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The Use of Cognitive Behavior Group Therapy to Reduce Maladaptive Perfectionism and Improve Cognitive Flexibility in Anxious Latino Youth

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THE USE OF COGNITIVE BEHAVIOR GROUP THERAPY TO REDUCE MALADAPTIVE PERFECTIONISM AND IMPROVE COGNITIVE FLEXIBILITY IN ANXIOUS LATINO YOUTH

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Dissertation Approval

This is to certify that the thesis presented to us by Jeremy Tyler

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Abstract

Cognitive behavior group therapy (CBGT) is an empirically supported treatment for anxiety disorders in adolescents. However, research on anxiety and related constructs is lacking within a Latino population of adolescents. Not all adolescents receiving CBGT for anxiety show clinically significant improvements, thus research is needed to identify treatment outcome predictors. Maladaptive perfectionism, including those that are self-oriented and socially prescribed, and cognitive flexibility are two constructs that may be related to anxiety from a cognitive perspective. Maladaptive perfectionism and cognitive flexibility deficits have been consistently linked to a host of psychiatric problems in adults and adolescents. The purpose of this study was to investigate whether or not a seven-week CBGT intervention could reduce maladaptive perfectionism and improve cognitive flexibility. Additionally, the predictive relationships between pre-treatment perfectionism, pre-treatment cognitive flexibility, and post-treatment anxiety were explored. Results indicated there was no significant impact of CBGT on maladaptive perfectionism or cognitive flexibility, nor was perfectionism or flexibility predictive of anxiety, post-treatment . However, scores of pre-treatment self-oriented perfectionism significantly, positively predicted higher scores of post-treatment generalized anxiety. Treatment implications, design limitations, and future directions for study are discussed.

Keywords: maladaptive perfectionism, cognitive flexibility, anxiety, cognitive behavior therapy

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Chapter 1: Introduction

Statement of the Problem

Anxiety disorders are the most common psychiatric diagnoses during childhood and adolescence (Kessler et al., 2012). In fact, 12 month prevalence rates have risen from 15.4% in 1990 to an estimated 24.6% as of 2010 (Kessler et al., 2012; Benjamin, Costello & Warren, 1990). Most notable, prevalence rates of social anxiety disorder (formerly social phobia) and specific phobia (formerly simple phobia) in adolescents have increased from 1.0% to 8.2% and 2.4% to 15.8%, respectively (Anderson, Williams, McGee & Silva, 1987; Whitaker et al., 1990; Kessler et al., 2012). Anxiety-related problems during adolescence are associated with a host of negative consequences spanning several domains including interpersonal relationships, academic performance and familial interactions (Kessler et al., 2005; Pine, 1997). However, much of the existing literature has focused on Caucasian youth, with less emphasis on ethnic minority youth such as Latinos (Ginsburg & Silvermen, 1996; Sue, 2009). Latinos continue to be a growing ethnic group in the United States, and preliminary studies suggest a higher prevalence rate of anxiety-related problems among Latino individuals (U.S. Census Bureau, 2009). Thus, it is important to investigate, further, the predictors and treatment of anxiety disorders within a Latino youth population.

Cognitive models of anxiety disorders in adolescents emphasize an understanding of schemas, cognitive distortions, and cognitive biases and their impact on information processing (Kendall & Ronan, 1990; Crick & Dodge, 1997; Daleiden & Vasey, 1997). A six stage information processing model has been most commonly used to conceptualize

the development and maintenance of anxiety disorders in adolescents (Crick & Dodge, 1997; Pilecki & McKay, 2011). Furthermore, it has been proposed that activated cognitive distortions and deficits (Kendall & Ronan, 1990) throughout these stages may lead to the development and maintenance of anxiety disorders (Daleiden & Vasey, 1997; Pilecki & McKay, 2011). Each stage of this model represents the processing of environmental and internal information and is intended to proceed in a sequential order (Daleiden & Vasey). *Encoding* is the cognitive process in which information is either attended to or ignored. Once attended to, *interpretation* refers to the appraisal of the information for potential meaning, reason for occurrence and probable outcome. After making sense of the incoming information, *goal-clarification*, *response construction* and *response selection* refer to the cognitive processes in which the adolescent decides what his/her primary goal is in relation to the incoming information, and how best to achieve it. Finally, *enactment* is the stage in which the adolescent follows through with the decided plan of action (Crick & Dodge, 1997). Although these six stages provide a concise framework for understanding the information processing of adolescents, the identification of specific cognitive distortions, deficits, and biases within these stages provides clinically relevant information in understanding the development of anxiety.

Cognitive distortions refer to the misinterpretation of events in a maladaptive way; cognitive deficits refer to the lack of cognitive activity in situations requiring problem solving abilities (Kendall, 1985). From a cognitive framework, maladaptive perfectionism can be conceptualized as multidimensional trait characterized by cognitive rumination, cognitive perseveration, and various formed of automatic cognitive biases

(Flett, Nepon, & Hewitt, 2016). Additionally, perfectionistic individuals demonstrate a tendency to set exceedingly high expectations (Frost, Marten, Lahart & Rosenblate, 1990; Hewitt & Flett, 1991) and to engage in negative dichotomous thinking (Davis & Wosinski, 2012; Egan, Piek, Dyck, & Rees, 2007). Moreover, it is not uncommon for perfectionistic adolescents to assume complete failure if their rigid high expectations are not met. This perception of failure is likely to trigger a high degree of psychological distress in the perfectionistic adolescents (Nobel, Manassis & Wilansky-Traynor, 2012). Congruent with Crick and Dodges's information processing model, perfectionistic thinking may lead to a misinterpretation of events. For example, a socially anxious adolescent is likely to attend to performance situations with greater sensitivity to negative evaluations (Antony et al., 1998). Perfectionistic thinking during the interpretation stage could lead to the belief that he/she must either perform perfectly or face failure. Once this dichotomous and ruminative thought process has been activated, it is likely that the adolescent will attempt to manage the situation (Daleiden & Vasey, 1997). To do so, he/she may construct, select, and enact a plan of escape or avoidance (Antony et al., 1998) or endure the situation with intense psychological distress (Pilecki & McKay, 2011). This type of rigid thinking is common in adolescents diagnosed with an anxiety disorder. Although maladaptive perfectionistic thinking may represent a host of negative cognitive operations such as cognitive distortions, cognitive perseveration, and worrisome rumination during the encoding and interpretation stages, certain forms of cognitive deficits during the response construction and selection stages may limit the anxious adolescent's coping ability.

Cognitive deficits refer to the lack of processing abilities in situations that require problem solving (Kendall, 1985). A type of cognitive deficit that may be related to anxiety disorders is the lack of cognitive flexibility, described as the ability, or lack there of, to adapt to challenging situations, modify one's perspective and change behavior in response to the demands of the environment (Kashdan & Rottenburg, 2010; Hayes, Luoma, Bond, Masuda & Lillis, 2006). Thus, a distinct feature of cognitive inflexibility in adolescents may manifest as the tendency to use maladaptive cognitive strategies excessively and rigidly, regardless of the situation (Greco, Lambert and Baer, 2008; Crosby, Bates, Twohig, 2011). Consistent with the information processing model of anxiety disorders, cognitive inflexibility may lead to maladaptive processing during the response construction and selection stages (Daleiden & Vasey, 1997). More specifically, anxious adolescents presented with a perceived threatening situation will often demonstrate a deficit in the ability to develop and select adaptive coping strategies that enhance emotional regulation (Pilecki & McKay, 2011). Instead, anxious adolescents may tend to rely disproportionately upon escape and avoidance strategies instead of adaptive problem-focused approaches (Daleiden &Vasey, 1997). Thus, it is no surprise that anxious individuals with a deficit in cognitive flexibility more commonly demonstrate increased social inhibition and experiential avoidance (Hayes et al., 2006; Kashdan & Rottenburg, 2010; Williams & Ciarrochi, 2012).

Given the impact that maladaptive perfectionism and cognitive inflexibility may have on information processing, targeting the associated distortions, biases, and deficiencies in treatment may be beneficial for adolescents experiencing elevated anxiety.

Cognitive behavioral therapy (CBT) and cognitive behavioral group therapy (CBGT) have demonstrated empirical support in reducing symptoms of anxiety associated with a wide variety of anxiety disorders in adolescents (Cartwright-Hatton et al., 2004; Kendall et al., 2009; Chorpita & Southern-Gerow, 2006). Key components of CBT and CBGT include identifying and modifying cognitive distortions (i.e. encoding and interpretation), as well as developing alternative coping strategies (i.e. goal-clarification, response construction and response selection). In several studies investigating anxiety in youth, adolescents receiving CBT and CBGT demonstrated improved interpersonal functioning, enhanced coping strategies and reduced overall anxiety at post-treatment (Kendall, 1994; Barrett, Dadds & Rapee, 1996; Baer & Garland, 2003). Furthermore, parents have observed improvements in their children's social competence and reductions in their symptoms of depression and anxiety after receiving CBT (Kendall, 1994; Kendall, Hudson, Gosch, Flannery-Schroeder & Suveg, 2008). However, the majority of these studies have been conducted with Caucasian youth, whereas only two studies have investigated the efficacy of CBT with anxious Latino youth (Pina, Zerr, Villalta, & Gonzales, 2012).

Although the benefits of CBT and CBGT have demonstrated effectiveness in reducing anxiety in the child and adolescent population, a proportion of children and adolescents continue to demonstrate symptoms of an anxiety disorder after receiving CBT (Cartwright-Hatton et al., 2004). Specifically, it is estimated that 40 percent of children and adolescents treated with CBT or CBGT show limited improvement (Reynolds, Wilson, Austin & Hooper, 2012). One possible hypothesis explaining the

lack of significant improvement for some children and adolescents is that perfectionism may contribute to the persistence of anxiety post-treatment (Mitchell, Newall, Broeren & Hudson, 2013; Nobel, Manassis, Wilansky-Traynor, 2012). To test this hypothesis, researchers have attempted to analyze the relationship between maladaptive perfectionism and post-treatment anxiety symptom severity. Thus far, two studies provide mixed results, but suggest that maladaptive perfectionism may predict reduced treatment effects in CBGT for adolescents (Mitchell et al., 2013; Nobel, et al., 2012). Moreover, individuals that demonstrate extremely inflexible problem solving strategies, or cognitive inflexibility, may find it more difficult to engage in a CBT intervention (Johnco, Wurthrich, & Rapee, 2015). Additionally, there is some suggestion that improvements in cognitive flexibility may improve CBT treatment outcome for anxiety (Mohlman 2013). However, cognitive flexibility is a construct that has only recently begun to be studied in anxiety treatment studies. Given that maladaptive perfectionism can be conceptualized by various cognitive biases and cognitive distortions, and that cognitive inflexibility can be conceptualized as a type of cognitive deficit, it seems plausible that CBT and CBGT would be an effective intervention for modifying these potentially maladaptive components of information processing.

The potential to reduce maladaptive perfectionism with CBGT is an area of research gaining increased attention (Mitchell et al., 2013; Nobel et al., 2012). Sound studies suggest that CBT is useful in reducing several aspects of perfectionism including concern over mistakes, doubts about actions, as well as unrealistic personal standards (Ashbaugh et al., 2007; Lundh & Ost, 2001). Moreover, CBGT has been demonstrated to

reduce multiple maladaptive facets of perfectionism in an anxious adolescent sample (Mitchell et al., 2013; Nobel et al., 2012). These findings suggest that CBGT may serve as an effective intervention to reduce the maladaptive aspects of perfectionism. Conversely, although cognitive inflexibility strongly predicts increased depression (Kashdan & Rottenburg, 2010), anxiety (Tirch, Leahy, Silberstein & Melwani, 2012) and distress (Loyd, Bond & Flaxman, 2013), only preliminary studies have begun to investigate the potential to improve cognitive flexibility with a CBT based intervention (Kashdan & Rottenburg, 2010), with results showing mixed findings thus far (Johnco et al., 2015; Johnco et al., 2014).

