PREDICTORS OF ANXIETY PERSISTENCE IN CHILDREN AND ADOLESCENTS RECEIVING OUTPATIENT MENTAL HEALTH SERVICES

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Abstract

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PREDICTORS OF ANXIETY PERSISTENCE IN CHILDREN AND ADOLESCENTS RECEIVING OUTPATIENT MENTAL HEALTH SERVICES (119 pp.)

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Clinical and demographic variables were used to predict anxiety persistence at a 1-year follow-up in children and adolescents receiving outpatient mental health services. Anxiety persistence was defined in two ways: presence of anxiety diagnoses and smaller internalizing change scores. Extensions upon previous studies included a dimensional measure of outcome, a large sample of African Americans, and two gender interactions. Analyses were conducted on three samples (parent, child, and agency worker) that overlapped only to some degree. The presence of primary anxiety diagnoses at a 1-year follow-up was predicted by older age (youth sample), Caucasian ethnicity (agency worker sample), and higher internalizing scores at intake (agency worker sample). The greatest predictor of smaller change scores was lower levels of internalizing symptoms at intake. Results of the current study can be generalized to outpatient mental health settings.

Approved:

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Introduction

Anxiety disorders are one of the least studied and understood mental health problems of children and adolescents (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). This can be explained by the fact that for many years anxiety disorders in children and adolescents were considered a transient developmental stage, consequently, receiving little attention from researchers (Clark, Smith, Neighbors, Skerlec, & Randall, 1994). Although studies revealed high remission rates (up to 75%) of primary anxiety disorders (Catwell & Baker, 1987, 1989; Last, Perrin, Hersen, & Kazdin, 1996), about one-third of children go on to develop new psychiatric disorders, mainly depression and new anxiety disorders (Ferdinand & Verhulst, 1995; Moreau & Follett, 1993). There is also some evidence that children and adolescents with anxiety disorders have lower educational achievement and some impairment in psychosocial functioning (Flakierska-Praquin, Lindstroem, & Gillberg, 1997; Woodward & Fergusson, 2001).

It is important to identify those children and adolescents who are at an increased risk for persistence of their anxiety disorders and provide appropriate interventions. Currently available treatments for anxiety disorders produce at best moderate effects (Weisz & Jensen, 2001). In addition to treatment itself, a number of other factors can exert influence on treatment outcome, one of them being client characteristics.

With respect to individual characteristics that affect treatment response, conduct disorder has received the most attention in child literature (Patterson & Chamberlain, 1994). Characteristics predicting persistence of internalizing disorders (depression and anxiety) have been understudied. A recent review of evidence-based assessments of anxiety disorders in children did not even briefly acknowledge the lack of findings about
the effects of client predictors on the course of anxiety disorders (Silverman & Ollendick, 2005). This lack of emphasis on predictors of anxiety persistence is unfortunate, considering the effects these disorders have on children’s lives. These effects include negative impact on the still-forming self-concept, impairment in social skills, interference with learning and development of new skills, as well as acting as risk factors for other psychiatric disorders, and leading to suicide (Woodward & Fergusson, 2001). Therefore, it is important to seek answers to the following question: What youth characteristics could lead to persistence of internalizing symptoms and anxiety diagnoses? These characteristics, once identified, could be very helpful in identifying youth at greater risk for persistence of their anxiety disorders and for tailoring treatment (Sanford et al., 1995). However, first it is necessary to define how anxiety persistence is going to be measured.

There are several ways to conceptualize anxiety. The Diagnostic and Statistical Manual (DSM) system that classifies anxiety symptoms into separate categories is widely used by clinicians and researchers, fostering efficient communication. However, there is ongoing debate about the appropriateness of categorical classifications for variables that are continuous and normally distributed in the population, such as levels of anxiety (Widiger & Coker, 2003). Brown and Barlow (2002) outline a number of problems with the DSM classification of anxiety disorders, some of which are high levels of comorbidity and frequent use of the “not otherwise specified” category when not all criteria for a disorder are met. An alternative to DSM is an empirically derived dimensional system of classification that is based on quantitative clusters of symptoms that correlate. The best example is Achenbach’s “internalizing – externalizing” system (Achenbach, 1991), which is based on numerous empirical studies. This dimensional
system provides an opportunity to capture a range of internalizing symptoms that a child with anxiety can manifest, giving a more comprehensive clinical picture. Frequently clinical researchers integrate dimensional and categorical approaches, by using self-report measures in addition to a diagnostic interview (Albano, Chorpita, & Barlow, 2003).

The importance of measuring a range of internalizing symptoms versus focusing mainly on anxiety symptoms becomes apparent when one considers high rates of anxiety comorbidity with depressive disorders and their shared etiology. Across anxiety disorders the most frequent comorbidity is with another anxiety disorder (65%); the second highest comorbidity is with major depressive disorder (20-44%; Kovacs & Devlin, 1998). High rates of comorbidity between anxiety and depression are not surprising, as anxiety and depression share an underlying feature of negative affect (Brown & Barlow, 2002). In fact, etiological models of anxiety and depression, incorporating genetic research, conclude that shared genetic risk factor (neuroticism, negative affect, low extraversion) may be responsible for general vulnerability for anxiety or depression, and unique experiences modify the specific expression of this vulnerability (Barlow, 2000; Clark & Watson, 1991). Thus it is not surprising that empirical studies indicate one broad factor of internalizing symptoms (Achenbach, 1991).

Interestingly, numerous studies examining temporal sequencing of disorders in children and adolescents report that anxiety disorders occur earlier and are followed by depressive disorders (Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack, 1997; Wickramarante & Weissman, 1998). Thus, it has been posited that anxiety is a risk factor for later depression. However, anxiety and depression may also have common etiological factors.
One of the disadvantages of the existing research on predictors of anxiety persistence is that studies mainly operationalize persistence as presence of diagnostic categories without assessing a broader range of internalizing symptoms. To advance existing literature the present study includes both diagnostic categories and a measure of internalizing symptomatology.

Studies that have assessed the effects of youth characteristics on the course of a disorder can be divided into two broad categories: prospective and treatment studies. Prospective studies follow children over a span of several years and examine the course of psychiatric disorders and some variables (demographic, family, and clinical) that can predict persistence, remission, or recurrence of disorders. These studies frequently do not assess or control for treatment, even though individuals may be receiving some kind of treatment. Conversely, the purpose of the treatment studies is to examine the efficacy or effectiveness of specific treatments. Some of the treatment studies examined the predictors of treatment response as part of secondary analyses (Emslie, Mayes, Laptook, & Batt, 2003).

Three prospective and eight treatment studies assessing effects of client variables on persistence of anxiety diagnoses have been conducted to date, producing some mixed findings. Studies report that youths’ improvement may depend on clinical predictors (comorbidity, severity of a disorder at intake), demographic predictors (age at intake, gender, ethnicity), and psychosocial predictors (peer relationships, psychiatric illness in family members, family structure) (Phillips et al., 2000). Overall, the knowledge we have today about the effects of youth characteristics on anxiety persistence is inconclusive. Furthermore, it is hard to generalize results from these studies to real-
world clinical settings, as studies are often conducted in research settings or at university-based anxiety clinics, where a number of factors are controlled for (such as the nature of the sample, excluding some comorbid conditions and children on medication. Furthermore, research studies employing structured diagnostic procedures, which are rarely used in clinical settings. As laboratory studies lack external validity, there has been a move in the past decade to conduct studies in clinical settings to increase applicability of findings (Weisz & Jensen, 2001). Clearly, the effects of child characteristics on anxiety persistence are understudied in real-world clinical samples.

The goal of the current study was to identify clinical and demographic characteristics that predicted persistence of primary anxiety diagnoses and internalizing symptoms in children and adolescents with anxiety disorders in outpatient clinical setting. Persistence of internalizing symptoms was operationalized as the difference score between intake and a one year follow-up assessment on the internalizing subscale of the Ohio Scales (Ogles, Melendez, Davis, & Lunnen, 2001). Furthermore, this study attempted to clarify effects of gender on persistence of internalizing symptomatology by including gender by age and gender by initial severity of internalizing symptoms interactions.

To give the context for the current study, some background information on anxiety disorders is provided, such as diagnostic history, epidemiology, comorbidity, parent-child agreement on internalizing symptoms, stability of anxiety over time and psychosocial functioning of children with anxiety disorders. Next, the variables that affect anxiety persistence in prospective and treatment studies are described. Finally, the
limitations of the previous studies are discussed and predictions of the current study are made.

Anxiety Disorders

Although certain fears and worries are developmentally appropriate, such as fear of strangers, separation from parents, or fear of the dark, some children develop more debilitating symptoms that qualify for diagnoses of anxiety disorders (Weems, Silverman, & La Greca, 2000). These children begin to avoid participating in daily activities because of their fears, anticipate future danger, have pervasive anxious thoughts and develop bodily symptoms of tension. In fact, anxiety has been conceptualized for many years as “a triple response system,” with (a) behavior response (e.g. escape, avoidance, and freezing); (b) somatic response (e.g. increased heart rate, secretion of adrenalin); and (c) cognitive response (anticipation of harm, exaggeration of danger, and fear of losing control) (Barlow, 2002; Lang, 1968).

Diagnostic History

Children and adolescents are diagnosed with the same anxiety disorders as adults: panic disorder, specific phobia, social phobia, obsessive–compulsive disorder, posttraumatic stress disorder, and general anxiety disorder according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders, Text-Revision (DSM-IV-TR; American Psychiatric Association (APA), 2000). Separation anxiety disorder is the only anxiety disorder that is placed under the category of Disorders First Diagnosed in Childhood in DSM-IV-R; however, adults can also be diagnosed with this disorder. In the previous editions of the DSM, the DSM-III (APA, 1980) and the DSM-III-R (APA,
1987), there were three anxiety disorders specific to childhood: separation anxiety disorder, overanxious anxiety disorder, and avoidant anxiety disorder. However, studies on diagnostic validity and reliability demonstrated considerable overlap between avoidant disorder and social phobia (adult diagnosis) in children, eliminating the need for two distinct categories (Kendall & Brandy, 1995; Klein, 1994). Similarly, in children both overanxious anxiety disorder and generalized anxiety disorder (diagnosed in adults) evidenced an overlap in symptoms, as both disorders were characterized by worries that were excessive and nonspecific (Chorpita, Albano, & Barlow, 1994). In fact, a person under the age of 18 could have met diagnostic criteria for both disorders. These changes with DSM – IV (APA, 1994) to diagnostic labels of childhood anxiety disorders were guided by research findings and also created consistency with the International Classification of Diseases (ICD; World Health Organization, 1992). It is important to keep in mind that this change of diagnostic criteria took place in 1994, and between 1987 and 1994 a large body of literature on anxiety disorders in children and adolescents was generated using old diagnostic labels (Silk, Nath, Siegel, & Kendall, 2000). A number of studies reviewed and summarized in this paper used diagnostic labels from the DSM-III-R (APA, 1987).

