-Compulsive	-	-	-	-	-	.664**	.741**	.639**	.661**	.719**	.689**	.647**
17. BSI Inerpersonal Sensitivity	-	-	-	-	-	-	.738**	.601**	.762**	.864**	.822**	.637**
18. BSI Anxiety	-	-	-	-	-	-	-	.711**	.824**	.811**	.753**	.800**
19. BSI Hostility	-	-	-	-	-	-	-	-	.681**	.704**	.748**	.697**
20. BSI Phobic Anxiety	-	-	-	-	-	-	-	-	-	.811**	.753**	.778**
21. BSI Psychoticism	-	-	-	-	-	-	-	-	-	-	.824**	.738**
22. BSI Parnaoid Ideation	-	-	-	-	-	-	-	-	-	-	-	.674**
23. BSI Somatization	-	-	-	-	-	-	-	-	-	-	-	-

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



Table 4.  
Correlations among demographic and illness characteristics for asthma group

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Gender	-	-.061	-.030	.075	-.062	.021	.075	-.179*	-.101	.002	-.119
2. Age	-	-	.722**	-.012	.083	.033	.076	.092	.075	.108	-.046
3. Year in School	-	-	-	-.051	.008	.063	.015	.115	.040	-.046	-.080
4. Ethnicity	-	-	-	-	-.177*	-.206*	-.156	.091	.008	.065	.072
5. Mother's Education	-	-	-	-	-	.353**	.265**	.050	.055	.234**	.035
6. Father's Education	-	-	-	-	-	-	.392**	.056	.110	.123	.021
7. Household Income	-	-	-	-	-	-	-	.007	-.099	.051	-.061
8. Age of Diagnosis	-	-	-	-	-	-	-	-	-.010	-.139	-.081
9. Severity	-	-	-	-	-	-	-	-	-	.289**	.170*
10. # visted dr. in 12 months	-	-	-	-	-	-	-	-	-	-	.188*
11. # visited hospital in 12 months	-	-	-	-	-	-	-	-	-	-	-

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. Gender	.056	-.052	.055	.017	-.093	-.136	-.052	-.110	-.076	-.122
2. Age	-.122	.131	.051	.007	.060	.036	.003	.024	-.026	.101
3. Year in School	-.115	.041	.020	-.096	.018	-.051	.068	-.086	-.131	.014
4. Ethnicity	.310**	.089	-.181*	.061	-.005	.084	-.077	.078	.070	.277**
5. Mother's Education	-.140	.229**	-.045	.089	.079	.146	.151	.050	.037	.003
6. Father's Education	-.026	.171*	.189*	.173*	.154	.173*	.240**	.178*	.141	-.052
7.	-.013	.062	.055	.092	-.011	.105	.146	.055	-.066	-.016

Household Income										
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8. Age of Diagnosis	-.393**	-.037	.019	-.116	-.119	-.161	.071	.037	-.067	-.281**
9. Severity	.193*	.538**	.112	.250**	.389**	.308**	.294**	.410**	.362**	.190*
10. # visted dr. in 12 months	.098	.376**	-.021	.224**	.411**	.227**	.241**	.261**	.337**	.390**
11. # visited hospital in 12 months	.295**	.137	.050	.128	.370**	.172*	.126	.207*	.183*	.158

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
12. # hospital lifetime	-	.090	.119	.243**	.138	.136	.074	.112	.185*	.464**
13. # sleep disturbed 12 months	-	-	.171*	.306**	.395**	.306**	.358**	.425**	.254**	.198*
14. Wheezing lifetime	-	-	-	.335**	.134	.123	.238**	.124	.171*	-.106
15. Wheezing 12 monts	-	-	-	-	.235**	.357**	.579**	.298**	.475	.096
16. Wheezing limit breath 12 months	-	-	-	-	-	.435**	.304**	.301**	.278**	.147
17. Wheezing limit activity 12 months	-	-	-	-	-	-	.451**	.167*	.389**	.076
18. Chest wheeze post-exersize 12 months	-	-	-	-	-	-	-	.326**	.379**	.042
19. Dry cough at night 12 months	-	-	-	-	-	-	-	-	.295**	.108
20. Asthma medication	-	-	-	-	-	-	-	-	-	.157
21. Days school missed 12 months	-	-	-	-	-	-	-	-	-	-

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

Table 5.  
Correlations among demographic and criterion variables for participants with asthma