Purpose of the Study

Although there is growing support for the use of CBGT for the treatment of anxiety disorders during adolescence, some adolescents continue to experience clinical symptoms of anxiety, post-treatment (Cartwright-Hatton et al., 2004). The information processing model of anxiety (Daleiden & Vasey, 1997) suggests that cognitive distortions, biases, and deficits (Kendall, 1987) during the interpretation, response construction and response selection stages (Crick & Dodge, 1994) may lead to the development and maintenance of anxiety. To date, few studies have considered perfectionism and cognitive flexibility's possible impact during treatment. Furthermore, few studies have investigated the efficacy of CBGT for anxiety in Latino youth. The purpose of this study is to investigate the possible effects of CBGT on perfectionism and cognitive flexibility in a sample of anxious Latino adolescents. Specifically, it is hypothesized that domains of maladaptive perfectionism will decrease and cognitive

flexibility will increase following a CBGT intervention. Additionally, the potential relationship between maladaptive perfectionism, cognitive flexibility, and symptoms of anxiety will be explored. If elevated maladaptive perfectionism is shown to be a predictor for elevated levels of anxiety in CBGT for adolescents at post-treatment, it would suggest that it may be beneficial to target perfectionistic biases, specifically, during treatment. Moreover, if cognitive inflexibility serves as a cognitive deficit, it is possible that elevated cognitive flexibility will predict reduced symptoms of anxiety following CBGT for adolescents. Furthermore, results could encourage CBT practitioners to identify maladaptive perfectionism and cognitive flexibility in anxious adolescents as targets of treatment, thus possibly enhancing the overall effectiveness of treatment.

The Use of Cognitive Behavior Group Therapy to Reduce Maladaptive Perfectionism and Improve Cognitive Flexibility in Anxious Youth

Fear is considered a common emotion that is experienced during childhood and adolescence in response to many situations (Moore, March, Albano, & Thienemann, 2010). For example, making new friends, preparing for tests, giving speeches, and participating in sports are common situations in which an adolescent might experience the feeling of fear. Whereas the term, fear, typically refers to the emotional response to a threatening stimulus, anxiety, although related to fear, commonly refers to a fearful reaction that is out of proportion to the situation (Sweeny & Pine, 2004). Although not always pleasant, fear and anxiety may function as motivators to excel at the numerous activities an adolescent may encounter in various situations. Specifically, fear and anxiety serve as signals to potential impending danger, thus activating the flight or fight response (Sweeny & Pine, 2004), a neurobiological system necessary for protection and survival (Barlow, 2002). However, the experience of excessive fear and anxiety to a degree that is counterproductive and disproportionate to the situation, may lead to the development of an anxiety disorder, which can cause a great deal of distress and dysfunction during adolescence (Silverman, 1987; Barlow, 2002).

Anxiety-related problems during adolescence are associated with a host of negative consequences spanning several domains including interpersonal relationships, academic performance and familial interactions (Kessler et al., 2005; Pine, 1997). Compared with other psychiatric diagnoses, anxiety disorders are the second highest predictor for not completing high school or college, second only to conduct disorder

(Kessler, Foster, Saunders & Stang, 1995). Furthermore, among high school graduates, anxiety disorders have the highest predictive value for not attending college when compared with mood, substance abuse and conduct disorder (Kessler, Foster, Saunders & Stang, 1995). In terms of comorbidity, there is a high probability that youths with an anxiety disorder will develop a depressive disorder (Costellow, Egger, & Angold, 2004), and those youth diagnosed with both a depressive and anxiety disorder are at greater risk for substance abuse (Clark & Neighbors, 1996) and suicidal behavior (Lewinsohn, Rhode & Seeley, 1995). Thus, anxiety remains an important construct for study within a youth population.

Despite the growing body of knowledge on prevalence and impact of anxiety disorders, much of the research examining psychological adjustment is based largely on Caucasian youth, with little focus on ethnic minorities (Ginsburg & Silverman, 1996; Sue, 2009; Anderson & Mayes, 2010; Varela, Niditch, Hensley-Maloney, Moore, & Creveling, 2013). According to the U.S. Census Bureau (2009), Latinos make up the nation's largest minority group, with approximately 15.4 million Latinos under the age of 18 accounting for 18% of students in grades K-12. In addition to being the largest ethnic minority group, Latino adolescents tend to have the highest prevalence rate of anxiety (Roberts, Roberts, & Xing, 2012). Alegria et al. (2008) estimated a lifetime prevalence rate of 15.7% for anxiety disorders among Latinos. Despite the high prevalence of anxiety disorders in Latino adolescents, only a few studies have investigated potential predictors of anxiety in this population (Anderson & Mayes, 2010; Varela et al., 2013).

Researchers have attempted to identify culture-specific theories related to the development of internalizing disorder, such as anxiety, in Latino youth. It has been suggested that Latino culture emphasizes the restraint of emotional reactivity and the placing of one's needs secondary to the needs of the family unit, values represented in collectivistic cultures (Varela, Weems, Berman, Hensley, & Rodriguez de Bernal, 2007). Additionally, the cultural value of *simpatía* suggests that individuals should strive to be agreeable, empathize with others, and be respectful of others, even if it causes personal distress (Anderson & Mayes, 2010). Specific to the expression of anxiety disorders in Latino youth, Valera and colleagues (2007) found that they are more likely to endorse a higher frequency of somatic symptoms when compared wirh Caucasian peers demonstrating similar anxiety disorders. Thus, it has been hypothesized that because emotional expression of anxiety may not be normative in Latino culture, somatic expression may be more culturally accepted. However, these findings are preliminary and further research is needed to explore these cultural factors. Regardless of culture, the recognition of these detrimental impacts of anxiety disorders in youth has led to increased attention on studying potential etiological and maintaining factors. Thus, several theories have been proposed to conceptualize the etiology and maintenance. One well-accepted model of youth anxiety is the cognitive model of anxiety.

Cognitive Model of Anxiety

Cognitive models of anxiety emphasize the regulatory role of expectation and interpretation of threatening events (Sweeny & Pine 2004), as well as the impact of schemas, cognitive distortions, and cognitive deficits on information processing (Beck,

1976; Kendall & Ronan, 1990; Crick & Dodge, 1994; Daleiden & Vasey, 1997). Schemas function as a cognitive organization system through which adolescents relate, adapt and assimilate new information with preexisting information (Kendall & Ronan, 1990), whereas cognitive distortions and cognitive deficits are maladaptive thought processes that may create a dysfunctional cognitive bias within their schema (Kendall, 1985). Therefore, adolescents that develop schemas with more cognitive biases such as cognitive distortions and cognitive deficits are more likely to experience a distressing response when faced with a perceived threatening situation (Kendall, 1985). Together, these factors directly influence an adolescent's ability to receive and interpret information, brainstorm possible solutions, and respond to the information in an adaptive way (Beck and Clark, 1997). One specific cognitive model, a six stage information processing model, has been commonly used to conceptualize the development and maintenance of anxiety disorders in adolescents (Crick & Dodge, 1994; Pilecki & McKay, 2011). Each stage of this model represents the processing of threatening environmental and internal information, and is intended to proceed in a sequential order from encoding to enactment (Daleiden & Vasey, 1997; Crick & Dodge, 1997). This progression from encoding to enactment represents a transition from cognitive processing to behavioral responses.

Unique to understanding youth anxiety disorders is identifying activated cognitive distortions, biases, and deficits (Kendall & Ronan, 1990) throughout the six stages of information processing that may lead to the development and maintenance of an anxiety disorder (Daleiden & Vasey, 1997; Pilecki & McKay, 2011). Cognitive processes such

as cognitive distortions, cognitive deficits, and various forms of overthinking may lead to maladaptive biases during each stage of information processing, thus identifying and modifying said processes is key to reducing maladaptive anxiety (Daleiden & Vasey, 1997). Cognitive distortions refer to the misinterpretation of external and internal information that may lead to the development of distressing emotions and maladaptive behaviors (Beck & Clark, 1988; Kendall, 1985), whereas cognitive deficits represent a lack of cognitive resources needed for problem solving strategies (Kendall, 1985). Various forms of overthinking may include cognitive perseveration and worrisome rumination (Flett et al., 2016), which refers to the repeated or chronic concern over various psychosocial stressors (Brosschot, Gerin, & Thayer, 2006). Essentially, individuals that display these types of overthinking remain stuck on a specific concern and are unable to redistribute their attention to other stimuli in their environment. Although there are many ways cognitive distortions, cognitive deficits, cognitive perseveration, and worrisome rumination can lead to developing elevated anxiety (Beck & Clark, 1997; Kendall, 1985), the current six stage information processing model (Daleiden & Vasey, 1997) does not suggest negative cognitive processes that lead to the development and maintenance of youth anxiety disorders. However, empirical evidence supports the notions that anxious adolescents demonstrate general maladaptive cognitive biases related to attentional selectivity, attentional intensity, threat interpretation, goal internalization, and a tendency towards avoidance coping.

Encoding is a stage of information processing during which internal or external information is either attended to or ignored (Crick & Dodge, 1994). Important during

this stage is the role of attention, the allocation of cognitive resources in any given situation. Moreover, the information processing model assumes that individuals have a limited capacity for attention, suggesting that not all stimuli can be attended to all of the time. Two dimensions of attention, attentional selectivity and attentional intensity, are believed to play critical functions during the encoding stage (Daleiden & Vasey, 1997; Crick & Dodge, 1994). Attentional selectivity refers to the process of allocating resources to some stimuli at the expense of ignoring other stimuli that exist in the environment (Daleiden & Vasey, 1997; Crick & Dodge, 1994). Determining which stimuli are attended to is unique to the individual who is processing the information, and this process may also be impacted by specific characteristics of the stimuli (Bijttebier, Vasey, & Bracet, 2003). For example, some adolescents may be more likely to attend to performance-based tasks such as a taking a test. The information processing model would suggest that these adolescents are more likely to be aware of performance-based tasks present in their environment, which would cause them then to ignore other stimuli in their environment. Attentional selectivity refers to the information that is attended to; however, attentional intensity refers to the expended quantity of resources dedicated to selected stimuli (Daleiden & Vasey, 1997; Crick & Dodge, 1994; Bijttebier, Vasey, & Bracet, 2003). For example, adolescents may selectively attend to threat-related stimuli in their environments, but attentional intensity refers to how much time they continue to ruminate and perseverate on the stimuli. It is during the encoding stage that anxious youth tend to show a cognitive bias towards being quite highly selective of potentially threatening stimuli, and once selected, dedicate an extremely intense amount of cognitive

resources on the selected stimuli (Murris & Field, 2008; Daleiden & Vasey, 1997; Bijttebier, Vasey, & Bracet, 2003).

A number of controlled studies have been conducted to investigate the extent to which anxious youth demonstrate a hyperattentional bias for threatening stimuli (Murris & Field). The emotional Stroop task, the visual-probe task, and tasks using emotional faces are three methodologies that have been implemented specifically to test attentional biases in youth. The emotional Stroop task was created to assess the extent to which threat-related words, compared with neutral words, cause interference. Participants are asked to read lists of neutral words or threat-related words printed in different colors, calling out the color of the word. It has been inferred that if it takes longer to say the color of threat-related words, the participant is demonstrating an attentional bias for threat. Thus, it has been hypothesized that anxious youth will take longer to name the colors of threat-related words due to an attentional bias (Puliafico & Kendall, 2006). The majority of findings from these studies support this hypothesis, suggesting that anxious youth are biased, selectively and intensely, to attend to threat-related stimuli. Despite this finding, the validity of the emotional Stroop task has been questioned, with some researchers suggesting that it is difficult to know if this performance deficit is due to an attentional bias or to a negative emotional reaction to the threat-related words, impairing their response time (de Ruiter & Brosschot, 1994; Puliafico & Kendall, 2006; Waters, Henry, Mogg, Bradley, & Pine, 2010).

Another method used to investigate the impact of attentional bias on information processing is the visual-probe task. This task requires participants to view two stimuli

(one threat-related and one neutral) simultaneously on a computer screen. Once the stimuli are removed from the screen, a dot appears in one of the positions of the previously presented stimuli. It is hypothesized that when the participants detect the dot faster, they were likely attending more closely to the stimulus that preceded it. Thus, if a participant detects a dot more quickly when placed in the spot where a threat-related stimulus (i.e., Danger, Stupid, and Painful) was, it is suggested that participants display a bias towards attending to threatening stimuli. In a study comparing the response time on this task of anxious and nonanxious youth (N=24; ages 9-14), results indicate that clinically anxious youth display an attentional bias toward threat-related stimuli, compared with their nonanxious peers (Vasey et al, 1995). Furthermore, results suggest that nonanxious youth do not differ in their reaction time to threat-related or neutral stimuli. These findings support the notion that anxious adolescents display an attentional bias to allocate more of their cognitive resources towards threat-related stimuli during the encoding stage.