Although children and adolescents are diagnosed with the same anxiety disorders as adults, DSM – IV – TR (APA, 2000) recognizes that symptoms of anxiety may manifest themselves differently in children. For example, when children are diagnosed with generalized anxiety disorder, they are required to meet at least one somatic symptom, instead of three that are necessary for adult clients. Furthermore, for such diagnoses as specific phobia, social phobia, and obsessive-compulsive disorder adults
need to recognize the excessive or unreasonable nature of their fear. However, this requirement is not placed on children, as they may not be able to cognitively assess the nature of their fears. It is also noted in the diagnostic criteria that in the context of specific phobia and social phobia children may express their anxiety by crying, tantrums, freezing, and clinging, whereas adults display symptoms of physiological and cognitive symptoms of panic attacks, such as accelerated heart rate, sweating, dizziness, fear of loosing control, etc. Children may express their posttraumatic stress disorder through repetitive play with themes of trauma, scary dreams without recognizable content or trauma-specific reenactments, whereas adults will have recurrent recollections of the event, dream of the event or relieve traumatic event through hallucinations and dissociative flashbacks.

**Epidemiology**

*Prevalence rates.* Numerous studies using the DMS-III-R (APA, 1987) criteria concluded that simple phobia, separation anxiety disorder, and overanxious anxiety disorder were the most prevalent anxiety disorders in children relative to other diagnoses (for review see Bernstein, Borchardt, & Perwien, 1996). Adolescents can present with the same anxiety disorders as children, but they also become more vulnerable to such anxiety disorders as panic disorder, obsessive – compulsive disorder, agoraphobia, and social phobia, which occur in much lower rates in children (for review see Bernstein et al., 1996).

Separation anxiety disorder is more prevalent in children (3 – 5 %) than adolescents (0.6 – 2.4 %; Clark, Smith, Neighbors, Skerlec, & Randall, 1994). The rates of generalized anxiety disorder in children and adolescents are estimated to be in the 0.4
% to 4.2% range (Southam-Gerow, 2001). Panic disorder and agoraphobia are relatively rare, occurring in less than 1% of adolescents (Essau, Conradt, & Petermann, 2000). The prevalence rates of social phobia or avoidant disorder are 1 – 2% (McGee et al., 1990). Specific phobia is one of the most commonly diagnosed anxiety disorders in children and adolescents, with prevalence rates ranging between 2% to 13% (Essau, Aihara, Petermann, & Wiswasi, 2001). This prevalence range is so broad due to the different thresholds that were used to calculate impairment and the types of phobias included in the studies. There is little research to guide the prevalence rates for posttraumatic stress disorder, but some studies suggest that rates are high in certain groups of traumatized adolescents. The lifetime prevalence of obsessive – compulsive disorder in children and adolescents is 1 – 2.3% (APA, 2000).

Sex differences. Rutter, Caspi, and Moffitt (2003) summarized findings on sex ratio and concluded that in childhood there are almost no sex differences in the prevalence rates of anxiety disorders; however, during adolescence anxiety disorders are almost twice more likely to occur in females than in males.

Several studies reported that females exhibited greater degrees of anxious symptomatology than males on the total scores of such measures as the Screen for Child Anxiety Related Emotional Disorders (SCARED) and the Fear Survey Schedule for Children (Muris, Merckelbach, Mayer, & Meesters, 1998a; Muris, Merckelbach, van Brakel, Mayer, & van Dongen, 1998b). More specifically, females received higher scores than males on such subtests of SCARED as social phobia, separation anxiety disorder, post - traumatic stress disorder, panic disorder, and generalized anxiety disorder. The age ranges in Muris et al.’s (1998a, b) studies included 9 to 13 year-olds.
Another study of children (7 to 12 year-olds) found that girls reported more worries than boys during a semi-structured interview that tapped 14 areas, particularly in such areas as school, classmates, future events, and appearance; this study did not examine diagnostic prevalence across genders (Silverman, La Greca, & Wasserstrein, 1995). A study that looked at panic attacks in adolescents concluded that adolescent females presented with a greater number of symptoms and had more severe panic attacks than adolescent males (King, Ollendick, Mattis, Yang, & Tonge, 1996).

Race. There is lack of research about the prevalence of anxiety disorders and their nature in minority children (Safren et al., 2000). The majority of research on anxiety disorders so far has been conducted with primarily Caucasian samples. Studies that have included ethnically diverse samples generally find minor differences between ethnic minorities and White children with anxiety disorders.

In an effort to evaluate racial differences and similarities, Last and Perrin (1993) compared African American children with European American children. They reported that these two groups of children exhibited more similarities than differences on such variables as duration of disorder, lifetime history of a mood disorder, age, and sex. There were only two trends towards significance: African American children were more likely to be diagnosed with post traumatic stress disorder than White children, which could be attributed to their lower SES; and European American children were more likely to have school refusal and also higher diagnostic severity ratings.

Ginsburg and Silverman (1996) found no differences in prevalence rates of anxiety disorders between Hispanic and Caucasian children, with the exception of Hispanic youth receiving the diagnosis of separation anxiety more frequently than
Caucasian youth. Considering our limited knowledge about the nature and pattern of anxiety disorders in minority children and adolescents, Safren et al. (2000) urged researchers to include children of different racial backgrounds in studies on anxiety disorders.

**Comorbidity**

Anxiety disorders are highly comorbid with both internalizing and externalizing disorders (Angold, Costello, & Erkanli, 1999; Kruger, Caspi, Moffitt, & Silva, 1998; Ollendick, Grills, & Alexander, 2001). The most frequent comorbidity is with another anxiety disorder or a depressive disorder. Among anxiety disorders themselves comorbidity rates are approximately 39% for children and 14% for adolescents (McGee et al., 1990). Comorbidity rates with major depressive disorder range from 22% to 44%, which is not surprising considering overlap in symptoms between anxiety and depression and their classification as internalizing disorders (Kovacs & Devlin, 1998). There is some evidence suggesting that children with comorbid anxiety or depression present with greater psychopathology and more severe symptoms than children with one anxiety disorder (Bernstein, 1991).

Although it may seem counterintuitive, children with anxiety disorders show comorbidity with externalizing disorders, reaching up to 40% in some clinical samples (Walker et al., 1991). Such high rates of comorbidity in clinical samples can be explained by the referral bias that Caron and Rutter (1991) elaborated upon in their paper on comorbidity of childhood psychopathology. Referral bias states that children with anxiety disorders who have a comorbid disruptive behavior disorder are more likely to get noticed and referred for services, thus creating high percentage of children with
comorbid behavior problems in clinical settings. Some other explanations that Caron and Rutter offer for patterns of comorbidity are: overlap between risk factors, one disorder creating a risk for another, and overlapping diagnostic criteria.

**Stability over Time**

Anxiety disorders in early years of life are not a transient stage for a number of children who maintain their anxiety diagnosis or develop other psychological disorders. Studies report that childhood obsessive-compulsive disorder and posttraumatic disorder tend to be particularly chronic and pervasive and disrupt development (Leonard et al., 1993; Pfefferbaum, 1997; Yule et al., 2000). Leonard et al. (1993) reported that 45% of children continued to meet criteria for OCD during 2–to 7–year follow–up after controlled pharmacological treatment. Only 11% were considered asymptomatic. Wewetzer et al. (2001) conducted a follow-up of 55 OCD adolescents 11.2 years after treatment. At follow-up, 36% continued to suffer from OCD, whereas 71% of the sample met criteria for some other psychiatric disorder.

Longitudinal research on the course of PTSD in childhood is just beginning to emerge. Studies examining the effects of repeated, multiple, or abusive stressors are scarce but suggest that incidence rates remain high for a number of years (Mannarino, Cohen, Smith, & Moore-Motily, 1991). Indeed, retrospective studies of adults who experienced sexual abuse indicate that symptoms persist into adulthood (Cahill, Llewelyn, & Pearson, 1991). Studies of children who were exposed to a single-occurrence stressor or lived through war conditions suggest that symptomatology usually peaks within the first year, however, a number of children continue to have symptoms years later (Thabet & Vostanis, 2000; Yule et al., 2000).
A few longitudinal studies that included such anxiety disorders as social phobia, simple phobia, panic disorder, overanxious anxiety disorder found high rates of remission, between 77% and 82% during a 4-year follow-up. Although the majority of cases (68%) remit during the first year (Cantwell & Baker, 1987, 1989; Last, Perrin, Hersen, & Kazdin, 1996), follow-up studies are less optimistic, reporting that about 30% – 40% of the children develop new psychiatric disorders, half of which are new anxiety disorders (Last et al., 1996; Cohen, Cohen, & Brook, 1993). Last et al. (1996) included a sample of 102 children with anxiety disorders and 87 children with no psychological disturbances as a control group. At the initial assessment in the anxiety sample 49% of children has a single anxiety disorder and 51% had an anxiety disorders plus comorbid conditions. Compared to the control group of children with no psychological disorders, children with anxiety disorders were more likely to develop new anxiety disorders and new behavior disorders (Last et al., 1996). In fact, 30 children (36%) in the anxiety sample had psychiatric condition at a three to four-year follow-up, which included new anxiety disorders and other psychiatric conditions. Of the 30 children, half retained their primary anxiety disorders and thirteen developed new disorders.