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Gender	-	-.061	-.030	.075	-.062	.021	-.157	-.144	-.113	-.158	-.166*
2. Age	-	-	.722**	-.012	.083	.033	.000	.033	.035	-.089	-.007
3. Year in School	-	-	-	-.051	.008	.063	.104	.100	.004	-.064	.019
4. Ethnicity	-	-	-	-	-.177*	-.206*	.092	.074	.053	.060	.075
5. Mother's Education	-	-	-	-	-	.353**	-.025	.020	-.001	-.039	-.007
6. Father's Education	-	-	-	-	-	-	-.020	.029	.012	.032	.029
7. Mean SCS	-	-	-	-	-	-	-	.656**	.782**	.662**	.841**
8. SCS Private	-	-	-	-	-	-	-	-	.607**	.416**	.819**
9. SCS Public	-	-	-	-	-	-	-	-	-	.592**	.881**
10. SCS Social Anxiety	-	-	-	-	-	-	-	-	-	-	.796**
11. SCS Total	-	-	-	-	-	-	-	-	-	-	-

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
1. Gender	-.228**	-.130	-.143	-.060	-.203*	-.126	-.023	-.156	-.128	-.129	-.157
2. Age	-.021	.001	.078	.009	-.011	.014	-.070	.012	-.043	-.025	.037
3. Year in School	.075	-.032	.023	-.044	-.031	-.008	-.063	.001	-.049	-.046	-.028
4. Ethnicity	.028	.105	.107	.078	.096	.103	.063	.115	.111	.124	.040
5. Mother's Education	-.046	.045	-.006	.015	.015	.132	-.032	.107	.034	.016	.065
6. Father's Education	.061	.057	.072	.048	.068	.083	.015	.090	.035	.040	.058
7. Mean SCS	.687**	.374**	.344**	.374**	.384**	.366**	.257**	.385**	.376**	.344**	.229**
8. SCS Private	.545**	.268**	.298**	.314**	.334**	.250**	.164**	.205*	.287**	.258**	.115

9. SCS Public	.739**	.345**	.344**	.450**	.450**	.347**	.214**	.338**	.377**	.319**	.204*
10. SCS Social Anxiety	.620**	.339**	.342**	.355**	.417**	.338**	.144	.389**	.340*	.318**	.222**
10. SCS Social Anxiety	.620**	.339**	.342**	.355**	.417**	.338**	.144	.389**	.340*	.318**	.222**
11. SCS Total	.761**	.380**	.394**	.416**	.480**	.373**	.210*	.371**	.401**	.357**	.215**

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

	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
12. Mean BFNE	-	.416**	.474**	.441**	.590**	.425**	.254**	.471**	.510**	.465**	.271**
13. BSI GSI	-	-	.906**	.822**	.849**	.916**	.786**	.851**	.934**	.899**	.857**
14. BSI Depression	-	-	-	.685**	.873**	.768**	.678**	.731**	.910**	.803**	.727**
15. BSI Obsessive-Compulsive	-	-	-	-	.670**	.748**	.606**	.615**	.696**	.725**	.652**
16. BSI Inpersonal Sensitivity	-	-	-	-	-	.730**	.608**	.729**	.879**	.840**	.653**
17. BSI Anxiety	-	-	-	-	-	-	.667**	.830**	.821**	.776**	.782**
18. BSI Hostility	-	-	-	-	-	-	-	.574**	.710**	.720**	.635**
19. BSI Phobic Anxiety	-	-	-	-	-	-	-	-	.803**	.721**	.729**
20. BSI Psychoticism	-	-	-	-	-	-	-	-	-	.858**	.732**
21. BSI Paranooid Ideation	-	-	-	-	-	-	-	-	-	-	.685**
22. BSI Somatization	-	-	-	-	-	-	-	-	-	-	-

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

Table 6.  
Correlations among illness characteristics and criterion variables for participants with asthma

	SCS Mean	SCS Priv	SCS Pub	SCS SA	SCS Tot	BFNE Mean	BSI GSI	BSI Dep	BSI Ob-C	BSI I-S	BSI Anx	BSI Host
1. Age of diagnosis	-.099	-.053	-.133	-.066	-.101	-.078	-.066	-.048	-.065	-.053	-.055	-.024
2. Wheeze lifetime	-.058	.153	.055	-.014	.080	.036	-.173*	-.143	-.077	-.120	-.136	-.268**
3. Wheeze 12 months	.014	.122	.095	.122	.136	.017	-.033	-.046	-.038	.008	.009	-.048
4. # wheezed 12 months	.086	.151	.200*	.136	.195*	.101	.061	.005	.004	.120	.112	-.014
5. # sleep disturbed 12 months	.111	.153	.134	.000	.117	.040	.145	.113	.088	.101	.139	.076
6. Sleep disturbed lifetime	.151	.163*	.174*	.084	.170*	.070	.159	.097	.105	.129	.159	.078
7. Wheeze limit breath 12 months	.026	.001	.056	.032	.035	.062	.100	.088	.037	.075	.098	-.059
8. Wheeze limit activity 12 months	.068	.142	-.154	.074	.101	.101	.034	-.017	.030	.055	.109	-.099
9. Wheeze post-activity 12 months	.102	.151	.106	.041	.121	.098	-.024	-.084	-.006	.023	.024	-.074
10. Cough 12 months	.107	.104	.026	.127	.103	.015	.106	.042	.073	.102	.145	.060
11. Use med	.063	.204*	.220**	.118	.218**	.127	.015	-.019	.034	.019	.078	-.005
12. # doctor visits 12 months	-.017	.026	.114	.035	.070	.034	.019	-.002	-.095	.121	.214**	.063