With findings from dot-probe task studies as a basis, additional studies have been conducted, utilizing pictures of faces to test the attentional biases of anxious youth (Waters, Henry, Mogg, Bradley, & Pine, 2010; Waters, Mogg, Bradley, & Pine, 2008). The procedures are conducted similarly to the visual-probe task, except the stimuli specifically used are different faces (i.e., angry, happy, and neutral). The participant must respond to a visual probe following either a happy, angry, or neutral face, with faster response times indicating an attentional bias toward the face that preceded the probe. In a sample (n=48) of children (ages 7-12), researchers found that children

demonstrating high levels of generalized anxiety displayed a significant attentional bias toward both angry and happy faces, whereas their nonanxious peers did not show an attentional bias towards either (Waters et al, 2008). In a similar study, 53 children (ages 8-12) participated in a similar procedure, and similar results were produced. A minor change in the procedure was that either a happy or an angry face was simultaneously paired with a neutral face. Results indicate that children reporting higher severity of anxiety (social, generalized, and separations) displayed a significant attentional bias toward angry faces over neutral faces (Waters et al., 2010). These findings provide additional support for the presence of attentional biases in anxious youth when they encode stimuli from their environment. Once attended to in the encoding stage, information is then interpreted for personal meaning and probable outcome.

The *Interpretation* stage refers to process of making cognitive appraisals of information for potential meaning, reason for occurrence and probable outcome (Daleiden & Vasey, 1997; Crick & Dodge, 1994). It is during this stage of information processing that adolescents engage in making sense of their environment and the stimuli they encounter. To understand, specifically, the development and maintenance of anxiety disorders, the role of ambiguous information, attributions, and outcome expectation are highlighted (Daleiden & Vasey, 1997; Crick & Dodge, 1994). During this stage of processing, anxious youth are more likely to perceive ambiguous information as threatening, self-attribute negative events, and expect outcomes to be probable failures (Daleiden & Vasey, 1997). These threat interpretation biases have been consistently observed in anxious youth, when compared with non-anxious youth (Suarez & Bell-

Dolan, 2001; Higa, Daleiden, 2008; Waters, Craske, Bergman, & Treanor, 2008; Micco, Hirshfield-Becker, Henin, &Ehrenreich-May, 2013).

In controlled studies, there is support for the conclusion that anxious youth hold stronger negative associations and negative outcome expectancies with social and school situations, compared with their nonanxious peers (Hullu, Jong, Sportel, & Nauta, 2011). One study investigated the threat-related automatic associations held by socially anxious adolescents (ages 12-15), compared with nonsocially anxious peers, and found that socially anxious adolescents demonstrated a stronger implicit and explicit association between social cue words (i.e., conversation, exam) and negative outcomes (i.e., failure). Implicit association between social cue words and outcome expectancy was measured by the use of an implicit association test; faster response times to pairs of social cues and outcome expectancy words indicated a stronger association between the pair of words. This finding provides support for the interpretation stage of the information processing model of youth anxiety, suggesting that anxious youth hold implicit negative interpretations of their environment compared with their nonanxious peers. Once information has been interpreted, the information processing model suggests that the youth will begin clarifying the outcome that they would like to happen in response to the situation.

After making sense of the incoming information, the *goal-clarification* stage is a process during which the overall goal of a given situation is developed and defined (Daleiden & Vasey, 1997; Crick & Dodge, 1994). Essentially, the adolescent is figuring out the function that the outcome of the situation will serve. It is common that

individuals strive to feel safe when feeling threatened, regardless of whether or not they have elevated anxiety (Daleiden & Vasey, 1997). Thus, given that anxious youth tend to allocate their attention to and interpret various situations as threatening more frequently, the information processing model would suggest that they are prone to feel fearful more frequently (Daleiden & Vasey, 1997; Crick & Dodge, 1994). These propensities to experience fear and feel threatened, suggest that anxious youth are likely to develop goals that will provide the function of feeling safe (Daleiden & Vasey, 1997; Crick & Dodge, 1994). Given that the adolescent can identify what their goal is in a given situation, he/she will then start to generate ideas about how to best achieve his/her safety goal. It is during this process that anxious adolescents will favor avoidance and escape strategies.

In the r*esponse construction* stage, adolescents begin to identify all of the possible strategies they can engage in to achieve the goal they have established in the previous, goal-clarification stage (Daleiden & Vasey, 1997; Crick & Dodge, 1997). A common problem for adolescents with an anxiety disorder is the tendency to demonstrate a bias towards escape and/or avoidance responses (Daleiden & Vasey, 1997). An example of this would be an adolescent that has concluded he/she needs to feel safe from a threatening test, and decides that the only solution is to stay home and appear sick to avoid the threat. Empirical findings have consistently identified the fact that increased anxiety is associated with a greater tendency to generate avoidance goals (Dickson, 2006; Rodebaugh, 2007). Specifically, a study conducted by Dickson and Macleod (2004) investigated the types of goals that a sample (n=112) of anxious adolescents (ages 16-18) would be more likely to endorse and described strategies on how to achieve those goals.

Participants were provided with an approach prompt ("In the future it will be important for me to…") and an avoidance prompt ("In the future it will be important for me to avoid…") and were asked to generate as many ideas as possible that were personally relevant to them. Next, they were asked to describe how they would achieve their two most important approach and avoidance goals. Overall, results indicated that anxious adolescents displayed a tendency to develop more avoidance goals and plans than did their nonanxious peers. Although anxious participants generated more avoidance goals overall, anxious and nonanxious adolescents did not differ in regard to the number of approach goals they developed. However, in relation to developing plans for these approach strategies, anxious adolescents tend to be less specific about how to execute the plans when compared with their nonanxious peers (Dickson & Macleod, 2004). These findings suggest that anxious adolescents not only display a bias toward avoidance-base solutions, but they also lack the ability to develop a detailed strategy that involves approaching a potential difficulty.

To further investigate the goal development and response construction processes of anxious adolescents, Dickson and Moberly (2013) studied goal internalization and outcome expectancy in a sample (n=76) of anxious adolescents (ages 16-18 years). The aim of this study was to explore further, the internal motivation for approach and avoidance goals developed by anxious adolescents. Specifically, the researchers sought to understand the motivation for anxious adolescents to develop approach-based strategies, in addition to avoidance-focused goals. Results indicate that anxiety is strongly correlated with the motivation underlying developed goals, depending on the

type of goal they are identifying as personally relevant (approach or avoidance). Specifically, the study highlights the tendency for anxious adolescents to identify avoidance goals with an external regulatory motivation (i.e., "I would pursue this goal because somebody else wants me to."), and approach goals with an introjected regulatory motivation ("I would pursue this goal because I would feel ashamed, guilty, or anxious if I did not."). Thus, these findings reveal that even when adolescents are identifying approach-based goals, the underlying motivator is to avoid negative emotional consequences. In addition to displaying this avoidance bias, the response construction stage is negatively impacted by anxious adolescents' deficits in developing alternative response strategies (Daledien & Vasey, 1997).

In addition to being more likely to develop avoidance responses, anxious adolescents display a tendency to limit their potential options, as opposed to thinking through several different options (Daleiden & Vasey, 1997). This may be observed as the tendency to over rely on one strategy to resolve the perceived problem. This lack of ability to generate multiple potential responses to a threatening situation is referred to as a cognitive deficit (Daleiden & Vasey, 1997; Kendall, 1985), and typically will lead to a problematic and rigid response selection.

Transitioning from a cognitive process to behavioral activation preparation, *response selection* refers to the cognitive processes in which the adolescent decides the option/response that will best achieve his/her primary goal in relation to the incoming information (Daleiden & Vasey, 1997; Crick & Dodge, 1997). Given the fact that anxious adolescents tend to generate few options, with a bias towards thinking of

escape/avoidance behaviors, it makes sense that they tend to select problematic escape/avoidance responses (Daleiden & Vasey, 1997). Moreover, when weighing the potential harm and the benefit of avoidance versus approaching the threatening situation, they tend to focus on the potential harm of facing the fear situation instead of the long term benefit of overcoming avoidance. For example, a socially anxious adolescent may tend to select skipping school as an option to avoid a feared test, because he/she thought of fewer alternative options that may achieve that same goal of feeling safe. Additionally, that student may feel more highly motivated by the fear of approaching the test. In addition to escape/avoidance behaviors, anxious individuals tend to engage in safety behaviors to reduce anxiety related to the perceived threat (Clark & McManus, 2002). Although these behaviors may provide temporary relief from anxiety, reliance on such behaviors will typically increase problematic outcomes, such as self-focused attention and anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). Furthermore, although the observation of safety behaviors has typically been discussed in reference to adults, safety behaviors have been observed in children and adolescents (Kley, Tuschen-Caffier, & Heinrichs, 2012). Essential to predicting whether or not these safety behaviors and/or avoidance-based strategies are repeated are the consequences of the behaviors once they are enacted

The *enactment* stage refers to the process by which the adolescent follows through with the decided plan of action (Daleiden & Vasey, 1997; Crick & Dodge, 1994). As a result, he/she will receive either reinforcement or punishment for the selected response, thus increasing or decreasing the likelihood of that response, respectively (Daleiden &

Vasey 1997). If the selected strategies achieve the intended goal, individuals will likely engage in that behavior more frequently. Although these six stages provide a concise framework for understanding the information processing of adolescents, cognitive distortions and cognitive deficits (Kendall, 1985) within these stages provide clinically relevant information regarding the development, maintenance, and potential treatment of anxiety disorders in youth (Daleiden & Vasey, 1997). As discussed, these distortions and deficits include general biases in attentional selectivity and intensity, threat interpretation, goal formulation, and coping strategy development and selection. However, little is known about specific cognitive distortions and deficits.

A trait highly associated with cognitive biases such as cognitive distortions, cognitive perseveration, and worrisome rumination is maladaptive perfectionism. Maladaptive perfectionism may be active throughout several stages of information processing, leading to a negative bias in regard to those environmental stressors that adolescents attend to, how intensely they attend to these stressors, and the threat appraisal or interpretation of the stressors. Similarly, cognitive flexibility is characterized by the extent to which an individual can consider a problem from multiple perspectives and respond to the problem in an adaptive way. Thus, if an adolescent demonstrates cognitive inflexibility, this can be conceptualized as a tendency to display various forms of cognitive deficits. Cognitive deficits associated with cognitive inflexibility can negatively affect how an adolescent respond to psychosocial stressors during various stages of information processing. Cognitive inflexiblity can potentially limit an anxious

adolescent's ability to problem solve, to brainstorm alternative solutions, and to cope with various psychosocial stressors in their environment. .

Maladaptive Perfectionism. Currently, perfectionism is defined as striving to achieve the highest expectations possible and becoming greatly disappointed if those expectations are not met (Frost, Marten, Lahart & Rosenblate, 1990; Hewitt & Flett, 1991). As with most personality traits, perfectionism is viewed as a dimensional construct, ranging from a positive factor in achievement (Hamacheck, 1978) to a maladaptive aspect of neuroticism (Flett, Hewitt, & Dyck, 1989; Pacht, 1984; Weisberger & Lobsenz). Although potentially adaptive to one's situation, maladaptive perfectionism is associated with a host of psychological difficulties including feelings of failure, guilt, indecisiveness, procrastination, shame and low self-esteem (Hollender, 1965; Pacht, 1984; Solomon & Rothblum, 1984; Sorotzkin, 1985). Furthermore, maladaptive perfectionism has been linked to increased social stress, psychological distress and elevated symptoms of depression and anxiety (Blatt, 1995; Ehns, 1999; Cox & Enns, 2003), alcohol dependence, anorexia and personality disorders (American Psychiatric Association, 1994; Pacht 1984; Burns & Beck, 1978).