Retrospective studies further support the continuity of anxiety disorders. One review of studies found that adults with anxiety and depressive disorders reported having symptoms of separation anxiety disorder or generalized anxiety disorder as children (Moreau & Follett, 1993). Another study found that 54% of adults with panic disorder retrospectively reported a history of childhood anxiety disorder (Pollack et al., 1996).

Numerous studies find that anxiety disorders in early years of life are a risk factor for adult psychopathology. For example, Moreau and Follett (1993) reported that
separation anxiety disorder was a precursor to a number of adult psychiatric conditions, among them anxiety disorders and depression. In a longitudinal study of 964 New Zealand adolescents, Woodward and Fergusson (2001) found a significant positive relationship between the numbers of anxiety disorders adolescents had at the age of 14-16 and the number of anxiety and depressive disorders 5 to 7 years later, when adolescents were 21 years old. The adolescents in this study had either no anxiety disorder, one, two, or three anxiety disorders. As the number of anxiety disorders between the ages of 14 to 16 increased so did the likelihood of having anxiety disorders or depressive disorders at the age of 21.

Psychosocial Functioning

In addition to the growing body of literature reporting that anxiety disorders in childhood and adolescence act as risk factors for adult psychopathology, several longitudinal studies reported that children and adolescents with anxiety disorders manifested impaired psychosocial functioning (Flament et al., 1990; Flakierska-Praquin, Lindstroem, & Gillberg, 1997; Woodward & Fergusson, 2001). Results of these studies are reviewed below, followed by a summary of one longitudinal study reporting that children with anxiety disorders were somewhat well-adjusted in young adulthood (Last et al., 1997).

Woodward and Fergusson (2001) assessed clinical and social outcomes of anxiety in 14 to 16-year-old adolescents with a single or multiple anxiety disorders when they reached the age of 21. This study found significant positive relationships between the number of anxiety disorders in adolescence and later risk for anxiety disorders and major depressive disorder, illicit drug use, and lowered likelihood of entering university, even
after controlling for a range of the family factors, such as social background, family functioning, and individual characteristics of anxious adolescents.

Another study (Flakierska-Praquin et al., 1997) looked at the social functioning of 35 adults who were treated at the outpatient clinics for school phobia with separation anxiety disorder between the ages of 7 to 12; all the participants were over the age of 30 at the time of the study. Compared to the matched sample from the non-psychiatric population \( (N = 35) \) and other psychiatric diagnoses \( (N = 35) \) adults with the history of separation anxiety disorder and school phobia used more psychiatric outpatient care, and were more likely to live with their parents. These findings may be interpreted in the light of these children having limited social relationships. However, the sample was small, and authors cautioned not to make generalizing statements. Another study, also with a small sample \( (N = 27) \), found that young adults diagnosed with obsessive – compulsive disorder 2-7 years prior to follow-up were more likely than normal controls to live with their parents, were unemployed, and had multiple diagnoses (Flament et al., 1990).

Conversely, Last, Hansen, and Franco (1997) in a prospective study of 101 young adults that were followed for up to 8 years after initial participation in treatment, drew an optimistic conclusion about the effects of pure anxiety disorders on later psychosocial functioning. The only way anxious participants differed from normal controls is that they were more likely to live with their parents or other relatives. However, participants that had comorbid depressive disorder at original intake showed impairment in several areas: they were less likely than normal controls to be working or to be in school, and were more likely to use mental health services.
In summary, anxiety disorders are highly prevalent in children and adolescents and seem to exhibit continuity into adulthood for about 15% to 20% of children (Last et al., 1997). Clearly, it would be beneficial to identify children and adolescents who are at a greater risk for persistence of their anxiety disorders.

*Predicting Persistence of Anxiety Disorders*

Until recently researchers have been primarily interested in the effects of different types of psychotherapies on treatment outcomes, whereas client differences were considered to be nuisance variables. However, in light of the findings that at the most only 50% of children and adolescents will benefit from the efficacious treatments (Weisz & Jensen, 2001), researchers have started to examine other factors that can explain persistence of disorders in spite of treatment. One of the classes of variables that came into the spotlight was client characteristics.

As mentioned earlier, studies that examined predictors of anxiety persistence can be classified into prospective and treatment studies. Currently, there are more treatment than prospective studies, and there is a lack of studies conducted in clinical settings. The following pages will provide an overview of prospective and treatment studies that investigated predictive validity of different individual variables on persistence of anxiety disorders.

**Prospective Studies**

The three prospective studies that have been identified in the literature were interested in the course of primary anxiety disorders; the effects of individual characteristics on anxiety persistence were conducted as secondary analyses. The
findings of these studies are grouped together by each predictive variable under the main categories of clinical, demographic, and psychosocial predictors.

**Clinical Predictors**

*Severity of anxiety at intake.* There are inconsistent findings across the three studies about the effects of initial levels of anxiety on anxiety persistence. Anxiety persistence was defined as the presence of primary anxiety diagnoses at the follow-up assessment. One study (Cohen et al., 1993) reported that initial severity predicted anxiety persistence, whereas in another study, only scores at the end of the five-week treatment predicted anxiety persistence (Leonard et al., 1993). Cohen et al. included only children with overanxious anxiety disorder in their sample; Leonard et al. had only children with severe obsessive compulsive disorder in their sample. In Last et al.’s (1996) study that included a broad range of anxiety disorders (simple phobia, separation anxiety disorder, social phobia, overanxious anxiety disorder, see Table 1), initial anxiety severity had no effects on anxiety persistence. These inconsistent findings are not surprising, considering that these studies differed along a number of dimensions, such as the anxiety disorders in the samples, definitions of initial severity of anxiety and anxiety persistence, and statistical analyses used. Cohen et al. included children with overanxious anxiety disorders in their epidemiological sample, whereas Leonard et al. had only children with severe obsessive – compulsive disorder in their sample; different anxiety disorders were represented in Last et al.’s sample.

Cohen et al. (1993) defined initial severity as a score on a continuous scale. Children who met diagnostic criteria and had scale scores more than one standard deviation above the population mean, were assigned “moderate” levels of severity;
children who fell at two standard deviations above the population mean were identified as “severe.” Cohen et al. found that 47% of severe cases at intake were rediagnosed at the end of a two and a half period.

Severity in Leonard et al.’s (1993) study was operationalized as higher scores on the clinician completed Yale – Brown Obsessive – Compulsive Scale (Y-BOCS). On the 2 – 7 year follow-up, 43% of the sample continued to meet criteria for obsessive compulsive disorder. Severity scores after five weeks of clomipramine, but not initial scores, predicted anxiety persistence in multiple regressions, accounting for 12% of the variance. This phenomenon can be explained by the fact that only children with severe obsessive-compulsive disorder were included in this study, resulting in restricted variability of scores on the initial Yale – Brown Obsessive – Compulsive Scale. Almost 50% of the participants benefited from treatment, which created greater variability in scores and power to detect differences after five weeks of treatment.

Contrary to the above-mentioned studies that used measures of symptomatology to define initial severity of anxiety, Last et al.’s study (1996) defined severity as clinicians’ ratings on a 5-point scale, with higher scores indicating greater severity. Using logistic regression, Last et al. found that severity did not predict recovery (absence of DSM – III – R diagnoses) at a 3 - to 4 - year follow-up.

Discrepant findings in these three studies suggest that the effects of initial levels of anxiety on anxiety persistence may be contingent upon a number of factors, such as amount of variability in the initial scores of anxious symptomatology, definitions of anxiety severity and anxiety persistence, as well as methodological approaches. For
example, Leonard et al., (1993) were able to detect effects of initial severity on anxiety persistence only when more variability was introduced into the data.

**Comorbidity.** Comorbidity of anxiety disorders with depression had no effect on persistence of anxiety (Last et al., 1996; Leonard et al., 1993). The percentage of children with depressive disorders in these two studies ranged between 13 (Last et al., 1996) and 54 (Leonard et al., 1993). Leonard et al. also reported that comorbidity with externalizing disorders (13 % of the sample had disruptive behavior disorders) did not have significant effects on the persistence of obsessive – compulsive symptoms.

**Treatment after intake.** Last et al. (1996) and Cohen et al. (1993) included the presence/absence of treatment included into statistical analyses, although they did not report on the kinds of treatments that were provided. In his epidemiological sample, Cohen et al. found that children who received treatment had higher diagnostic persistence than those who had no treatment. This finding is not unusual, considering that children with greater severity would be referred for treatment. Last et al. were surprised to find that treatment was not a significant predictor of recovery from primary anxiety disorder. However, participation in treatment was voluntary in their study, and it may be that more severe cases decided to participate in treatment.

**Demographic Predictors**

**Age at intake and age of onset.** All three studies found that age at intake did not affect persistence of anxiety (Cohen et al., 1993; Last et al., 1996; Leonard et al., 1993). These studies included age ranges from about 5 to 18. Last et al. also reported that age of onset of the earliest psychiatric disorder was not related to recovery from initial anxiety disorder.
Gender. Gender did not affect persistence of anxiety disorders in three prospective studies (Cohen et al., 1993; Leonard et al., 1993; Last et al., 1996). The studies included an almost equal number of males and females, as well as both children and adolescents. When examining the effects of gender on persistence, it is important to investigate an interaction with age, considering the epidemiological findings that anxiety disorders have the same rates of occurrence in children, but are more prevalent in females once they enter adolescence (Rutter et al., 2003). It is interesting to consider whether the increase in prevalence rates for anxiety disorders in females is due to the disproportionate persistence of anxiety disorders in females or rather to the development of new anxiety disorders. None of the studies so far have analyzed the effects of age by gender interaction on anxiety persistence. Furthermore, the studies have not assessed gender by severity interaction. It is important to investigate if there are gender differences in anxiety persistence due to the different levels of initial severity in light of the findings that females may present with more severe symptoms of anxiety (King et al., 1996; Muris et al., 1998 a, b).