13. # hospital 12 months	-.032	-.081	-.044	-.071	-.079	.034	.019	-.002	-.095	.034	.016	-.046
14. # hospital lifetime	-.144	-.059	-.088	-.077	-.090	-.104	-.138	-.130	-.086	-.075	-.178*	-.093

13. # hospital 12 months	.085	.087	.065	.049
14. # hospital lifetime	-.111	-.103	-.091	-.160
15. Days school missed 12 months	.135	.117	.182*	.079
16. Severity	.041	.000	-.061	.106

Table 7. Brief Symptom Inventory (BSI) Means and Standard Deviations and Results of *t*-Tests

BSI Subscale	Healthy Mean $\pm$ SD	Asthma Mean $\pm$ SD	<i>t</i> -statistic	<i>p</i>
BSI Global Severity Index	0.741 $\pm$ 0.681	0.800 $\pm$ 0.673	-1.188	.235
BSI Depression	0.772 $\pm$ 0.885	0.759 $\pm$ 0.809	0.214	.831
BSI Obsessive-Compulsiveness	1.132 $\pm$ 0.859	1.167 $\pm$ 0.816	-.545	.586
BSI Interpersonal Sensitivity	0.943 $\pm$ 0.968	1.00 $\pm$ 0.938	-.804	.422
BSI Anxiety	0.695 $\pm$ 0.771	0.761 $\pm$ 0.776	-1.163	.245
BSI Hostility	0.699 $\pm$ 0.702	0.735 $\pm$ 0.673	-.703	.484
BSI Phobic Anxiety	0.569 $\pm$ 0.728	0.658 $\pm$ 0.768	-1.654	.099
BSI Psychotism	0.724 $\pm$ 0.799	0.772 $\pm$ 0.804	-8.06	.420
BSI Paranoid Ideation	0.819 $\pm$ 0.801	0.890 $\pm$ 0.823	-1.209	.227
BSI Somatization	0.559 $\pm$ 0.715	0.719 $\pm$ 0.717	-3.074	.002

*BSI Range 0-4*

Table 8. BSI Somatization Subscale Scores Means and Standard Deviations and Results of *t*-Tests

Somatization Question	Healthy Mean ± SD	Asthma Mean ± SD	<i>t</i> -statistic	<i>p</i>
Pains in heart/chest	.45 ± .879	.78 ± .982	-3.511	.001
Faintness/dizziness	.55 ± .895	.69 ± .95	-1.606	.109
Nausea	.67 ± .981	.74 ± .943	-.691	.490
Trouble getting breath	.38 ± .807	.70 ± .906	-3.914	.000
Hot/cold spells	.47 ± .881	.72 ± 1.020	-2.688	.008
Numbness/tingling	.47 ± .861	.65 ± .947	-2.119	.034
Feeling weak	.59 ± .957	.74 ± .998	-1.694	.091

*Equal variances not assumed for pains in heart/chest, trouble getting breath, and hot/cold spells*



Table 9. Hierarchical Regression Analyses: Health Status Predicting Change in Psychological Distress

BSI Subscale	Model	Adjusted R <sup>2</sup>	ΔR <sup>2</sup>	β1
Global Severity Index	Father's education	.005	.006	-.08*
	Health status	.006	.003	.168
Depression	Father's education	.005	.007	-.082*
	Health status	.004	.000	-.001
Obsessive-Compulsiveness	Health status	-.001	.000	.021
Interpersonal Sensitivity	Health status	-.001	.000	.031
Anxiety	Health status	.001	.000	.045
Hostility	Health status	-.001	.000	.027
Phobic Anxiety	Father's education	.005	.006	-.079*
	Health status	.008	.005	.071
Psychoticism	Father's education	.008	.009	-.097*
	Health status	.008	.002	.040
Paranoid Ideation	Health status	.001	.002	.047
Somatization	Father's education	.007	.008	-.092*
	Health status	.021	.016	.127***

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

Table 10. Hierarchical Regression Analyses: Disclosure Group Predicting Change in Psychological Distress