In relation to cognitive models, maladaptive perfectionism has been found to be strongly associated with various types of overthinking such as cognitive perseveration and worrisome rumination (Flett et al., 2016), as well as automatic cognitive biases such as an overreliance on dichotomous thinking (Davis & Wosinski, 2012; Egan, Piek, Dyck, & Rees, 2007). It is possible that maladaptive perfectionism, characterized by the tendency to set exceedingly high expectations (Frost, Marten, Lahart & Rosenblate, 1990;

Hewitt & Flett, 1991) and engage in dichotomous thinking (Davis & Wosinski, 2012; Egan, Piek, Dyck, & Rees, 2007), may negatively affect information processing of psychosocial stressors during the encoding, interpretation, and goal-clarification stages (Daleiden & Vasey, 1997). For example, perfectionistic adolescents may tend to draw their attention toward performance-related tasks and spend a great deal of time perseverating on such tasks. They may further interpret these tasks as being potential threats to success and continue to worry and ruminate on the potential, often dichotomous, outcomes (e.g. total success or complete failure). Thus, a perfectionistic adolescent's goal will likely be to avoid failure, which can be achieved only by being totally successful. He or she is not totally successful if not in accord with the rigid expectations or rigid expectations he or she thinks others have set (Hewitt & Flett, 1991). This perception of failure is likely to trigger a high degree of psychological distress in perfectionistic adolescents (Nobel, Manassis & Wilansky-Traynor, 2012), which can further impact how they respond and react to the stressor. To better understand the role that perfectionism may play in information processing, it is useful to consider the unique differences between two subtypes of maladaptive perfectionism, self-oriented perfection is (SOP) and socially prescribed perfectionism (SPP) through the scope of a multidimensional model (Hewitt & Flett, 1991).

The multidimensional model of perfectionism. The multidimensional model of perfectionism provides a framework that distinguishes between two subtypes of maladaptive perfectionism, self-oriented perfectionism (SOP) and socially-prescribed perfectionism (SPP; Hewitt & Flett, 1991). The core difference between these two

dimensions lies in the origin of the rigidly high expectations. Individuals demonstrating more SOP tend to impose high expectations on themselves, but those with greater SPP tend to perceive others in their environment as holding them to high expectations. In regard to conceptualizing maladaptive perfectionism as a maladaptive cognitive bias operating throughout the cognitive information processing model (Daleiden & Vasey, 1997), it is important to recognize the cognitive processing differences between SOP and SPP present in perfectionistic youth.

SOP is the tendency to set unreasonably high standards, with a strong drive to achieve them perfectly (Hewitt & Flett, 1991; Hewitt et al., 2002; Hewitt et al., 2011). Not only do these individuals hold a high standard for themselves (Hewitt & Flett, 1991), but they also engage in self-criticism when these standards are not met (Egan, Wade, & Shafran). This high degree of value placed on striving for self-determined high standards, combined with the negative self-criticism when the standards are not met, suggests a dichotomous style of cognitive processing. Dichotomous thinking is a type of cognitive distortion that is commonly predictive of increased feelings of anxiety (Beck and Clark, 1997). This type of cognitive operation could lead to a negative attentional bias during the *encoding* stage of information processing (Daleiden & Vasey, 1997). For example, adolescents demonstrating high SOP may selectively attend to situations involving success or failure. Although this relationship has not been studied in youth, there is preliminary empirical support of this relationship in adults (Kobori & Tanno, 2012).

To test the hypothesis that individuals displaying higher, self-imposed perfectionistic standards (SOP) are prone to an attentional bias toward failure and mistakes, a study was conducted with 245 undergraduate students at a Japanese university (Kobori & Tanno, 2012). Participants were administered a version of the emotional Stroop task to test for attentional biases toward mistakes and failures. The words used in this task were categorized as failure/mistake (mistake, failure, fault, flaw, slip, unsuccessful, error, and imperfection) or as neutral (air, temperature, pencil, weather, newspaper, map, furniture, and printer), and participants were required to name the color in which these words were printed. Attentional bias toward mistakes and failures was indicated if the participants took a longer period of time to name the color of the words in the mistake/failure category (Kobori & Tanno, 2012). Results from this study indicate that although they did not take longer to respond to failure/mistake words, compared with neutral words, individuals demonstrating higher levels of SOP did take longer to respond to failure/mistake words than individuals with lower levels of SOP. This may suggest that individuals displaying characteristics of SOP hold an attentional bias towards stimuli related to making mistakes and/or failure. However, continued empirical investigation is needed. In addition to attending to failure and/or mistake stimuli, it is possible that self-oriented perfectionists dedicate a large quantity of time perseverating on the situation in order to achieve perfectionistic standards, indicating a high degree of motivation to be successful and to avoid failure.

The role of motiviation is a notable aspect of SOP because it suggest not only that these individuals tend to strive for their high standards, but also demonstrates their high

motivation to avoid perceived failures (Hewitt & Flett, 1991). Unfortunately, it has been shown that there is a low probability for individuals to succeed at perfectionistic standards, thus leading them to engage in self-blame (Hewitt, Mittelstaed, & Wollert 1989) and experience low self-regard (Hoge & McCarthy, 1983). With such a great degree of motivational and cognitive efforts focused on striving to succeed at their own high standards, in order to avoid failure, it is not surprising that individuals demonstrating SOP tend to develop elevated anxiety (Flett et al. 1989) and subclinical depression (Hewitt & Dyck, 1986).

In contrast to SOP, SPP refers to the rigid belief that other individuals set unrealistically high expectations for them (Hewitt & Flett, 1991; Hewitt et al., 2002). Furthermore, individuals with SPP tend to believe others will evaluate them harshly when the expectations are not met (Hewitt & Flett, 1991). Important to note is that the SPP individual assumes, rather than actually knows, what standards others hold. This process is similar to mind-reading (Beck & Emery, 1985), a type of cognitive distortion that is very likely to lead to increased feelings of anxiety (Beck and Clark, 1997). This cognitive distortion is likely activated during the *encoding* stage, causing the adolescent to attend selectively to situations perceived as performance-based. In addition to assuming others hold exceedingly high standards for them; it is not uncommon that those with greater SPP believe they cannot meet the demands of the socially prescribed standards, resulting in increased self-criticism and fear of negative evaluation (Hewitt & Flett, 1991). Given this increased likelihood of experiencing self-criticism and fear of negative evaluation, it is not surprising that higher scores of SPP are strongly predictive

of elevated symptoms of social anxiety disorder (Alden, Bieling & Wallace, 1994; Jain & Sudhir, 2010).

Another characteristic of the cognitive process involved with SPP that may lead to negative emotional reactions is the degree of perceived uncontrollability and ambiguity (Hewitt & Flett, 1991). In general, adolescents with elevated SPP operate within a great deal of ambiguity and perceived lack of control over outcomes. As mentioned, they perceive others to hold exceedingly high standards, even though it is unknown what others are thinking. This perception is problematic because it has been established that when individuals perceive their environment to be ambiguous and uncontrollable, they are likely to develop a bias toward threatening stimuli (Suarez & Bell-Dolan, 2001; Higa, Daleiden, 2008; Waters, Craske, Bergman, & Treanor, 2008; Daleiden & Vasey, 1997). If the vast majority of stimuli being interpreted are perceived as threatening, the likelihood to experience elevated levels of anxiety increases (Waters, Craske, Bergman, & Treanor, 2008). This process is relevant to understanding the potentially maladaptive role that perfectionistic thinking may play during the *interpretation* stage of information processing. The perception of ambiguity and lack of control elicits a bias towards perceiving situations as threatening for SPP adolescents, leading to the development of a cognitive vulnerability that may lead to excessive anxiety. Overall, adolescents demonstrating greater SPP and SOP tend to display various negative cognitive biases, such as automatic cognitive distortions, cognitive perseveration, and worrisome rumination throughout the various stages of the information processing model of youth anxiety disorders.

Despite recent increased attention on studying maladaptive perfectionism, much of the focus has been on samples of Caucasian individuals. In fact, only two relatively recent studies have empirically investigated the relationship between maladaptive perfectionism in Latino samples (Ortega, Wang, Slaney, Hayes, & Morales, 2013; Chang, Hirsch, Sanna, Jeglic, & Fabian, 2011). One study on Latina college students (n=121) indicates that maladaptive perfectionism significantly predicts elevated depression, anxiety and loneliness (Chang, Hirsch, Sanna, Jeglic, & Fabian, 2011), suggesting a substantial need to investigate, further the perfectionism in the population. Ortega and colleagues (2013) expanded on this topic by studying 207 Latino undergraduates to explore, further the role maladaptive perfectionism within the Latino culture. Results support the notion that perfectionistic Latinos are more prone to anxiety, depression, and deflated self-esteem. Moreover, and perhaps relevant to Latino culture, was the finding that participants' perceptions of how well they are meeting their family's expectations and standards is also predictive of anxiety, depression, and deflated self-esteem (Ortega et al., 2013). Thus, it is critical that continued research be conducted on the role of perfectionism in Latinos of all ages.

Although maladaptive perfectionism may be characterized by cognitive biases that negatively impact information processing throughout during the *encoding, interpretation, and goal-clarifying* stages (Daleiden & Vasey, 1997), deficits in cognitive flexibility during the *response construction* and *response selection* stages (Daleiden & Vasey, 1997) may limit the anxious adolescent's problem solving, brainstorming, adaptive coping. This is useful to consider from a treatment standpoint because targeting

specific perfectionistic cognitive biases and deficits in cognitive flexibility may enhance the overall treatment of anxiety associated with these cognitive operations because improving cognitive deficits should allow for better coping in adolescents.

Cognitive Flexibility. Cognitive flexibility, described as the ability to adapt to challenging situations, modify one's perspective and change behavior in response to the demands of the environment (Kashdan & Rottenburg, 2010; Hayes, Luoma, Bond, Masuda & Lillis, 2006), may play an important role in the processing of information for anxious youth. It is generally considered to be a general cognitive ability characterized by being able to shift between and consider multiple perspectives (Rende, 2000). When anxious adolescents demonstrate difficulties in being able to brainstorm multiple solutions to psychosocial stressors in an adaptive or flexible way, this can be considered a deficit in cognitive flexibility. Cognitive deficits refer to the lack of processing abilities in situations that require problem solving (Kendall, 1985), thus a distinct feature of cognitive inflexibility in adolescents is the tendency to use potentially maladaptive cognitive strategies excessively and rigidly, regardless of the situation (Greco, Lambert & Baer, 2008; Crosby, Bates, & Twohig, 2011).

Cognitive rigidity is viewed as a failure to respond to novel stressors in the environment (Rende, 2000). It is somewhat unclear about what may cause an individual to engage in inflexible cognitive rigidity; however, it is generally viewed as precursor to deficit in coping with psychosocial stressors (Eslinger & Grattean, 1993). By not adjusting problem solving strategies when confronted with psychosocial stress, an individual with poor cognitive flexibility may continue to use previously successful

strategies even when they are not effective in new situations. This type of inflexible response has also been considered as a form of cognitive perseveration (Daigneault, Braun, & Whitaker, 1992), a type of cognitive operation also linked with maladaptive perfectionism (Flett et al., 2016). Although there is a dearth of research specifically studying the link between cognitive flexibility and anxiety, previous studies suggest that rigid approaches to problem solving have been linked to the maintenance of depressive mood states (Moore, 1996; Teadale, Taylor, Cooper, Hayhurst, & Paykel, 1995).

Consistent with the information processing model of anxiety disorders, a deficit in cognitive flexibility may have a deleterious affect on information processing during the *goal clarification* and *response construction* stages (Daleiden & Vasey, 1997; Crick & Dodge, 1994). More specifically, anxious adolescents presented with a perceived threatening situation will often demonstrate a deficit in the ability to develop and select adaptive coping strategies that enhance emotional regulation (Pilecki & McKay, 2011). Instead, anxious adolescents will tend to disproportionately rely upon escape and avoidance strategies instead of adaptive problem-focused approaches (Daleiden &Vasey, 1997). Thus, it is no surprise that anxious individuals with a deficit in cognitive flexibility more commonly demonstrate increased social inhibition and experiential avoidance (Hayes et al., 2006; Kashdan & Rottenburg, 2010; Williams & Ciarrochi, 2012). Therefore, in treating adolescent anxiety disorders, it may be useful to target cognitive inflexibility and maladaptive perfectionism, conceptualizing these as cognitive distortions and cognitive deficits, respectively. If using a cognitive model to conceptualize these constructs, a cognitive behavior intervention could be beneficial to reduce maladaptive

perfectionism and increase cognitive flexibility, thus enhancing the overall treatment of anxiety in adolescents.

Cognitive Behavior Therapy

The use of cognitive behavior therapy (CBT) to treat anxiety disorders in youth was originally purposed in light of the robust empirical support recognized in treating adults with anxiety disorders, and thus has continued to gain empirical support over the past two decades (Cartwright-Hatton, Roberts, Chitsabesan, Fothergrill, & Harrington, 2004; Reynolds, Wilson, Austin, & Hooper, 2012). CBT for anxious youth typically includes providing psychoeducation, relaxation training, identification of cognitive errors, modification of distorted thinking patterns, development of fear hierarchies, and exposure procedures. When compared with waitlist and general support conditions, CBT interventions have reduced anxiety symptoms in children and adolescents in several controlled studies (Cartwright-Hatton, Roberts, Chitsabesan, Fothergrill, & Harrington, 2004; Reynolds, Wilson, Austin, & Hooper, 2012). In addition to providing CBT in an individual format, the use of CBT has been implemented in a group format (CBGT), and consequently has demonstrated similar effectiveness.