Psychosocial Predictors

Psychiatric illness in family members. Family history of anxiety disorders at intake did not predict presence of primary anxiety diagnoses at a three to four-year follow-up in one study (Last et al., 1996). Leonard et al. (1993) reported that the presence of any parental Axis I disorders predicted presence of anxiety diagnoses posttreatment, accounting for 10% of the variance in the final score of obsessive-compulsive symptoms. The differences in these two findings may be due to the fact that
Leonard et al. used a broader definition of psychopathology in their study than Last et al. and the length of follow-up differed between studies.

Summary of Prospective Studies

Several tentative conclusions may be drawn based on the review of the three prospective studies. There was no agreement between studies about the effects of initial levels of anxiety on anxiety persistence. In terms of the demographic predictors, neither age nor gender was found to predict anxiety persistence in these three studies. However, the effects of gender interactions have not been investigated in these studies. Furthermore, these studies did not include ethnicity as a predictive factor. The initial presentation of anxiety, as well as its course, is currently understudied in minority youth (Safren et al., 2000). The three prospective studies suggest that the findings about the effects of client characteristics on anxiety persistence may be contingent upon the definition of anxiety severity, variability in initial scores of anxious symptomatology, and the statistical approaches employed. Table 1 provides a brief summary of the three prospective studies.
<table>
<thead>
<tr>
<th>Study</th>
<th>Anxiety Disorders</th>
<th>Age group</th>
<th>Length of Follow-up</th>
<th>Significant Predictors</th>
<th>Non-significant Predictor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohen, Cohen, &amp; Brook, 1993</td>
<td>OAD</td>
<td>9-18</td>
<td>2 ½ years</td>
<td>a) more severe initial anxiety</td>
<td>a) age at intake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b) gender</td>
</tr>
<tr>
<td>Last, Perrin, Hersen, &amp; Kazdin, 1996</td>
<td>simple phobia</td>
<td>5-18</td>
<td>3-4 years</td>
<td>none</td>
<td>a) initial severity</td>
</tr>
<tr>
<td></td>
<td>social phobia</td>
<td></td>
<td></td>
<td></td>
<td>b) age at intake</td>
</tr>
<tr>
<td></td>
<td>OAD,OCD</td>
<td></td>
<td></td>
<td></td>
<td>c) age of onset of earliest psychiatric d/o</td>
</tr>
<tr>
<td></td>
<td>anxiety NOS</td>
<td></td>
<td></td>
<td></td>
<td>d) gender</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>e) history of depression</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(at and before intake)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>f) family history of anxiety</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>g) treatment after intake</td>
</tr>
<tr>
<td>Leonard et al., 1993</td>
<td>OCD</td>
<td>6-18</td>
<td>2-7 years</td>
<td>a) parental Axis I diagnosis;</td>
<td>a) age at onset and intake;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b) more severe OCD symptoms after 5 weeks of therapy</td>
<td>b) gender;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>c) lifetime history of tics</td>
<td>c) initial severity of symptoms</td>
</tr>
</tbody>
</table>
Treatment Studies

Compared to a small number of prospective studies, there is a larger number of treatment studies that examined effects of client variables on treatment outcomes (presence of anxiety diagnoses). In treatment studies, therapy was delivered as part of randomized clinical trials or at anxiety clinics that were adjunct to universities. Seven treatment studies analyzed the predictive values of different variables and produced a few consistent findings. These studies differed on various dimensions that could have affected the findings, such as the length of the follow-up, nature of treatment, anxiety disorders included in the sample and sample size.

The findings from the treatment studies are grouped together by predictive variables: clinical (severity of anxiety at intake, internalizing/externalizing comorbidity, therapeutic relationship, parental involvement); demographic (age at intake, gender, ethnicity, socioeconomic status, IQ); and psychosocial (parental psychopathology, family composition). Some studies included a broader range of predictors (Berman, Weems, Silverman, & Kurtines, 2000; Southam-Gerow, Kendall, & Weersing, 2001), whereas other studies investigated the predictive values of only a few predictors (Kendall, 1994; Kendall et al., 1997).

Clinical Predictors

Severity of anxiety at intake. Four studies investigated effects of initial anxiety severity on anxiety persistence. These studies defined initial severity in one of the two ways: (a) high levels of internalizing symptoms on some parent-or child-rated outcome
measure; or (b) clinician-rated index of severity that took into consideration impairment in daily living.

Two studies reported that the higher levels of anxiety and depression symptoms at intake predicted treatment failure, defined as the presence of an anxiety diagnosis at post-treatment (Southam – Gerow et al., 2001; Berman et al., 2000). In Southam - Gerow et al.’s study (2001) the withdrawn subscale on the parent-rated version of Child Behavior Checklist (CBCL) (Achenbach, 1991a) and anxious/depressed subscale on the Teacher Report Measure (Achenbach, 1991b) predicted treatment failure at posttreatment and at the one-year follow-up; child report was not included in this study.

Conversely, Berman et al. (2000) found that none of the parent-completed measures about the child (CBCL, Revised Children’s Manifest Anxiety Scale, Reynolds & Richmond, 1978) detected significant differences between treatment response and treatment failure groups at posttreatment. Similarly, child rated Revised Children’s Manifest Anxiety Scale did not differentiate treatment failure and success groups. However, child – completed ratings of depression (Children’s Depression Inventory; Kovacs, 1981) and trait anxiety (State Trait Anxiety Inventory for Children – Trait Version; Spielberg, 1973) revealed that higher internalizing symptoms at intake predicted the likelihood of being in the treatment failure group posttreatment. The differences in findings on child self-report may be explained by the fact that the two anxiety measures tap into different constructs of anxiety. Berman et al. (2000) also included a clinician-rated severity index in their study, which will be discussed later.

The above-mentioned studies produced discrepant findings on the parent reports.
The robust findings in the child literature that youth are often better reporters of their internalizing states than their parents (Grills & Ollendick, 2002) can explain why Berman et al. (2000) did not detect a relationship on parent reports. In terms of the child report, both studies agreed that anxious and depressive symptomatology on CBCL did not affect treatment outcome. It was the higher levels of trait anxiety and depression measured by Children’s Depression Inventory that predicted treatment failure in Berman et al.’s (2000) study. There were many similarities between Southam-Gerow et al. (2001) and Berman et al.’s (2000) studies, such as examining the efficacy of cognitive-behavioral therapy, having a sample size of 106 participants, and including a broader range of anxiety disorders.

One study, defining severity through a clinician-rated index, reported that higher levels of initial anxiety predicted the likelihood of having anxiety disorders at follow-up (Dadds et al., 1999). Dadds et al. used an 8-point scale to assess severity of symptoms and the degree of interference (0 = “no interference”, 8 = “very severely disturbing/disabling”). Dadds et al. implemented an early intervention and prevention program in school for children with anxiety disorders, conducting treatment in groups of 10. Children who received a severity rating of 6 (“markedly disturbing/disabling) and higher were excluded from the study and referred for individual treatment. Thus, severity of children in the Dadds et al.’s study was restricted. In Dadds et al.’s study severity of anxiety at intake together with two other factors (female gender and parental anxiety) was related to anxiety persistence at posttreatment for the monitoring group but not for the intervention group. The monitoring group received no active intervention except for the review of the child’s progress at 6-, 12-, and 24-month follow-up assessments. In
fact, initial severity of anxiety was the most robust predictor of anxiety persistence at the 2-year follow-up for this group of children.

Using a similar severity rating system (8 – point scale), that was filled out by both clinicians and parents, Berman et al. (2000) found that initial severity did not differentiate between treatment success and treatment failure groups. This finding was consistent across two raters. Berman et al. did not include a control group in their study. As a result, this finding is similar to Dadds et al.’s (1999) report, stating that initial severity of anxiety did not predict persistence of anxiety for children who received active treatment.

Only one study used a continuous measure (Pediatric Anxiety Rating Scale; Research Units on Pediatric Psychopharmacology Anxiety Study Group (RUPP) Anxiety Study Group, 2002) as a primary outcome of treatment effectiveness; this was a pharmacological approach to treatment of anxiety disorders (Walkup et al., 2003). Initial severity of anxiety was measured by the scores on PARS. Walkup et al. found that clients with greater scores on PARS at intake improved more than clients with lower scores at intake. The authors suggested that their finding was not surprising, considering that clients who have more severe initial symptoms have more room to improve.

There are advantages and disadvantages to evaluating initial severity in terms of clinician – rated index versus higher levels of symptomatology on some measure. As mentioned above, using outcome measures of internalizing symptoms may provide greater variability, which gives more power to detect potential effects compared to severity - rated index. Moreover, using outcome measures allows for multiple perspectives on outcome, which is crucial when looking at the internalizing symptoms of children and adolescents. As was evidenced in Berman et al.’s study (2000), parental
report did not detect any differences between treatment failure and response groups, but child self-report did.

In summary, there is disagreement about the effects of initial levels of anxiety symptoms on presence/absence of anxiety diagnoses. The relationship between initial levels of anxiety and anxiety persistence in the described studies appears to be contingent on the rater of the outcome, the operationalization of anxiety severity, and the presence/absence of active treatment versus control group. Future studies need to address these multiple issues if we are to draw accurate conclusions.

Comorbidity with internalizing disorders. Two studies of cognitive-behavioral therapy reported that comorbid anxiety disorders had no effect on presence/absence of anxiety diagnoses posttreatment or reduction of clinician-rated severity index (Berman et al., 2000). Further, comorbid anxiety disorders had no effects on changes between intake and follow-up on measures of internalizing symptoms, such as CBCL, Revised Children’s Manifest Anxiety Scale and Children’s Depression Inventory (Kendall et al., 1997). Approximately half of the children in these studies presented with comorbid anxiety disorders, allowing for the generalizability of the findings.

Although Berman et al. (2000) reported no relationship between comorbid anxiety disorders and treatment outcome, they also found that children who scored high on self-report measures of depression and trait anxiety at intake were significantly more likely to retain their diagnoses at posttreatment. Similarly, another study reported that higher levels of internalizing symptoms on parent and teacher reports at intake were related to diagnostic persistence (Southam – Gerow et al., 2001). These few studies show an interesting pattern – comorbid internalizing diagnoses did not affect outcome, however,
higher levels of internalizing symptoms were related to anxiety persistence. This finding can be explained by the fact that using internalizing symptomatology as a predictor allows for greater variability and possibility of detecting relationships compared to using categorical diagnostic labels. Finally, children can have internalizing symptoms that run short of meeting diagnostic criteria, but may still affect persistence of their primary anxiety disorders. Using outcome measures of symptomatology allows us to learn about clinical presentation of these children.