BSI Subscale	Model	Adjusted R <sup>2</sup>	ΔR <sup>2</sup>	β1
Global Severity Index	Disclosure	-.004	.003	-.058
Depression	Disclosure	-.003	.004	-.064
Obsessive-Compulsiveness	Disclosure	.008	.015	-.123
Interpersonal Sensitivity	Disclosure	-.001	.000	.031
Anxiety	Times visited hospt life	.025	.032	-.178*
	Times visited dr 12 mnth	.065	.046	.217**
	Disclosure	.064	.005	-.073
Hostility	Disclosure	-.001	.006	-.075
Phobic Anxiety	Times visited dr 12 mnth	.034	.041	.201*
	Disclosure	.033	.006	-.075
Psychotism	Disclosure	.003	.003	-.050
Paranoid Ideation	Days missed school	.026	.033	.182*
	Disclosure	.027	.008	-.088
Somatization	Wheezing 12 months	.056	.063	.251**
	Dry night cough 12 mnth	.068	.018	.142
	Tims sleep disturbed	.073	.011	.122
	Disclosure	.066	.000	.011

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

Table 11. Brief Fear of Negative Evaluation (BFNE) Means and Standard Deviations and Results of *t*-Tests

BFNE	Healthy Mean ± SD	Asthma Mean ± SD	<i>t</i> -statistic	<i>p</i>
BFNE Mean	2.588 ± 1.733	2.667 ± 1.331	-1.28	.20

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

Table 12. Brief Fear of Negative Evaluation (BFNE) Means and Standard Deviations and Results of *t*-Tests by Disclosure Group

BFNE	Asthma Disclosure Mean ± SD	Asthma Non-Disclosure Mean ± SD	<i>t</i> -statistic	<i>p</i>
BFNE Mean	2.980 ± 1.345	2.483 ± 1.295	2.203	.029*

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

Table 13. Hierarchical Regression Analyses: Disclosure Group Predicting Change in Fear of Negative Evaluation

BFNE	Model	Adjusted R <sup>2</sup>	ΔR <sup>2</sup>	β1
BFNE Mean	Gender	.045	.052	-.228**
	Disclosure	.074	.035	-.187*

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

Table 14. Self-Consciousness Scale (SCS) Means and Standard Deviations and Results of *t*-Tests

SCS Subscale	Healthy Mean $\pm$ SD	Asthma Mean $\pm$ SD	<i>t</i> -statistic	<i>p</i>
Mean SCS	2.14 $\pm$ 0.638	2.123 $\pm$ 0.653	-.50	.61
SCS Private	2.468 $\pm$ 0.552	2.454 $\pm$ 0.534	.34	.73
SCS Public	2.54 $\pm$ 0.746	2.265 $\pm$ 0.736	-.21	.84
SCS Social Anxiety	1.927 $\pm$ 0.834	2.016 $\pm$ 0.827	-1.45	.15

*SCS Range 0-4*

Table 15. Self-Consciousness Scale (SCS) Means and Standard Deviations and Results of *t*-Tests by Disclosure Group

SCS Subscale	Asthma Disclosure Mean $\pm$ SD	Asthma Non-Disclosure Mean $\pm$ SD	<i>t</i> -statistic	<i>p</i>
Mean SCS	2.259 $\pm$ 0.588	2.044 $\pm$ 0.678	1.947	.054
SCS Private	2.550 $\pm$ 0.559	2.398 $\pm$ 0.514	1.669	.097
SCS Public	2.43 $\pm$ 0.710	2.166 $\pm$ 0.737	2.120	.036
SCS Social Anxiety	2.124 $\pm$ 0.873	1.952 $\pm$ 0.796	-1.207	.230
SCS Total	2.402 $\pm$ 0.552	2.211 $\pm$ 0.554	2.014	.046*

*SCS Range 0-4*

Table 16. Hierarchical Regression Analyses: Disclosure Group Predicting Change in Self-Focused Attention

SCS Subscale	Model	Adjusted R <sup>2</sup>	ΔR <sup>2</sup>	β1
Mean SCS	Disclosure	.019	.026	.054
SCS Private	Medication	.035	.042	.204*
	Disclosure	.055	.026	-.163*
SCS Public	Medication	.042	.048	.220**
	Disclosure	.076	.040	-.201*
SCS Social Anxiety	Disclosure	.003	.010	-.100
SCS Total	Gender	.021	.028	-.166*
	Medication	.057	.042	.206*
	Disclosure	.089	.037	-.195*

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



## VITA

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Doctor of Philosophy

Thesis: YOUNG ADULTS WITH CHILDHOOD-ONSET ASTHMA: THE SPOTLIGHT EFFECT, PSYCHOLOGICAL ADJUSTMENT, FEAR OF NEGATIVE EVALUATION AND SELF FOCUSED ATTENTION

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