In light of the encouraging empirical support for CBT and CBGT to treat anxiety disorders in youth, researchers have begun to explore the feasibility of delivering these interventions to subclinical samples. These studies include testing the efficacy of CBT and CBGT in community and school-based settings (Ginsburg & Becker, 2009). To date, there is encouraging support that the delivery of CBT/CBGT in school-based and

community samples is feasible and efficacious in reducing symptoms of anxiety, when compared with control conditions (Cartwright-Hatton, Roberts, Chitsabesan, Fothergrill, & Harrington, 2004). Given the overall, encouraging empirical support in clinical trials, community samples, and school-based settings, further studies to investigate the effectiveness of CBT/CBGT for youth anxiety-related difficulties are indicated. Specifically, recent studies have begun to investigate ways to increase the robustness of empirical support, similar to that found in the literature concerned with adult anxiety

Although many children and adolescents with an anxiety disorder experience a significant reduction of symptoms following CBT or CBGT interventions, some youth continue to meet criteria for an anxiety disorder post CBT/CBGT treatment (Reynolds, Wilson, Austin, & Hooper, 2012). Researchers have begun to explore factors that may contribute to less than optimal treatment outcomes for those children and adolescents. One suggestion, originating from adult literature, is that perfectionistic cognitive biases may reduce overall treatment effects of CBT for anxiety disorders (Ashbaugh et al., 2007; Chik, Whittal, & O'Neil, 2008). Although the underlying process has not been specifically identified, previous findings in the adult literature suggests that higher levels of maladaptive perfectionism may interfere with the therapeutic alliance and social relationships, thus impeding the overall treatment effectiveness (Shahar, Blatt, Zuroff, Krupnick, & Sotsky, 2004). Moreover, empirical evidence suggests that perfectionistic thinking patterns predict a poor response to CBT in adult social phobia (Ashbaugh et al., 2007; Lundh & Ost, 2001; Rosser et al., 2003) and obsessive compulsive disorder (Chik et al., 2008). Although the link between maladaptive perfectionism and anxiety disorder

treatment has received empirical support, fewer studies have been conducted with youth samples.

Although preliminary, there is some indication that anxious children and adolescents that display overly perfectionistic and inflexible thinking patterns, may not benefit optimally from a CBT/CBGT intervention targeting symptoms of anxiety (Nobel, Manassis, & Wilansky-Traynor, 2012; Mitchell, Newall, Broeren, & Hudson, 2013). Given that maladaptive perfectionism may serve as a cognitive distortion in information processing, reducing perfectionistic thinking may lead to a greater reduction of anxiety symptoms at post CBT treatment. Moreover, the role of cognitive flexibility in treatment outcome for CBT has begun to receive some attention in empirical studies; however, there is a dearth of literature on this topic. It has been suggested that individuals displaying excessively inflexible cognitive styles may struggle with the cognitive restructuring involved in CBT/CBGT interventions (Johnco, Wuthrich, & Rapee, 2013; Johnco, Wuthrich, & Rapee, 2014). Theoretically, cognitive inflexibility could serve as a cognitive deficit in anxious youth, thus improving flexible thinking may lead to a greater reduction of anxiety symptoms at post CBT treatment. If perfectionism serves the function of a cognitive distortion and cognitive flexibility that of a cognitive deficit, it seems likely that a CBT intervention would be effective in modifying these constructs involved in information processing, thus improving the overall treatment of anxiety in youth samples.

The use of CBGT to reduce maladaptive perfectionism has been explored in a number of settings, including in the context of treating anxiety symptoms in adolescents

in a school-based setting. One important study investigated the use of CBGT to reduce maladaptive perfectionism, and the role of maladaptive perfectionism on the treatment of anxiety and depression in a youth sample (Nobel, Manassis, & Wilansky-Traynor, 2012). In this study, 78 students with elevated levels of anxiety and depression were randomly assigned to either CBGT or to a control structured activity group named "The Feelings Club." Both groups were structured, facilitated by a trained child therapist, held after school, spanned the course of 12 weeks, and utilized homework assignments (Nobel, Manassis, & Wilansky-Traynor, 2012). The primary difference was that the CBT condition utilized a manualized program, focusing on identifying negative thoughts and developing coping skills to manage them. Results indicate the use of a 12-week school-based, structured group format, regardless of the use of CBT techniques, has the potential to reduce SOP (Nobel, Manassis, & Wilansky-Traynor, 2012). Despite the reduction of SOP in both groups, SPP was not significantly reduced over the span of the group intervention (Nobel, Manassis, & Wilansky-Traynor, 2012). Additionally, pre-treatment SOP predicted a greater reduction of depressive symptoms at post-treatment; however, this relationship was not found in predicting post-treatment anxiety symptoms. Moreover, there were no significant reductions of anxiety symptoms in either group (Nobel, Manassis, & Wilansky-Traynor, 2012). These findings are not greatly supportive of the use of CBT to reduce perfectionism in youth; however, there are some indications to be noted.

One important aspect of the Nobel, Manassis, and Wilansky-Traynor (2012) study that may explain the lack of anxiety symptoms reduction, is that the CBGT condition did

not implement exposure procedures. Exposure procedures have been identified as a key component of CBT/CBGT interventions when treating anxiety disorders in youth and in adult samples (Kazdin & Weisz, 1998; Kendall et al., 2005). Given the fact that there was no overall reduction of anxiety symptoms in either group, it would not be expected that pre-treatment perfectionism could predict post-treatment anxiety symptoms. However, it is encouraging that elevated pre-treatment SOP scores did predict greater reductions in depressive symptoms at post-treatment because this may be suggestive that improving perfectionistic thinking may improve psychological functioning in other domains. Additionally, the researchers found that SOP reduced at the end of the 12-week sessions in both conditions (Nobel, Manassis, & Wilansky-Traynor, 2012), which may support the notion that perfectionistic distortions may be malleable in youth.

In further investigations concerning the role of perfectionism in CBGT for anxious youth, a recent study was conducted to test whether or not pre-treatment perfectionism levels impact the treatment of anxiety in school-aged youth, and if a CBGT intervention can reduce perfectionism scores from pre- to post-treatment (Mitchell, Newall, Broeren, & Hudson, 2013). This study included 67 clinically anxious youth (ages 6-13), who participated in ten-week CBGT program for anxiety. The CBGT intervention, the "Cool Kids Program" (Lyneham, Abbott, Wignall, & Rapee, 2003), is a structured and manualized treatment that incorporates psychoeducation, cognitive restructuring, parent skills, in-vivo exposures, social skills training, and coping skills development. Results indicate that the intervention significantly reduced symptoms of anxiety pre- to post-treatment, as well as at a six month follow-up (Mitchell, Newall,

Broeren, & Hudson, 2013). Additionally, results indicated that higher, self-reported pre-treatment scores of SOP significantly predicted higher scores of maternal ratings of child anxiety at post-treatment, and although not statistically significant, higher self-report pre-treatment scores of SOP demonstrated a marginal trend towards predicting higher clinician-rated scores of child anxiety (Mitchell, Newall, Broeren, & Hudson, 2013). In addition to these findings, the researchers found that scores of SOP significantly reduced from pre- to post-treatment (Mitchell, Newall, Broeren, & Hudson, 2013). These findings support a link between higher levels of pre-treatment perfectionism and greater severity of post-treatment anxiety symptoms, thus suggesting a potentially maladaptive impact on the therapeutic process of treating youth anxiety with CBGT. Overall, these findings encourage the utility of CBGT to reduce maladaptive perfectionistic standards that the child or adolescent places on himself or herself (SOP), which may consequently improve the robustness of treatment outcome for anxiety symptoms. However, these finding are preliminary, thus continuing investigation on this topic is needed.

Although CBGT may be potentially useful for modifying maladaptive perfectionistic thinking in anxious youth, it is possible that CBGT may also be efficacious in improving cognitive flexibility by improving problem solving and coping strategies. Given the fact that cognitive flexibility is consistently defined as the ability to perceive, process, and respond to one's environment when presented with challenges (Kashdan & Rottenburg, 2010), it seems likely that demonstrating greater cognitive flexibility before treatment would produce better outcomes in CBT interventions. Specifically, CBT interventions typically implement cognitive restructuring throughout

the process of treatment. Cognitive restructuring is a technique that requires the client to identify, evaluate, and modify his/her maladaptive thoughts in distressing situations (Beck, 1976; Beck et al., 1979). Thus, demonstrating a flexible cognitive style prior to CBT may be helpful when learning to engage in cognitive restructuring. To date, no studies have investigated the potential relationship between cognitive flexibility and CBT in a youth sample. However, studies have been conducted on this relationship in adults.

There is evidence in the literature concerning adults that cognitive flexibility may have an impact on adults' ability to learn cognitive restructuring tasks and that greater pre-treatment cognitive flexibility may predict a stronger ability to utilize cognitive restructuring techniques after receiving a CBT intervention (Johnco, Wuthrich, & Rapee, 2013; Johnco, Wuthrich, & Rapee, 2014). One study included forty-one older adults (ages 60-86) with nonclinical levels of anxiety and depression, and found that cognitive flexibility is positively correlated with the ability to learn cognitive restructuring tasks (Johnco, Wuthrich, & Rapee, 2013). Specifically, participants that demonstrated rigid thinking and cognitive inflexibility had difficulty recognizing thinking errors and correcting thinking errors in a cognitive restructuring task similar to what would be presented in a CBT protocol (Johnco, Wuthrich, & Rapee, 2013). The task required participants to apply cognitive restructuring principles to a personally distressing situation, to identify irrational thoughts, and generate alternate thoughts that would result in a more adaptive affective response. The findings of this study have very limited generalizability to an anxious youth sample, but provide preliminary support that

cognitive flexibility is related to an individual's ability to engage in cognitive restructuring.

Building upon these findings, Johnco, Wuthrich, and Rapee (2014) investigated whether or not pre-treatment cognitive flexibility predicted treatment outcome; whether or not it improved over the course of a CBGT intervention, and predicted individuals' ability to learn cognitive restructuring at post-treatment in a sample of older adults (ages 61-78) meeting diagnostic criteria for an anxiety or depressive disorder. Participants received 11 sessions of manualized CBGT, which incorporated psychoeducation, mood monitoring, activity scheduling, cognitive restructuring, problem solving, sleep strategies, graded exposure, assertiveness training and grief and bereavement coping (Johnco, Wuthrich, & Rapee, 2014). Results indicate that participants who demonstrated greater cognitive flexibility demonstrated a greater ability to utilize cognitive restructuring to reduce subjective distress at post-treatment. However, pre-treatment cognitive flexibility was not predictive of treatment outcome, nor did it improve over the course of treatment (Johnco, Wuthrich, & Rapee, 2014). In summary, there continues to be a dearth of empirical investigation on cognitive flexibility in youth samples, but preliminary findings in older adults support the notion that deficits in cognitive flexibility predict limited gains in learning and the application of cognitive restructuring reduces subjective distress. Thus, further research is needed to explore roles of cognitive flexibility and maladaptive perfectionism in CBT for anxiety, and specifically in youth samples.

Currently, there is support to conceptualize maladaptive perfectionism as a trait that is characterized by various types of biased cognitive processes, products, and

operations including worrisome rumination, cognitive perseveration, and automatic cognitive distortions (Flett, 2016). Additionally, there is support to conceptualize cognitive flexibility as a general cognitive ability that allows for efficient problem solving and coping (Rende, 2000). Thus, a deficit in cognitive flexibility is characterized by cognitive rigidity and perseveration, types of cognitive deficits within the information processing model of youth anxiety. Therefore, it is worthwhile to consider research investigating the efficaciousness of a CBT intervention to reduce maladaptive perfectionism and improve cognitive flexibility because it seems likely that changes in these construct could affect change in overall treatment outcome (e.g. reducing symptoms of anxiety). Much more research is needed to examine the role of these constructs in the context of a CBT intervention, especially with anxious adolescents. The current study proposes to investigate the efficacy of a school-based CBGT intervention for anxiety and coping on reducing maladaptive perfectionism and improving cognitive flexibility. Additionally, pre-treatment scores on measures of maladaptive perfectionism and cognitive flexibility will serve as predictors for post-treatment anxiety scores to investigate the possible impact of these constructs on the therapeutic process when treating anxiety.