_Comorbidity with externalizing disorders._ There is agreement in the literature that the presence of comorbid externalizing disorders has no effect on treatment outcome (Berman et al., 2000; Kendall et al., 1997; Walkup et al., 2003). Two of the studies (Kendall et al., 1997; Walkup et al., 2003) included large percentage of participants with comorbid externalizing disorders (Attention Deficit/Hyperactivity Disorder, and Oppositional Defiant Disorder) ranging from 16% to 30%. Moreover, children with different anxiety disorders were represented across these three studies (see Table 2), making results generalizable across anxiety disorders.

One study investigated the effects of externalizing symptoms on treatment response (Southam – Gerow et al., 2001), concluding that maternal and teacher reports of child externalizing symptoms (on CBCL and Teacher Report Measure) did not predict the likelihood of having anxiety diagnosis at posttreatment or at a year follow-up.

_Therapeutic relationship._ Two studies found that children’s perception of the quality of therapeutic relationship was not related to treatment gains posttreatment or maintenance of scores at 1–year follow-up (Kendall 1994; Kendall et al., 1997). These two studies included different samples of youth with anxiety disorders. Multiple child
and parent outcome measures of symptoms were used to assess response to treatment. Using a 7-item scale in both studies children rated therapeutic relationship very highly, resulting in ceiling effect.

*Parental involvement.* Kendall and his colleagues (Kendall 1994; Kendall et al., 1997) reported that therapists’ ratings of parental involvement in treatment had no effect on treatment outcome or follow-up assessment. Therapists rated parental involvement on a 7-point scale that included three areas: amount of contact with parents, degree of parental interference, and degree of beneficial parental involvement. In the area of childhood externalizing disorder, parental involvement is a critical factor to treatment success, as treatments are based on behavioral parent training and improving communication between parents and the school (Pelham, Wheeler, & Chronis, 1998; Webster-Stratton & Reid, 2003).

*Demographic Predictors*

*Age at intake.* There seems to be agreement that age at intake has no effect on treatment outcome for children with anxiety disorders (Berman et al. 2000; Dadds et. al. 1999; Kendall et al. 1997; Walkup et al., 2003). Studies included children ages 6 to 17 (Berman et al., 2000; Walkup et al., 2003) and children ages 9 to 13 (Dadds et al., 1999; Kendall et al., 1997).

However, one study reported that older age at intake ($M = 11.44, SD = 1.5$) predicted poor treatment response at posttreatment compared to younger age ($M = 10.83, SD = 1.2$). This finding was no longer present at the 1 – year follow - up (Southam – Gerow et al., 2001). Children between the ages of 7 and 15 were included in this study.
Poor treatment response was defined as the presence of primary diagnoses in addition to a parent–rated severity score of at least 2 on a 0 to 4 scale.

**Gender.** All the studies that included gender as a predictive factor found that gender alone had no effect on presence or absence of anxiety disorder posttreatment (Berman et al., 2000; Dadds et al., 1999; Southam-Gerow et al., 2001; Treadwell et al., 1995, Walkup et al., 2003;). Nevertheless, one study reported that gender became a significant predictor when initial severity of anxiety was added into the model (Dadds et al., 1999). In this study, girls with higher levels of anxiety at intake were more likely to maintain their anxiety disorders at posttreatment than males. This relationship, however, was not evident at the 2-year follow-up. Dadds et al. stated that it was difficult to interpret that finding. It is important to continue investigating whether high levels of anxiety at intake affect persistence of anxiety in females, as some studies report that females present with more severe symptoms of anxiety (King et al., 1996; Muris et al., 1998a, b). Furthermore, none of the treatment studies examined the influence of gender by age interaction on treatment outcome, which is a limitation, considering that the prevalence of anxiety disorders increases almost twofold in females compared to males when they enter adolescence (Rutter et al., 2003).

**Ethnicity.** The five studies that assessed ethnicity as a predictive variable reported that ethnicity did not affect treatment outcome (Berman et al., 2000; Kendall, 1994; Southam-Gerow et al., 2001; Treadwell et al., 1995; Walkup et al., 2003). However, it is important to keep in mind that the percentages of ethnic groups in these studies were relatively small, and may have created lack of power to detect possible differences. The percentages of ethnic groups were 5% African Americans, 4% Hispanics, and 1%
Asian Americans in Southam – Gerow et al.’s study; 36 % Hispanics and 2 % African Americans in Berman et al.’s study; 11 % African Americans in Treadwell et al.’s study; and 22 % African Americans in Kendall’s study. Studies with larger ethnic samples are needed before any conclusive statement about the effect of ethnicity on anxiety persistence can be made.

*Socioeconomic status (SES).* Only three studies included SES as a predictive variable and agreed that it had no effect on treatment outcome (Berman et al., 2000; Southam - Gerow et al., 2001; Walkup et al., 2003).

*IQ.* One study looked at the effects of intellectual levels of children as measured by standardized tests, and reported that IQ did not act as a predictor of treatment outcome (Walkup et al., 2003). Walkup et al. (2003) dichotomized IQ scores into below/above 100, which creates a limitation mentioned in the previous section.

**Psychosocial Predictors**

*Parental psychopathology.* Studies report that poor psychological health of parents is related to persistence of primary anxiety disorders in spite of treatment. Studies found that maternal depressive symptoms on Beck Depression Inventory (Berman et al., 2000; Southam - Gerow et al., 2001) and parental self-reported anxiety (Dadds et al., 1999) predicted poor treatment response. In Dadds et al.’s study parental self-reported anxiety predicted poor treatment response at the end of the 10-week intervention program, along with severity of child’s diagnosis at intake, and female gender. However, parental anxiety was no longer a significant predictor at the 2 - year follow – up assessment (Dadds et al., 1999). This finding, however, does not mean that relationship between parental psychological functioning and treatment outcome
disappears over time. High levels of maternal depressive symptoms were related to poor treatment outcome at a 1-year follow-up in Southam–Gerow et al.’s study. Southam-Gerow et al. concluded that since the mechanism of poor treatment response may be parent-child relational factors, it may be important integrate parents into treatment.

Berman et al. (2000) also found that parental global severity ratings at intake, calculated from the average of 90 symptoms on the Symptom Check List (SCL-90, Derogatis, 1983), were significantly higher for the treatment failure group than the treatment success group. Treatment failure was defined as presence of primary anxiety disorder or reduction in severity by four points on the 8-point clinician rated severity scale in this study.

*Family composition.* Only one study examined the effects of living with both parents versus single households on treatment outcome (Southam – Gerow et al., 2001). They found that family composition had no effect on treatment outcome. Eighty one percent of the sample (\(N = 109\)) lived in two-parent households, and only 19 % (\(N = 26\)) lived with a single parent. The unequal sample sizes may have created lack of power to detect potential differences. Considering that childhood and adolescent anxiety can stem from a variety of sources, it is important to continue investigating the effects of the living environment on the course of anxiety in youth.

*Summary of Treatment Studies*

Overall, the eight studies that analyzed effects of different variables on treatment outcome for anxiety disorders produced a few consistent findings. There is agreement that comorbid anxiety disorders had no effect on treatment outcome (Berman et al., 2000; Kendall et al., 1997). It is not possible to make conclusions about the effects of comorbid
depressive disorders on anxiety persistence at this time, since studies included very small samples of comorbid depressive disorders. Studies reported that comorbid externalizing disorders had no effects on anxiety persistence. Furthermore, there were consistent findings that gender, age at intake, ethnicity, SES and IQ had no effect on presence/absence of diagnoses (Berman et al., 2000; Southam - Gerow et al., 2001; Treadwell et al., 1995; Walkup et al., 2003).

There was disagreement about the effects of initial levels of anxiety on anxiety persistence (presence of primary diagnosis at posttreatment) (Berman et al., 2000; Dadds et al., 1999; Southam – Gerow et al., 2001). The relationship between initial levels of anxiety and presence of anxiety diagnoses posttreatment seemed to be contingent upon the rater of the outcome, the operationalization of anxiety severity, the measures of anxiety, and the presence or absence of active treatment.

Finally, studies have consistently shown that parental psychopathology predicted the likelihood of having primary anxiety diagnoses at posttreatment. Other psychosocial variables have received little attention from researchers. Brief descriptive information about the eight treatment studies is presented in Table 2.