In addition to this dearth of literature, it is important to note that studies investigating the effectiveness of CBT with anxious youth have primarily, if not exclusively, been conducted with non-Latino samples. This is problematic, given the predicted growth of the Latino population in the United States (U.S. Census Bureau, 2009) and the estimated high prevalence of anxiety disorders in Latino youth (Roberts,

Roberts, & Xing, 2012). Only two studies investigating the empirical support of CBT for anxious Latino youth have been published (Pina, Silverman, Fuentes, Kurtines, & Weems, 2003; Pina, Zerr, Villalta, & Gonzales, 2012); however, these studies demonstrate promising results, supporting the continued investigation of the utility of CBT/CBGT with anxious Latino youth (Pina, Silverman, Fuentes, Kurtines, & Weems, 2003; Pina, Zerr, Villalta, & Gonzales, 2012).

Chapter 2: Hypotheses

1. It is hypothesized that adolescents will experience a decrease of maladaptive self-oriented and self-prescribed perfectionism following a seven-week, school-based cognitive behavioral group therapy intervention, as supported by findings in similar studies with adults (Ashbaugh et al., 2007; Lundh & Ost, 2001) and adolescents (Mitchell et al., 2013; Nobel et al., 2012). To evaluate a reduction of maladaptive perfectionism, scores on the Child-Adolescent Perfectionism Scale (CAPS; Flett, Hewitt, Boucher, Davidson & Munro, 1997) will be compared between pre- and post-treatment.

2. Given that cognitive inflexibility can be conceptualized as a specific type of cognitive deficit (Kendall, 1985) within an information processing model of anxiety (Daleiden & Vasey, 1997), it is hypothesized that adolescents will improve cognitive flexibility following a seven-week, school-based cognitive behavioral group therapy intervention. Improved cognitive flexibility will be indicated by improved scores on the Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) between pre- and post-treatment.

3. As supported by previous studies (Nobel, Manassis & Wilansky-Traynor, 2012), it is hypothesized that pre-treatment maladaptive perfectionism will be positively correlated with post-treatment anxiety symptom severity, following a seven-week school-based cognitive behavioral group therapy intervention . To test this hypothesis, pre-treatment maladaptive perfectionism, as measured by scores on the CAPS (Flett, Hewitt, Boucher, Davidson & Munro, 1997), will be compared with post-treatment anxiety symptom

severity, as measured by the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997).

4. As supported by previous studies (Tirch, Leahy, Silberstein & Melwani, 2012), it is hypothesized that pre-treatment cognitive flexibility will be negatively correlated with post-treatment anxiety symptom severity, following a seven-week, school-based cognitive behavioral group therapy intervention. To test this hypothesis, pre-treatment cognitive flexibility, as measured by scores on the CFI (Dennis & Vander Wal, 2010), will be compared to post-treatment anxiety symptom severity, as measured by scores on the SCARED (Birmaher et al., 1997).

Chapter 3: Method

Overview/Design

The purpose of this study was to examine if group cognitive behavioral therapy is effective in reducing maladaptive perfectionism and increasing cognitive flexibility. To do so, archival data from a larger study of a school-based, group cognitive behavioral intervention for middle school students with elevated symptoms of anxiety was examined. A within group pretest/posttest design was used to compare scores on perfectionism and cognitive flexibility measures before and after treatment. The primary focus of the larger group intervention study was to reduce anxiety-related symptoms and to improve coping skills. Measures of perfectionism and cognitive flexibility were included as part of the assessment battery.

Participants

Fifty middle school students with elevated symptoms of anxiety were selected to participate in the coping skills group intervention. Students were recruited from an urban, bilingual (English and Spanish) charter school in the Mid-Atlantic region. Participants were between the ages 11 to 14, with nearly twice as many females (n = 33) as males (n = 17). Eighty-six percent of the students reported themselves to be of Hispanic origin; 2.0% identified as Caucasian; 2.0% identified as African American; 2.0% identified as bi-racial, and 6% identified as another unreported racial group. Fifty-four percent identified as being in the sixth grade; 36.0% identified as being in the seventh grade, and 10.0% identified as being in the eighth grade. In regard to the primary

language spoken in their home, 66.0% of the participants reported speaking both English and Spanish, equally, whereas 18.0% reported speaking primarilySpanish, and 16.0% reported speaking primarily English. Ninety-four percent of the participants were born in the United States, whereas 6.0% reported being born outside of the United States. Comparatively, 58.0% of participants reported that their parents were born outside of the United States, whereas 34.0% reported that their parents were born outside of the United States. Eight percent of participants reported being unsure about where their parents were born. A summary of these results can be found in Table 1.

Table 1.

Demographic Data

	N	%
Age		
11	17	34
12	19	38
13	11	22
14	3	6
Gender		
Male	17	34
Female	33	66
Race		
Caucasian	1	2
Hispanic	43	86
African American	1	2

Bi-Racial	1	2
Other	3	6
Missing	1	2
Grade in school		
6th	27	54
7th	18	36
8th	5	10
Language at Home		
English	8	16
Spanish	9	18
Both	33	66
Country of origin		
USA	47	94
Outside of USA	3	6
Parents country of origin		
USA	17	34
Outside of USA	29	58
Unknown	4	8

Inclusion criteria. In order to be eligible for the larger study, adolescents had to demonstrate clinically elevated scores of anxiety on the Screen for Child Anxiety and Emotionally Related Disorders (Birmaher et al., 1997), speak English and provide caregiver consent. Additionally, the school counselor reviewed those students that met

the criteria and provided feedback confirming their suitability for participating in a group intervention during school hours.

Exclusion criteria. Students reporting externalizing behavior (i.e. aggressive and/or violent behavior) on the Brief Problem Checklist were excluded from the larger study. Furthermore, students whose parents did not provide both written and verbal consent were not included in the study.

Recruitment

The clinicians and research assistants collaborated with the school counselor during the group recruitment process to ensure that students with elevated symptoms of anxiety were included in the group intervention. The counselor provided clinicians with access to all middle school students' SCARED and BPC measures as part of a school-wide assessment. These measures were reviewed by clinicians and research assistants to ensure selection of adolescents that met inclusion and exclusion criteria for the study. Students that met the eligibility criteria received consent forms to be taken home for parental review. Research assistants contacted parents of those children eligible for the study via telephone to obtain verbal consent and answer any questions the parents had about the group intervention. Parents were asked to sign and return written consent forms if they agreed for the children to participate. At any point during the recruitment, assessment, and treatment, children had the option to withdraw from participating in the group.

Measures

Screening and assessment of anxiety symptoms. The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997) is a self-report measure of childhood and adolescent anxiety disorders. It consists of 41 items rated on a three-point Likert scale (0 = not true or hardly ever true of me; 2 = very true or often true of me). Adolescents are asked to indicate their identification with various statements (i.e., "I worry about other people liking me" and "I get really frightened for no reason at all"), with higher scores indicating the presence of anxiety-related symptoms. Specifically, adolescents receive an overall score and five separate subscale scores linked to specific anxiety disorders, Panic Disorder (PN), Generalized Anxiety Disorder (GD), Separation Anxiety Disorder (SP), Social Anxiety Disorder (SC) and Significant School Avoidance (SH). An overall score of 25 or higher likely indicates the presence of an anxiety disorder; however, each subscale has its own threshold score indicating the possible presence of that associated disorder (PN > 7, GD > 9, SP > 5, SC > 8, SH >3). The SCARED has demonstrated strong overall internal consistency ($\alpha = .90$) and good test-retest reliability. Additionally, the SCARED has demonstrated acceptable discriminant validity, compared with measures of depression as well as when comparing overall scores with subscale scores and between subscales scores (Birmaher et al., 1999).

Screening measure for externalizing behaviors. The Brief Problem Checklist (BPC; Chorpita, Reise, Weisz, 2010) is a self-report measure of internalizing and externalizing problems for children and adolescents. It contains 12 items rated on a three-point Likert scale (not true; somewhat true; very true). Adolescents are asked to

rate their agreement with various statements (i.e. "I argue a lot" and "I feel guilty"). This measure was reviewed to identify students that endorsed items indicating specific externalizing problems. Specifically, three items ("I destroy things belonging to others," "I have a hot temper," and "I threaten to hurt people") were reviewed, and if endorsed as "very true", the students were ineligible for the group intervention.

Measure of adolescent perfectionism. The Child-Adolescent Perfectionism Scale (CAPS; Flett, Hewitt, Boucher, Davidson & Munro, 1997) is a self-report measure of self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP). It contains 22 items rated on a five-point Likert scale (1 = false – no true of me at all; 5 = very true of me). Adolescents are asked to rate their agreement with various statements (i.e., "it really bothers me if I don't do my best every time"), with higher scores indicating greater perfectionism. The CAPS has demonstrated strong internal consistency ($\alpha = .85$) and test-retest reliability ($\alpha = .83$) over a five week period (Castro et al., 2004).

Measure of cognitive flexibility. The Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) is a self-report measure designed to assess two factors of cognitive flexibility. The factors include *Control*, the tendency to perceive difficult situations as controllable and *Alternatives*, the ability to generate multiple alternative solutions to difficult situations. It contain 20 items rated on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Individuals are asked to rate their agreement with various statements (i.e., "I like to look at difficult situations from many different angles") with higher scores indicating greater cognitive flexibility. The CFI has

demonstrated good internal consistency ($\alpha = .90$) and high test-retest reliability ($r = .81$; $p < .001$) over the seven-week period (Dennis & Vander Wal, 2010).

Demographics. A demographics form was administered to collect information related to participants' ages, grades, genders, races, ethnic origins, languages spoken and family makeup.

Procedure

Recruitment for the group intervention was a collaborative process between the school counselor and clinicians, including a review of an anxiety screening measure and a behavior problem checklist administered to the entire sixth, seventh and eighth grade classes. Students deemed to be eligible were randomly placed into a group. There were between seven to ten students per group, and each group was held for approximately seven weeks. Groups were ran one at a time, consecutively over the course of several years. Information for this study will be gleaned from the most recent five groups

Assessment. Once students were selected for the group intervention, an assessment day was scheduled at the school to allow for pretest data collection. Research assistants and clinicians administered the measures to the selected students in a group format and allowed for individualized assistance as needed. Upon completion of the measures, students selected a reward from a grab bag containing various treats and toys of low monetary value. At that time, a general overview of the group was explained to the students and any questions they had were answered in a group or one-on-one format. Students were assigned identification numbers, and the assessment measures were scored

and entered into an electronic database by research assistants not directly involved with the group intervention.

Intervention. The intervention was conducted at the school during regular school hours, and the specific time of the intervention was agreed upon between the clinicians and school counselor in order to minimize the disruption of any academic activities for the recruited students. The intervention was a seven-week CBT-based group intervention. Clinicians followed a semi-structured manual that allowed for flexibility in the delivery of the CBT protocol. The CBT group intervention included psychoeducation, recognizing feelings and physiological sensations, identification of problematic thoughts, brainstorming alternate thoughts, problem solving, developing a coping plan, developing a fear hierarchy, behavioral exposures, homework, and collaborative presentations. Sessions included both group activities and one-on-one interactions between clinicians and participants. This allowed for the development of individualized fear hierarchies in preparation for behavioral exposures. Clinicians included doctoral trainees and a licensed clinical psychologist. After each session clinical notes were documented; progress was reviewed for each participant, and specific behavioral and cognitive interventions were discussed for each participant. Any specific concerns (i.e. suicide ideation, bullying, etc…) that arose throughout the group sessions were discussed with all necessary parties (i.e. parents, school counselor), as needed. This intervention has demonstrated effectiveness in reducing anxiety and improving self-perceived coping (Panichelli-Mindel et al., 2015; Panichelli-Mindel et al., 2014; Panichelli-Mindel et al., 2013).

Post-assessment. After completion of the group intervention, a day was scheduled to administer post-intervention assessments. Research assistants and clinicians administered the measures to the students in a group format, allowing for individualized assistance as needed. Upon completion of the measures, students selected a reward from a grab bag containing various treats and toys of low monetary value.

All data collected were de-identified, entered into SPSS, and stored in the Department of Psychology at the Philadelphia College of Osteopathic Medicine in the supervising licensed clinical psychologist's office. A portion of the archived data were analyzed in the current study.

Chapter 4: Results

Completed measures from the archival dataset were analyzed to test the hypotheses. Descriptive statistical analyses were conducted for age, gender, race, grade in school, language spoken at home, country of origin, and parents' country of origin. Additionally, descriptive statistical analyses were conducted on pre post-treatment scores of maladaptive perfectionism (SOP and SPP), cognitive flexibility, total anxiety scores, and specific anxiety disorder subtypes. A summary of this data can be found in Table 2. Of the 50 participants that participated in the CBGT intervention, 35 completed both pre and post-treatment measures of maladaptive perfectionism, and 27 completed pre and post-treatment measures of cognitive flexibility. The reduction in anticipated participants was due to a measure administration error. For one of the group interventions, the post-treatment perfectionism measures were missing the second half of the measure, thus making them invalid and unusable.

Table 2.

Means and Std. Deviations of SPP, SOP, CFI, and SCARED scores at pre and post treatment.

	N	Pre-Treatment Mean (SD)	Post-Treatment Mean (SD)
Anxiety			
Total	50	33.4 (12.09)	29.06 (10.53)
Panic Disorder		7.76 (4.87)	6.77 (4.81)
Generalized Anxiety		8.36 (4.23)	7.13 (3.58)
Separation Anxiety		6.58 (3.56)	4.93 (3.03)
Social Anxiety		8.60 (2.75)	7.65 (3.20)
School Anxiety		2.60 (1.59)	2.52 (1.87)
Maladaptive Perfectionism			
Total	35	--	--
Self-Oriented Perfectionism		38.34 (8.84)	36.60 (8.87)
Socially-Prescribed Perfectionism		27.14 (7.97)	28.17 (8.41)
Cognitive Flexibility			
Total	27	74.48 (11.59)	72.77 (13.06)

Hypothesis I & II

Before beginning hypothesis testing, an analysis was conducted to confirm that the treatment had an effect on overall scores of anxiety. To do this, a paired samples t-test was conducted to compare pre- and post-treatment Total scores on the SCARED. Treatment served as the independent variable, and overall anxiety served as the

dependent variable. A summary of the results can be found in Table 2. Participants reported a decrease in anxiety, as measured by the Total score on the SCARED (Mpre=32.66, Mpost= 29.07), $t(43)=2.99$, $p < .005$.

To test the hypotheses that anxious adolescents receiving a seven-week, school based cognitive behavioral group therapy intervention will experience a decrease of maladaptive self-oriented and socially-prescribed perfectionism and an increase in cognitive flexibility, a MANOVA was conducted. The Levene's test was found to be nonsignificant for SOP (p=.332), SPP (p=.441), and CFI (p=.455); therefore, equal variances can be assumed across groups. No significant differences were found, Wilks A = .880, $F(3,22.00) = 1.093$, p=.371. A summary of the mean scores and standard deviations for SOP, SPP, and CFI at pre and post-treatment can be found in Table 3. Additionally, Cohen's d effect size was calculated for the change in SOP scores from pre to post-treatment. The effect was found to be very small, $d = .195$.

Table 3.

Descriptive Statistics for Anxiety, SOP, SPP, and CFI at pre and post treatment

	Pretest		Posttest				
Variable	M	SD	M	SD	n	t	Df
SCARED Total	32.66	11.19	29.07	10.53	44	2.99	43
SOP	38.34	8.88	36.60	8.88	34		
SPP	27.14	7.98	28.17	8.42	34		
CFI	74.48	11.59	72.78	13.06	26		

SOP=self-oriented perfectionism, SPP=socially prescribed perfectionism, CFI=cognitive flexibility.

Hypothesis III & IV

To test the hypothesis that higher scores of maladaptive perfectionism and lower scores of cognitive flexibility at pre-treatment predict elevated scores of anxiety at post-treatment, a multiple regression analysis was conducted. Scores on the CAPS and the CFI pre-treatment served as the predictor variables, whereas scores on the Total-SCARED post-treatment served as the criterion variable. Before a multiple regression could be conducted, the assumption of collinearity, that SPP, SOP, cognitive flexibility, and scores of anxiety are moderately but not highly correlated, was tested. A Pearson's product-moment correlation test was conducted. A summary of the correlations can be found in Table 4. The correlation between pre-treatment SOP and pre-treatment SPP was found to be significant, but the coefficient was not large enough to suggest multicollinearity, r (47) = .43, $p < .01$. The correlation between pre-treatment SOP and

pre-treatment CFI was found to be significant, but the coefficient was not large enough to suggest multicollinearity, r (29) = .46, p < .01. The correlation between pre-treatment SPP and pre-treatment CFI was found to be significant, but the coefficient was not large enough to suggest multicollinearity, r (29) = .44, p < .01. A multiple regression was conducted to determine whether or not pre-treatment maladaptive perfectionism and pre-treatment cognitive flexibility can predict post-treatment anxiety. The results were not significant, R^2 = .303, F(3,23) = .775, p = .52.

Table 4.

Correlations between pre-treatment SOP, SPP, CFI, and post-treatment anxiety

	Pre-treatment SOP	Pre-treatment SPP	Pre-treatment CFI
Pre-treatment SOP	1	.433**	-.463**
Pre-treatment SPP	.433**	1	-.444*
Pre-treatment CFI	-.463**	-.444*	1
Post-treatment SCARED	.304*	.101	-.249

**p < .05, **p<.01; SOP=self-oriented perfectionism, SPP=socially prescribed perfectionism, CFI=cognitive flexibility.*

A Pearson correlation was conducted to determine if there were significant relationships between pre-treatment SOP, SPP, CFI and specific anxiety disorder subtypes. Pre-treatment SPP was significantly correlated with Generalized Anxiety (GD), $r(50) = .54$, $p < .01$. Pre-treatment SOP was also significantly correlated with GD, $r(50) = .58$, $p < .01$, as well as Panic Disorder (PN), $r(50) = .31$, $p < .05$, and School Anxiety (SH), $r(50) = .52$, $p < .01$. CFI was significantly correlated with SH, $r(50) = -.393$, $p < .01$. A summary of correlations can be found in Table 5.

Table 5.

Correlations between pre-treatment SOP, SPP, CFI, and anxiety disorder sub-types

Pre-treatment Perfectionism and Flexibility	Pre-treatment Anxiety Disorder Subtypes				
	GD	PN	SC	SH	SP
SOP	.587**	.312*	.16	.520**	.058
SPP	.540**	.150	.202	.224	-.034
CFI	-.303	-.233	-.267	-.393*	-.267

**p<.05, **p<.01; SOP=self-oriented perfectionism, SPP=social prescribed perfectionism, CFI=cognitive flexibility, GD=generalized, PN=panic, SC=social, SH=school, SP=separation*

Further analysis was conducted to explore the relationship between pre-treatment SOP and post-treatment GAD. GAD was selected for two major reasons. The first, the diagnostic characteristics of GAD (chronic worry) theoretically overlap with the cognitive conceptualization of maladaptive perfectionism, specifically SOP (worrisome rumination and perseveration). Second, GD was very significantly correlated with both types of maladaptive perfectionism at pre-treatment, suggesting maladaptive perfectionism may be more closely related to symptoms observed in GAD. As a result, an additional multiple regression analysis was conducted to see if pre-treatment perfectionism scores predicted post-treatment GD scores. A multiple regression was conducted to determine how pre-treatment maladaptive perfectionism can predict post-treatment generalized anxiety. The model was significant, $F(2,40) = .10.804$, $p < .001$.

The adjusted R square value was .313. This indicated that 31.3% of the variance in post-treatment GD was explained by SOP and SPP. However, pre-treatment SPP did not significantly predict post-treatment GD, whereas pre-treatment SOP did, (β=.432, t=3.20, p<.01).

Chapter 5: Discussion

Implications

The first aim of this study was to investigate if a seven-week CBGT intervention aimed at reducing anxiety and improving coping skills could also reduce maladaptive perfectionism. It was hypothesized that scores on self-report measures of maladaptive perfectionism would decrease from pre to post-treatment. This hypothesis was not supported because there was no significant change between maladaptive perfectionism scores before and after treatment. If there had been an observed reduction of scores on maladaptive perfectionism, this may have suggested that treating anxiety symptoms in youth may lead to more global changes in perfectionism. Because this was not observed, clinicians treating youth that are both perfectionistic and anxious should not necessarily expect perfectionism to change if the specific target is anxiety. However, mixed findings of previous studies (Nobel, Manassis, & Wilansky-Traynor, 2012; Mitchell, Newall, Broeren, & Hudson, 2013) suggests a CBGT intervention aimed at reducing anxiety may also reduce maladaptive perfectionism (SOP and SPP). Thus far, two studies have found that CBGT, targeting anxiety in adolescents can significantly reduce SOP in adolescents (Nobel et al., 2012; Mitchell et al., 2013), whereas in only one of those studies similar support for reducing SPP was reported. Although changes in SPP and SOP from pre to post-treatment were not significant in the present study, it is interesting that SOP did improve slightly, whereas SPP did not improve at all. Thus, although not statistically significant and with only a small effect, the results are somewhat similar to previous studies suggesting consistently that SOP can be reduced from CBGT for anxiety.

The present study differed from those studies in a number of ways, which should be considered when interpreting these findings. The present study sample was smaller, demonstrated higher overall pre-treatment SOP, and implemented a much shorter intervention, compared with past studies. For example, the present study had a sample of 35 adolescents with an average pre-treatment SOP score of 38.3, and the intervention consisted of one-hour group sessions, weekly, for seven weeks. One prior study that detected a significant reduction of SOP had a sample of 44 adolescents with an average pre-treatment SOP score of 34.4 and used a treatment that consisted of two-hour sessions, weekly, for 10 weeks (Mitchell et al., 2013). The other previous study that observed an effect had a sample of 78 adolescents with an average pre-treatment SOP score of 19.4 and implemented an intervention that consisted of one and a half hour-sessions, weekly, for 12 weeks. Given the fact that the sample of the present study demonstrated higher SOP before treatment and that it was a shorter treatment, it is possible a longer treatment is necessary to reduce SOP significantly. Additionally, a larger sample would increase the power of this study,and thus make it more likely to detect statistically significant findings.

Another aim of this study was to investigate the effect of a CBGT intervention for anxiety on cognitive flexibility. It was hypothesized that scores of cognitive flexibility would increase, following a seven-week CBGT intervention; this would suggest an increase of flexibility in how adolescents approach problem solving. The results do not support this hypothesis because there was no significant difference between scores on the CFI at pre and post treatment. To our knowledge, this is only the second study to

investigate the impact of a CBT intervention on cognitive flexibility, and the only one to do so with an adolescent sample. Moreover, cognitive flexibility has not been studied within an adolescent population, thus little was known about the role this construct may play in anxiety and treatment. The current findings are consistent with a previous study investigating the effect of CBGT on cognitive flexibility in older adults (Johnco et al., 2014), which also did not observe an treatment effect. Based on these findings, it is not necessarily expected that treating anxiety will result in a change in cognitive flexibility. That is to say, that clinicians working with anxious youth that demonstrate more rigid thinking may not expect the rigidity of their approach to problem solving to improve while treating their anxiety. Rather, this may suggest that if a treatment goal is to increase how flexibly an adolescent approaches problem solving, cognitive flexibility may need to be specifically targeted in treatment.