Clearly, the current findings about the predictors of anxiety persistence in children and adolescents are limited and warrant further investigation.
<table>
<thead>
<tr>
<th>Study</th>
<th>Anxiety Disorders</th>
<th>Age</th>
<th>Length of treatment</th>
<th>Predictors of poor treatment response</th>
<th>Predictors not related to outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southam-Gerow, Kendall, &amp; Weersing, 2001</td>
<td>SAD, GAD, social phobia, AD</td>
<td>7-15</td>
<td>12 weeks</td>
<td>a) older age (at posttreatment only); b) high levels of maternal depressive symptoms (at follow-up only); c) higher anxiety and depression;</td>
<td>a) gender; b) SES; c) family composition (single vs. 2 parents); d) ethnicity; e) externalizing symptoms; f) number of comorbid disorders;</td>
</tr>
<tr>
<td>Berman, Weems, Silverman, &amp; Kurtines, 2000</td>
<td>GAD, simple phobia, social phobia, agoraphobia</td>
<td>6-17</td>
<td>10 weeks</td>
<td>a) high scores on depression and trait anxiety scale; b) high parental global severity rating; c) parental depression;</td>
<td>a) age; b) gender; c) SES; d) comorbid depression; e) ethnicity f) comorbid externalizing disorders; g) total number of diagnosis;</td>
</tr>
<tr>
<td>Dadds et al., 1999</td>
<td>GAD, SAD, simple phobia, social phobia</td>
<td>7-14</td>
<td>10 weeks</td>
<td>a) female gender; b) parental anxiety; c) more severe initial anxiety;</td>
<td>a) gender; b) parental anxiety</td>
</tr>
<tr>
<td>Treadwell, Flannery-Schroeder, &amp; Kendall, 1995</td>
<td>OAD, SAD, AD</td>
<td>9-13</td>
<td>16 weeks</td>
<td>a) more severe initial anxiety;</td>
<td>a) gender; b) ethnicity</td>
</tr>
<tr>
<td>Study</td>
<td>Anxiety Disorders</td>
<td>Age</td>
<td>Length of treatment</td>
<td>Predictors of poor treatment response</td>
<td>Predictors not related to outcome</td>
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</tr>
<tr>
<td>Walkup et al., 2002</td>
<td>GAD, social phobia, SAD</td>
<td>6-17</td>
<td>8 weeks</td>
<td>a) more severe initial anxiety; b) having social phobia; c) lower depression</td>
<td>a) age; b) gender; c) ethnicity; d) IQ; e) comorbidity with ADHD; f) SES; g) parental education;</td>
</tr>
<tr>
<td>Kendall, 1994</td>
<td>OAD, SAD, AD</td>
<td>9-13</td>
<td>16 weeks</td>
<td></td>
<td>a) child’s perception of therapeutic relationship; b) therapist’s perception of parental involvement</td>
</tr>
<tr>
<td>Kendall et al., 1997</td>
<td>OAD, SAD, AD</td>
<td>9-13</td>
<td>16 weeks</td>
<td></td>
<td>a) age; b) comorbidity (with another anxiety disorder, or any other disorder); c) therapist’s ratings of parental involvement;</td>
</tr>
</tbody>
</table>
General Limitations of Anxiety Studies: Ways to Improve upon them.

There are only few consistent findings in the literature about characteristics of children and adolescents that predict persistence of their anxiety disorders. In fact, there are only three perspective and eight treatment studies that examined this relationship. Furthermore, these studies had some limitations that are delineated below, and are paired with current study’s improvements upon them.

First, the majority of the studies have been conducted at the university – based anxiety clinics or as part of randomized clinical trials. Most of these studies had exclusion criteria and used structured clinical diagnostic interviews, limiting the ecological validity of findings. The lack of the studies in clinical settings is not surprising, considering that it is hard to establish reliability of diagnostic categories and control for many variables. However, there is a move towards assessing effectiveness of treatment in real-world clinical settings versus efficacy in controlled research condition in treatment outcome literature to make results more generalizable and applicable (Weisz & Jensen, 2001). In light of this move, the present study was interested in predictors of anxiety persistence in children and adolescents who presented for outpatient services. It is quite likely that children with anxiety disorders in real-world clinical settings are qualitatively different from children with anxiety disorders participating in randomized treatment studies, as the latter usually have to meet certain exclusion criteria. This is the first study to the authors’ knowledge to assess the predictors of anxiety persistence in children with anxiety disorders in outpatient mental health settings.
Second, half of the studies defined anxiety persistence as the presence of primary anxiety diagnoses posttreatment or reduction in clinician-rated index of severity. There are a number of advantages to using diagnostic categories as a measure of outcome. Diagnostic categories provide a succinct way of conceptualizing pathological behavior and simplify communication between professionals (Widiger & Coker, 2003). Moreover, there is a body of literature that demonstrates validity of diagnostic categories (Widiger & Coker, 2003). However, the categorical approach to mental illness has its limitations. Advocates of the dimensional model (mental disorders exist along a dimension) claim that due to the continuous nature of pathology it cannot be easily divided into distinct categories; when pathology is categories it produces high rates of comorbidities between diagnoses (Regier et al., 1998). In terms of the validity, there is currently a larger body of literature supporting dimensional rather than categorical model (see Widiger & Coker, 2003). When it comes to statistical analyses, diagnostic categories create lack of variability in outcome and reduce power to detect potential differences. Thus it is important to include continuous measures of outcome which provide more variability. Although five studies delineated earlier used a continuous measure of outcome, only two of them (Leonard et al., 1993; Walks et al., 2003) included a wide range of predictors. Furthermore, sample in Leonard et al. consisted of children with severe obsessive compulsive disorder only, limiting the generalizability of results. Thus more studies are needed to investigate the effects of children and adolescent’s characteristics on the persistence of the internalizing symptoms measured on a continuous scale.

Third, none of the studies assessed the effects of children’s functional impairment on persistence of their anxiety disorders; studies primarily investigated the effects of
initial severity of symptoms on anxiety persistence. However, research shows that emotional/behavior problems in children and their functioning are constructs that are only modestly related, sharing a variance between 5% to 18% (Kazdin, 1993; Rosenblatt, & Rosenblatt, 2002). In light of these findings, the current study investigated the effects of both internalizing symptoms and functional impairment on persistence of anxiety disorders and internalizing symptomatology.

Fourth, studies found no effects of race on anxiety persistence (Kendall 1994; Southam – Gerow et al., 2001; Treadwell et al., 1995; Walkup et al., 2003). However, sample sizes of children from different ethnic groups were small in these studies. The present study will assess the impact of race on persistence of anxiety in a large sample of African-American children and adolescents.

Finally, previous studies have not examined possible interactions between gender and age and gender and initial severity of symptomatology on anxiety persistence. Examining the effects of gender alone studies reported that gender had no effects on anxiety persistence. However, epidemiological studies report a twofold increase in anxiety disorders in females after puberty compared to teenage males and prepubertal females (Rutter et al., 2003). It is interesting to consider whether the increase in prevalence rates for anxiety disorders in prepubertal females is due to the disproportionate persistence of anxiety disorders in females or to the development of new anxiety disorders. The present study will attempt to shed light on this question though examining the effects of gender by age interaction on the persistence of internalizing symptomatology. Furthermore, the present study will examine gender by initial severity interaction, as females presented with higher severity of anxiety symptomatology than
males in some studies (Muris et al., 1998 a, b) and may thus exhibit smaller change scores.

Purpose of the Current Study

The findings we have today about characteristics of children and adolescents that predict persistence of anxiety disorders and affect treatment outcomes are limited and warrant further investigation. The goal of the present study was to investigate the effects of clinical and demographic characteristics of children and adolescents at intake on persistence of anxiety diagnoses and internalizing symptoms at 1-year follow-up in an outpatient clinical setting. We operationalized persistence of internalizing symptoms as the change score between intake and 1-year follow-up on the internalizing subscale of an outcome measure. Furthermore, this study attempted to clarify the effects of gender on persistence of internalizing symptomatology by including gender by age and gender by severity interactions. The present study was the first study to the authors’ knowledge to investigate factors that predicted persistence of anxiety in children and adolescents receiving services from outpatient clinical facilities. No data was available on the mode of treatment or number of sessions provided to children and adolescents. However, as all children were receiving services there was no need to control for treatment effects. One of the major advantages to studying real-world clinical samples is the generalizability of results to clinical practice. One of the disadvantages is that in clinical setting it is often not possible to control for a number of variables (such as comorbid diagnoses, treatment, etc.), which can confounded the results.

The current study improved upon previous findings in a number of ways. First, in addition to looking at diagnostic persistence, the current study used a continuous measure
of outcome. Second, parallel forms of child-, parent-, and agency worker- reports were used, comparing the impact of variables across raters. Agency workers on the Ohio Scales included case managers, clinical psychologists, and counselors. Third, the present study included a large percentage of African Americans in the sample, which surpassed the percentages of African Americans in other studies. Lastly, the current study was the first study to investigate the effects of gender interactions on persistence of internalizing symptomatology of children and adolescents with anxiety disorders.

In the present study the effects of the following variables were assessed on persistence of anxiety diagnoses and internalizing symptomatology: internalizing symptoms, externalizing symptoms, delinquency symptoms, functioning, gender, age at intake, ethnicity, gender by age and gender by severity interactions. Initial severity of internalizing symptoms was defined as higher scores on the sum of the nine internalizing items on the Ohio Scales. Similarly, externalizing symptomatology and functioning were operationalized as total score of externalizing items and the score on the Functioning Scale.

Predictions of the Current Study

Hypotheses of Individual Variables

The following variables gathered at intake were hypothesized to predict the presence of anxiety diagnoses and smaller change scores at a year follow-up: (a) higher levels of initial severity of internalizing symptomatology; (b) greater degrees of functional impairment; (c) higher levels of delinquency; and (d) older age. These
findings were predicted to occur according to at least one of the three informants, based on the robust findings of low agreement between informants (Achenbach et al., 1987).

Specific hypotheses were not made about gender, as a current study made a number of improvements upon previous studies that failed to find a relationship between gender and anxiety persistence. Also, no hypotheses were made about effects of externalizing symptoms, as previous literature primarily examined effects of externalizing diagnoses. In terms of race, specific predictions were hard to make, as findings from previous research may be not be representative of the possible relationship due to small sample sizes.

Combined Model

The current study was interested in how the above-mentioned predictors overlap and together predict persistence of symptomatology. It is hard to make predictions about this combined model, since previous studies used other statistical approaches. Previous studies employed stepwise regressions or t-tests and chi-squares as their statistical procedures. T-tests and chi-squares examine effects of each variable onto a dichotomous dependent variable (presence/absence of diagnoses) and do not allow studying the overlapping effects of variables. To examine overlapping effects of variables on persistence of internalizing symptomatology hierarchical multiple regressions were conducted in the current study. The only other study that used similar approach reported that higher initial severity of symptoms accounted for greatest improvement in scores (Walks et al., 2003). Thus we predicted that initial severity of internalizing symptoms will account for the greatest amount of variance in the change score. Hence, initial severity of internalizing symptoms was entered as Block 1. The present study was
interested in how much variance other predictors could explain after initial severity was already in the model. We were particularly interested in the effects of two gender interactions on the internalizing change scores. In terms of the gender by age interaction, it was predicted that the change scores will decrease with age for females but stay the same for males. As for gender by initial severity of internalizing symptoms interaction, it was predicted that females would have smaller change scores than males due to higher initial levels of internalizing symptomatology.
Methods

Participants

Participants were 176 youth, 466 parents (or primary caregivers) and 521 agency workers, who had a primary diagnosis of one of the anxiety disorders and filled out corresponding forms of the Ohio Scales about youths’ problem severity and functioning (see Appendix A). The number of children who retained their primary diagnoses at 1-year follow-up was high. Eighty two percent of children and adolescents in each sample retained their primary anxiety diagnoses. Children diagnosed with posttraumatic stress disorder constituted more than half of the sample across all three reporters and were rated to have similar levels of internalizing severity at intake as the children with other anxiety disorders. Considering the pervasive nature of posttraumatic stress disorder (Pfefferbaum, 1997; Yule et al., 2000) separate percentages of diagnostic persistence were calculated for children who presented with other anxiety diagnoses. The pattern evidenced little change; 78 % to 84 % of children retained their primary anxiety diagnoses across three samples.

Agency workers included case managers, licensed psychologist, and counselors. The youth, parent, and agency worker samples in the current study were overlapping but were not the same. Thus comparisons across informants cannot be made. There were more parent and agency worker reports, as parents and agency workers could fill out the forms for the children ages 5 to 18, whereas youth could fill out the form starting age 12 only. In addition, in some cases only one source of data was available. As a result, separate descriptive analyses are provided for parent, agency worker and youth reports.
and the samples were treated as separate in the analyses. In addition to clinical and
demographic information, the total Problem Severity scores across three raters at intake
and 1-year follow-up are presented to give some indication of the severity of symptoms
and their change over time (see Tables 3-5). The total Problem Severity scores were
divided into five levels of severity: none (0 – 9); mild (10 – 19); moderate (20 – 36);
severe (37 – 52); extreme (53 - 200) (Ogles & Healy, 2005). As can be evident from the
tables, the largest percentage of participants fell into moderate to severe category.

Table 3

*Levels of Problem Severity on Youth Report at Intake and Follow-up*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th></th>
<th></th>
<th>Time 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>None (0-9)</td>
<td>29</td>
<td>16.5</td>
<td>62</td>
<td>35.2</td>
<td></td>
</tr>
<tr>
<td>Mild (10 – 19)</td>
<td>47</td>
<td>26.7</td>
<td>62</td>
<td>35.2</td>
<td></td>
</tr>
<tr>
<td>Moderate (20 – 36)</td>
<td>49</td>
<td>27.8</td>
<td>32</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>Severe (37 – 52)</td>
<td>42</td>
<td>23.9</td>
<td>17</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>Extreme (53 – 200)</td>
<td>9</td>
<td>5.1</td>
<td>3</td>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Parentheses indicate the range of scores on the Problem Severity scale necessary to
fall within a certain severity level.
Table 4

Levels of Problem Severity on Parent Report at Intake and Follow-up

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th></th>
<th>Time 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>None (0-9)</td>
<td>46</td>
<td>9.9</td>
<td>86</td>
<td>18.5</td>
</tr>
<tr>
<td>Mild (10 – 19)</td>
<td>66</td>
<td>14.2</td>
<td>153</td>
<td>32.8</td>
</tr>
<tr>
<td>Moderate (20 – 36)</td>
<td>193</td>
<td>41.4</td>
<td>151</td>
<td>32.4</td>
</tr>
<tr>
<td>Severe (37 – 52)</td>
<td>100</td>
<td>21.5</td>
<td>53</td>
<td>11.4</td>
</tr>
<tr>
<td>Extreme (53 – 200)</td>
<td>55</td>
<td>11.8</td>
<td>18</td>
<td>3.9</td>
</tr>
</tbody>
</table>

*Note.* Parentheses indicate the range of scores on the Problem Severity scale necessary to fall within a certain severity level.
Table 5

*Levels of Problem Severity on Agency Worker Report at Intake and Follow-up*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th></th>
<th>Time 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>None (0-9)</td>
<td>18</td>
<td>3.5</td>
<td>63</td>
<td>12.1</td>
</tr>
<tr>
<td>Mild (10 – 19)</td>
<td>93</td>
<td>17.9</td>
<td>177</td>
<td>34.0</td>
</tr>
<tr>
<td>Moderate (20 – 36)</td>
<td>241</td>
<td>46.3</td>
<td>210</td>
<td>40.3</td>
</tr>
<tr>
<td>Severe (37 – 52)</td>
<td>119</td>
<td>22.8</td>
<td>61</td>
<td>11.7</td>
</tr>
<tr>
<td>Extreme (53 – 200)</td>
<td>43</td>
<td>8.3</td>
<td>10</td>
<td>1.9</td>
</tr>
</tbody>
</table>

*Note.* Parentheses indicate the range of scores on the Problem Severity scale necessary to fall within a certain severity level.

The current sample is derived from the archival deidentified dataset of children and adolescents, who received outpatient mental health services by publicly funded agencies in the state of Ohio. The current study did not assess or control for treatment, although all children were in treatment. Diagnoses were made in the clinical setting by licensed mental health agency workers; no data is available on the procedures and instruments used in deriving diagnoses. Children had to meet three criteria to qualify for the current study: (a) an anxiety disorder as a primary diagnosis; (b) initial administration of the Ohio Scales within the first two month of youths’ intake; (c) two administrations of the Ohio Scales, within two months of intake and a year follow-up. The third criteria was crucial for the purposes of the current study, as a number of children in the dataset have been receiving mental health services for various lengths of time when the state of Ohio implemented mandatory administration of the Ohio Scales. Children and adolescents in the current sample presented with an average internalizing score on the Ohio scales in the 13 to 15 range out of the possible 0 – 45 points. Interestingly, levels of externalizing
symptoms were as high as levels of internalizing, ranging from 11 to 16 out of the possible 0 – 40 points. In terms of race, there were less than 1 % of Native American/Pacific Islander, 1 % of Hispanic/Latino, 50 % of White and 30 % of African Americans in the dataset. Due to the small percentage of Native American/Pacific Islander and Hispanic/Latino in the current dataset race was coded as majority (white) being a “2”, and the minority (African Americans and others) represented by a “1.”

Parent report. The sample included 466 parental reports of their children, with an equal gender representation of youth (50 % males; 50 % females). At a year follow-up 380 children maintained an anxiety diagnosis. The sample was ethnically diverse with 52 % Caucasians, 31.5 % African Americans, and less than 1 % of Native Americans and Hispanics. Primary anxiety diagnoses at intake included post traumatic stress disorder (53.4 %), generalized anxiety disorder (14.8 %) and anxiety disorder not otherwise specified (13.7 %). For the frequencies of all other anxiety disorders at intake see Table 6. In terms of their internalizing symptoms at intake, according to the parent report youth presented with an average score of 13.00 (SD = 8.50) with 0 – 40 range. For the descriptive information on the clinical variables see Table 7.

Youth report. There were 176 children and adolescents in the sample with primary anxiety diagnoses. This number decreased to 145 at a year follow-up. The sample was predominantly female (67 %) and ethnically diverse with 56 % Caucasians, 28 % African Americans, and less than 1 % of Native Americans and Hispanics. Primary anxiety diagnoses at intake included post traumatic stress disorder (55.1 %), generalized anxiety disorder (14.2 %) and anxiety disorder not otherwise specified (12.5 %). For the frequencies of all other anxiety disorders at intake see Table 6. Youth presented with an
average internalizing score of 12.40 ($SD = 9.09$), with 0 – 40 range. For the descriptive information on the clinical variables see Table 7.

Agency worker report. The sample included reports of agency workers on 521 children with anxiety disorders. A year later, 422 children and adolescents maintained an anxiety diagnosis. This sample of youth had a slightly larger percentage of females (52.8 %) and was ethnically diverse (see Table 6). According to agency workers, youth entered treatment with an average score of 14.74 ($SD = 8.02$) on their internalizing symptoms (see Table 7, for the rest of the clinical variables).

Table 6

Descriptive Statistics of Categorical Variables at Intake

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th></th>
<th>Youth</th>
<th></th>
<th>Agency worker</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>233</td>
<td>50.0</td>
<td>119</td>
<td>67.6</td>
<td>275</td>
<td>52.8</td>
</tr>
<tr>
<td>Male</td>
<td>233</td>
<td>50.0</td>
<td>57</td>
<td>32.4</td>
<td>246</td>
<td>47.2</td>
</tr>
<tr>
<td>Caucasian</td>
<td>242</td>
<td>51.9</td>
<td>99</td>
<td>56.3</td>
<td>253</td>
<td>48.6</td>
</tr>
<tr>
<td>African American</td>
<td>147</td>
<td>31.5</td>
<td>49</td>
<td>27.8</td>
<td>163</td>
<td>31.3</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>8</td>
<td>1.7</td>
<td>1</td>
<td>.6</td>
<td>7</td>
<td>1.3</td>
</tr>
<tr>
<td>Native American/</td>
<td>1</td>
<td>.2</td>
<td>1</td>
<td>.6</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTSD</td>
<td>249</td>
<td>53.4</td>
<td>97</td>
<td>55.1</td>
<td>284</td>
<td>54.5</td>
</tr>
<tr>
<td>GAD</td>
<td>69</td>
<td>14.8</td>
<td>25</td>
<td>14.2</td>
<td>78</td>
<td>15.0</td>
</tr>
<tr>
<td>Anxiety NOS</td>
<td>64</td>
<td>13.7</td>
<td>22</td>
<td>12.5</td>
<td>76</td>
<td>14.6</td>
</tr>
<tr>
<td>OCD</td>
<td>30</td>
<td>6.4</td>
<td>13</td>
<td>7.4</td>
<td>22</td>
<td>4.2</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>7</td>
<td>1.5</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>1.3</td>
</tr>
<tr>
<td>SAD</td>
<td>35</td>
<td>7.5</td>
<td>4</td>
<td>2.3</td>
<td>40</td>
<td>7.7</td>
</tr>
<tr>
<td>Panic Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Agoraphobia</td>
<td>6</td>
<td>1.3</td>
<td>4</td>
<td>2.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Anxiety disorders with less than 1 % prevalence in the sample are not reported
Table 7

Descriptive Statistics of Quantitative Variables at Intake

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th></th>
<th>Youth</th>
<th></th>
<th>Agency worker</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td>10.56</td>
<td>3.00</td>
<td>14.23</td>
<td>1.43</td>
<td>10.53</td>
<td>3.00</td>
</tr>
<tr>
<td>Internalizing score</td>
<td>13.00</td>
<td>8.50</td>
<td>12.40</td>
<td>9.09</td>
<td>14.74</td>
<td>8.02</td>
</tr>
<tr>
<td>Externalizing score</td>
<td>16.01</td>
<td>9.61</td>
<td>11.45</td>
<td>7.72</td>
<td>15.35</td>
<td>8.34</td>
</tr>
<tr>
<td>Delinquency score</td>
<td>1.14</td>
<td>1.84</td>
<td>1.02</td>
<td>2.00</td>
<td>1.11</td>
<td>1.74</td>
</tr>
<tr>
<td>Functioning</td>
<td>46.09</td>
<td>14.30</td>
<td>56.46</td>
<td>12.68</td>
<td>43.16</td>
<td>13.18</td>
</tr>
<tr>
<td>ROLES</td>
<td></td>
<td></td>
<td>2.60</td>
<td>1.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Due to some missing data, the number of cases for the quantitative variables ranged from 450 – 466 for parent; 173 – 176 for youth; 494 – 521 for agency worker reports.