It should be noted that this treatment has been found to be effective in reducing anxiety in this sample of adolescents (Panichelli-Mindel et al., 2015). One reason this intervention may have reduced anxiety, yet not significantly affected scores on cognitive flexibility and/or maladaptive perfectionism is that this specific CBGT intervention focused primarily on exposure-based techniques. Although there are two sessions spent on recognizing thoughts, discussing problem solving, and connecting thoughts to feelings, four sessions are spent on designing, conducting, and processing behavioral exposures. In exposure treatments, the emphasis is on facing a feared situation, accessing the tolerating distress, and allowing habituation to occur (Rachman, 1980; Foa & Kozak, 1986; Foa & McNally, 1996). Accessing the fear structure and allowing anxiety to

decrease naturally throughout the exposure serves as a form of corrective learning, during which the individual develops a new association with the initially feared stimulus (Foa & Kozack, 1986) or an association the competes with the original, feared association (Foa & McNally, 1996). An alternative explanation suggests that successful treatment of anxiety by exposure procedures results in the development of new inhibitory meanings (safety), in achieved by successful tolerance of fear over time (Eifert & Heffner, 2003; Abramowitz, 2013). addition to the original excitatory meanings of the fear situations (Craske et al., 2008), which is

Because this treatment has a greater emphasis on exposure interventions, it is possible the observed reduction in anxiety was not related to specific cognitive changes in perfectionism or flexibility. Cognitive change may occur through exposure therapy (Chambless & Gillis, 1993); however, the cognitions that change are more directly related to danger (e.g. estimate of danger) and safety (Abramowitz, 2013), which are not necessarily the same types of cognitions related to maladaptive perfectionism and cognitive flexibility. Cognitive inflexibility is characterized by rigid thinking patterns, a deficit in adapting to challenging situations, and limited ability to modify one's perspective (Eslinger & Grattean, 1993; Rende, 2000). Maladaptive perfectionism is characterized by worrisome overthinking, cognitive rumination, cognitive perseveration, and automatic cognitive biases (Flett et al., 2016), Thus, it is more likely that an intervention targeting anxiety via the use of more cognitive focused interventions (e.g. cognitive restructuring) may have a stronger effect on cognitive flexibility and maladaptive perfectionism.

Another aim of this study was to investigate if pre-treatment maladaptive perfectionism and cognitive flexibility in anxious youth are predictive of anxiety at post-treatment. Recent studies have begun to investigate potential factors leading to less than optimal outcomes in the treatment of anxiety in adolescent youth (Cartwright-Hatton et al., 2004); this study investigated whether maladaptive perfectionism and/or cognitive flexibility might be two such factors. By identifying factors that may predict less than optimal treatment outcome, CBT clinicians treating anxiety in youth could consider different treatment approaches that specifically target those predictors. In doing this, clinicians may be able to enhance overall treatment effectiveness. Specifically, it was hypothesized that pre-treatment perfectionism and pre-treatment cognitive flexibility would predict anxiety at post-treatment. However, the results did not support these hypotheses. That is to say, that those individuals that demonstrated higher maladaptive perfectionism and less cognitive flexibility before the treatment were no more or no less likely to report less anxiety after receiving the treatment, and vice versa. This is an interesting finding because it suggests that anxious adolescents may still benefit from a CBGT intervention targeting anxiety symptoms regardless of how perfectionistic or flexible their thinking may be before beginning treatment. Clinicians that treat anxiety in youth can use this information when treatment planning. If they work with an adolescent that demonstrates both elevated levels of anxiety and maladaptive perfectionism and/or cognitive inflexibility, they likely will, nonetheless, still have success in reducing the anxiety symptoms without specifically targeting these other constructs.

Although the primary hypotheses were not supported, additional correlational analyses were conducted between the pre-treatment SOP, SPP, cognitive flexibility, and specific anxiety disorder subtypes. Scores of SOP, SPP, and cognitive flexibility were strongly correlated with scores of total anxiety, and all of these correlations were significant. However, by taking a closer look at specific subtypes of anxiety, it is possible to learn more about the characteristics of these variables. Of the observed correlations, only three subtypes had significant correlational relationships with SOP, SPP, and/or cognitive flexibility. School anxiety was positively correlated with SOP and negatively correlated with cognitive flexibility. Scores of panic disorder were positively correlated with SOP. Additionally, scores of generalized anxiety were positively associated with scores of both SOP and SPP. Consistent with previous literature, it appears that SOP is related to anxiety pathology (Bieling et al., 2004; Shafran & Mansell, 2001; Mitchell et al., 2013). In fact, an additional analysis was conducted in the present study, suggesting that SOP was significantly, positively correlated with scores of generalized anxiety at post-treatment when controlling for SPP.

Generalized anxiety disorder is characterized by chronic worry and rumination in relation to a number of different domains (American Psychiatric Association, 2013), which share characteristics with the cognitive conceptualization of maladaptive perfectionism (Flett et al., 2016). The finding that both SPP and SOP were significantly correlated with generalized anxiety is in line with recent literature that suggests there is a clinical link between maladaptive perfectionism and generalized anxiety disorder (Handly et al., 2014). It is possible that perfectionistic youth may view worry as a means

for controlling their environment and consequently of avoiding future mistakes (Affrunti & Woodruff-Borden, 2014). More specifically, the finding that higher pre-treatment SOP significantly predicted higher GAD scores at post-treatment may suggest that adolescents who hold a self-imposed, high personal standard and a tendency to engage in chronic worrisome rumination as a means to avoid future mistakes may not benefit as much from an exposure-based CBGT intervention, compared with their less perfectionistic peers. Thus, this may suggest that targeting maladaptive self-oriented perfectionism in GAD may better serve overall treatment outcome for this sub-group of anxious adolescents.

Although not a specific aim of this study, it should be noted that the CBGT intervention for anxiety was effective within this anxious Latino sample. Moreover, descriptive statistics sugget that this sample was, in fact, highly anxious and perfectionistic overall. Although specific cultural factors were explored in this archival study, cultural considerations should be further explored. The collectivistic values of *simpatí*a and f*amilismo* may help to better understand the clinical characteristics of this sample. S*impatí*a is a cultural value that emphasizes the importance of pleasant social interaction (Varela et al., 2009); *familismo* emphasizes protecting the interests of the family unit even if it means suppressing the needs of the individual (Martinez et al.). In general, Latino culture emphasizes self-control, emotional restraint, compliance with social norms, and social inhibition as values consistent with cultural norms (Varela & Hensley-Maloney, 2009). In turn, it has been suggested that collectivistic values such as these may contribute to higher incidences of overcontrolled and internalized emotional problems (e.g. anxiety) in Latino individuals (Varela & Hensley-Maloney, 2009).

Although there is limited research on perfectionism within the Latino population, there are findings, suggesting that both adaptive and maladaptive perfectionism predict higher levels of depression, anxiety, and low self-esteem, in comparidon with their Caucasian peers (Ortega et al., 2014). Thus, one explanation for the observed high levels of anxiety and perfectionism in this sample is that Latino cultural norms may encourage experiencing their distress internally and attempting to restrain and control their emotions as a form of coping.

Limitations

There are limitations to this study to consider when interpreting the findings. First, the generalizability of this study is limited to the population from which the sample was drawn. This sample consists of Latino, middle school-aged children living in an urban setting, primarily of Puerto Rican descent. Given this sample, the results from this study may not be applicable to adolescents of ethnicities other than Latino. Furthermore, the Latino population consists of several diverse subgroups other than Puerto Ricans. Thus, the results of this study should be taken with caution when considering Latinos of ethnic descent, other than Puerto Rican. In addition to ethnicity, the school from which the data were collected is a charter school where children apply to attend. This is not typical for public schools, thus the results from this study may not be generalized to adolescents from other public school settings.

The exclusion of a control/comparison group is a large threat to the internal validity of this study. No changes in perfectionism or cognitive flexibility were observed

in the treatment group, but a control comparison group would provide greater accuracy at determining the magnitude of the treatment effectiveness on anxiety, overall. Although preliminary findings support the use of the CBGT intervention to reduce anxiety in these students, it is possible that the treatment is no more effective at reducing anxiety than a control group (e.g. a present centered support-style group). It is possible that the adolescents experienced a decrease of anxiety due to the act of participating in the group, rather than the CBGT implemented by the clinicians For example, previous studies have shown that adolescents benefit from structured group activities led by trained clinicians (Nobel et al., 2012), regardless of the implementation of cognitive techniques. Additionally, a group format may facilitate social connectedness that may alleviate psychological distress in the participants of the CBT group. Furthermore, it is possible that the students participating in CBGT may have improved on measures of anxiety naturally as the school year progressed, even if they had not received treatment.

Another limitation to this study is the use of archival data. By using archival data, there is an inherent limitation of control over the previously collected data. Because the data had already been collected, there is no way to correct any errors that may have occurred during the initial data collection process. In fact, it was discovered that approximately eight of the post-treatment measures were administered incorrectly, missing the second page of the measure. Thus, this data could not be used, lowering the overall power of the analyses. Additionally, given the fact that the original data were collected in the participants' school, their responses may have been influenced by a concern that teachers or other school officials would have access to their responses. This

may have caused them to modify the way in which they responded to the self-report measures. Moreover, by using only self-report measures, the results will be limited to how the adolescents view themselves in relation to the constructs being studied. Specifically, self-report measures are susceptible to social desirability bias (Holden & Fekken, 1989) and the potential for items to be misunderstood. Data collected from multiple reporters have been found to be a more comprehensive approach to assessing child and adolescent functioning, although for internalizing symptoms, self- reports tend to be most reliable (Achenbach, McConaught, & Howell, 1987).

As mentioned previously, the sample size of this study was smaller than anticipated, thus limiting the power of the statistical analyses. Specifically, the reduction of SOP from pre to post-treatment was similar, compared with previous studies that found statistical significance; however, the lack of power makes it more difficult to detect a significant finding even if it does exists.

Future directions

Further investigation of the effectiveness of CBT to reduce maladaptive perfectionism and increase cognitive flexibility is warranted. Given that maladaptive perfectionism has been linked to deflated self-regard (Hewitt, Mittelstaed, & Wollert 1989), increased procrastination and self-criticism (Hollender, 1965; Pacht, 1984; Solomon& Rothblum, 1984; Sorotzkin, 1985), as well as to higher rates of anxiety and depression (Nobel, Manassis & Wilansky-Traynor, 2012), improving this domain of functioning would be beneficial. Likewise, cognitive flexibility his been consistently related to depressed mood, negative affect to social rejection, increased rumination on negative events, and a bias towards recalling negative past events (Gros, 20007; Gyurak et al., 2012; Sommerville et al., 2010; Johnco et al., 2014). However, few studies have investigated treatment of perfectionism within an adolescent population, and there continues to be a dearth of literature investigating treatment for cognitive inflexibility. Thus, future studies could explore the use of CBT and other interventions to reduce the maladaptive nature of perfectionism and improve cognitive flexibility. Specifically, studies that use a larger sample size would allow for the detection of more robust findings when looking at treatment outcome effectiveness. In continuing this line of research, future studies could include the use of a control group to decrease the placebo and maturational threats to internal validity.

Recent studies have begun to investigate potential factors leading to less than optimal outcomes in the treatment of anxiety in adolescent youth (Cartwright-Hatton et al., 2004). As previously mentioned, cognitive flexibility is a construct that has been

generally overlooked in the literature, thus additional research about the nature and development of this construct is recommended. Negative correlations were observed between cognitive flexibility and maladaptive perfectionism, as well as anxiety. Thus, future studies could explore these relationships further. Preliminary findings suggest that improving cognitive flexibility may improve an individual's ability to engage in cognitive restructuring (Johnco, Wuthrich, & Rapee, 2013; Johnco, Wuthrich, & Rapee, 2015), an important aspect of CBT. However, larger studies instituting more control are needed. If cognitive flexibility has a predictive or causal relationship with one's ability to engage in cognitive restructuring, CBT clinicians could use this information to enhance the effectiveness of cognitive interventions.

Excessively perfectionistic and inflexible thinking were not found to be predictive of overall post-treatment anxiety, thus further research is needed to identify constructs that may be predictive of treatment outcome. However, a predictive relationship was observed, such that higher pre-treatment SOP predicted higher post-treatment generalized anxiety. Given the ruminative, worrisome, and perseverative nature of perfectionistic thinking, it makes sense that it is so strongly related to generalized anxiety. Thus, future studies should consider focusing specifically on adolescents demonstrating symptoms of generalized anxiety symptoms.This area of research will assist CBT clinicians treating anxiety in youth to consider treatment approaches that enhance the overall treatment effects.

Latino youth remain an understudied population in regard to understanding the relationship between maladaptive perfectionism, cognitive flexibility, and anxiety

symptoms. Future prospective studies should aim to identify and investigate the potential relationship between these variables within a Latino youth population. Additionally, studies that consider the inclusion of other subgroups of the Latino population, in addition to the primarily Puerto Rican sample included in this study, would be warranted. Moreover, given the tendency for Latino individuals to manifest psychological symptoms somatically (Valera et al., 2007); future studies could include measures that specifically address somatic manifestations. Future studies should continue to investigate the effectiveness of a CBT/CBGT with anxious Latino youth. Although CBT/CBGT has gained substantial empirical evidence to support its use with the majority of anxious adolescents (Cartwright-Hatton, Roberts, Chitsabesan, Fothergrill, & Harrington, 2004), there is a dearth of research specifically evaluating the use of CBT/CBGT with Latino youth.

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