Measures

*The Ohio Scales.* The Ohio Scales are multi-content global measures of outcome for children and adolescents receiving mental health services (Ogles et al., 2001). It is administered to all youth seeking services and is used primarily to examine therapy effectiveness and provide accountability for services. The Ohio Scales offer three parallel forms to be filled out by parents (or primary caregiver), agency workers, and youth (age 12 to 18). Parents and agency workers complete the rating scales for youth between the ages of 5 and 18.

The Ohio Scales assess four domains: problem severity, functioning, hopefulness, and satisfaction with services. Only the Problem Severity and Functioning Scales that appear on the short forms were used in this study (See Appendix A). The short forms were derived from the original forms after rewording some items to achieve
consistency across raters and reducing the number of items on the Problem Severity scale from 44 to 20. Two main sources were used when compiling items for the Problem Severity Scale: (a) behaviors that are criteria for diagnoses in the DSM-IV; (b) the list of the most common problems of youth, compiled by regional mental health board. Each item is rated for severity/frequency (0 “Not at all” to 5 “All the time”) on a six-point scale, with higher scores indicating more severity and frequency.

Factor analytic studies indicate that the Problem Severity scale has a three-factor structure across three informants: (a) externalizing (eight items reflecting symptoms of hyperactivity and aggression); (b) internalizing (nine items of depression, anxieties and somatic complaints); and (c) delinquency (three items, involving anti-social acts with the highest loading on items describing drug and alcohol use) (Baize, 2001; Texas Department of Mental Health and Mental Retardation [TDMHMR], 2004). The Delinquency subscale includes three items that measure youths’ use of drugs and alcohol, breaking rules/laws, and skipping school/classes. A recent study indicated that the internalizing subscale was able to discriminate children with anxiety and depression from all other disorders, as they presented with higher scores on that subscale. Also the externalizing subscale discriminated children with disruptive behavior disorders from all other disorders (Turchik, Karpenko, & Ogles, 2006).

The 20 items of The Functioning Scale assess youths’ functioning across a broad range of domains. Each item is rated on a five-point scale (0 “Extreme troubles” to 4 “Doing very well”) with higher scores indicating better functioning. Factor analysis revealed that the Functioning Scale is unidimensional (Baize, 2001).
Although more reliability and validity information is available for the original forms of the Ohio Scales, the short forms are highly correlated with the original forms (ranging from $r = .80 - .96$; Ogles et al., 2000). The original forms of the Problem Severity and Functioning scales showed adequate 1-week test-retest reliabilities, ranging from .63 to .88 for youth and parents respectively (Ogles, Dowell, Hatfield, Melendez, & Carlston, 2004).

The short forms of the Ohio Problems scale demonstrated excellent internal reliability across raters (alphas = .90, .91 and .92 for agency workers, parents and youth, respectively; TDMHMR, 2004). The short forms of the Functioning scale also demonstrated excellent internal consistency (alphas = .93, .93 and .92 for agency workers, parents and youth, respectively; TDMHMR, 2004). The subscales of the Ohio Scales have been found to have adequate to excellent internal reliabilities for Externalizing problems (alphas = .90, .92 and .92), Delinquency (alphas = .70, .63 and .71) and Internalizing problems (alphas = .88, .87 and .90) for agency workers, parent and youth, respectively (Turchik et al., 2006). The short forms of the Problem Severity scales have also shown evidence of convergent validity, correlating significantly with other established children outcome measures, such as the Child Behavior Checklist (CBCL; Achenbach, 1991) (ranging from $r = .63 - .66$) and the total difficulties score on the Strengths and Difficulties Questionnaire (SDQ) ($r = .63$ & $r = .56$ for parents and child forms, respectively, TDMHMR, 2004). The Problem and Functioning scales have also demonstrated sensitivity to change (TDMHMR, 2004). The Externalizing and Internalizing subscales of the Ohio Problems scale were correlated with the corresponding subscales on the CBCL ($r = .58$ and $r = .62$ for externalizing and
internalizing, respectively; TDMHMR, 2004), showing evidence of convergent validity. The validity of Ohio Scales is also demonstrated in the ability to distinguish between clinical and nonclinical samples (Ogles et al., 2001). The scales are also sensitive to change, as they are able to detect differences in scores over time. There are however, shortcomings pertaining to the pragmatics of this measure; the Ohio Scales are less comprehensive in comparison to different diagnostic instruments such as the CBCL.

Procedure

It is a statewide requirement in Ohio that mental health agencies receiving state funding administer the Ohio Scales at intake, six months and yearly thereafter. Agency workers in the current study included case managers ($N = 110$), therapists ($N = 283$), and others ($N = 97$). The data in the current study was collected by mental health agencies in the state of Ohio over the past two years. Examination of treatment intensity of outpatient mental health services through publicly available data for all the children who receive services in the state of Ohio indicated that most children receive limited treatment, an average of 10 individual sessions over the course of a year (the Ohio Department of Mental Health, MACSIS Data Mart). Although we could not match children in the current study with the treatment data, most likely they received limited services as well. The investigators of the current study requested the dataset from the Ohio Department of Mental Health (ODMH). The dataset was received in March, 2006. The ODMH follows HIPPA waiver procedures for the datasets and provided deidentified datasets to the investigators, coding participants with identification numbers.
Results

Analytic Strategy

Two strategies were used to identify predictors of anxiety persistence. First, to replicate the methodology of previous studies, children and adolescents were divided into two categories: presence or absence of primary anxiety diagnoses at 1-year follow-up. Chi square and t-test analyses were used to examine the ability of clinical and demographic variables to predict diagnostic persistence. Chi square and t-test analyses were performed on three different samples, as the samples across parent, youth and agency worker reports were not completely overlapping. Because there are limitations to using categorical dependent variables, second strategy involved examining how clinical and demographic variables predicted persistence of symptoms on a continuous measure of outcome (change scores of the internalizing subscale on the Ohio scales). Change scores were calculated by subtracting internalizing scores at intake from internalizing scores at a year follow-up. This second strategy involved calculating simple correlations between the internalizing changes scores and the variables of interest. Next, variables that reached significance, along with gender, age and initial severity that are part of interaction terms, were entered into multiple hierarchical regressions. Children and adolescents across all three samples presented with low levels of internalizing symptoms at intake, with an average around 13, out of the possible 0 to 45 points, creating restricted range of internalizing symptoms.

The findings of chi-square and t-test analyses are presented first, followed by the findings from regressions and a summary.
Predicting Presence or Absence of Anxiety Diagnoses at a Year Follow-up

Separate chi–square and t–test analyses were performed for parent, youth and agency worker reports predicting the presence of anxiety diagnoses at 1-year follow-up. Chi-squares were used to analyze the effects of gender and ethnicity on presence of anxiety diagnoses; independent sample t-tests were utilized to examine the effects of clinical variables, age and ROLES scores on diagnostic persistence.

Chi–Square Analyses

Parent report. Gender and ethnicity did not significantly differentiate between the presence/absence of anxiety disorders at follow-up (see Table 8).

Table 8
Chi–Square Analyses for Predictors of Diagnostic Persistence in the Parent Sample

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>(X^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>184 (79.0 %)</td>
<td>49 (21.0 %)</td>
<td>1.72</td>
</tr>
<tr>
<td>Female</td>
<td>196 (84.1 %)</td>
<td>37 (15.9%)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority</td>
<td>202 (83.5 %)</td>
<td>40 (16.5 %)</td>
<td>1.46</td>
</tr>
<tr>
<td>Minority</td>
<td>153 (78.5 %)</td>
<td>42 (21.5 %)</td>
<td></td>
</tr>
</tbody>
</table>
Youth report. Similarly to the parent sample, gender and ethnicity did not differentiate between the presence/absence of anxiety diagnoses (see Table 9).

Table 9

Chi – Square Analyses for Predictors of Diagnostic Persistence in the Youth Sample

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>43 (75.4 %)</td>
<td>14 (24.6 %)</td>
<td>2.14</td>
</tr>
<tr>
<td>Female</td>
<td>102 (85.7 %)</td>
<td>17 (14.3 %)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority</td>
<td>80 (80.8 %)</td>
<td>19 (19.2 %)</td>
<td>.06</td>
</tr>
<tr>
<td>Minority</td>
<td>56 (83.6 %)</td>
<td>11 (16.4 %)</td>
<td></td>
</tr>
</tbody>
</table>
Agency worker report. Gender had no effects on the presence or absence of anxiety diagnoses at the follow-up. Interestingly, in terms of children’s race, Caucasians were more likely to have an anxiety diagnoses at follow-up than African Americans/Others (see Table 10).

Table 10

Chi – Square Analyses for Predictors of Diagnostic Persistence in the Agency Worker Sample

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>194 (78.9 %)</td>
<td>52 (21.1 %)</td>
<td>1.13</td>
</tr>
<tr>
<td>Female</td>
<td>228 (82.9 %)</td>
<td>47 (17.1 %)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority</td>
<td>215 (85.0 %)</td>
<td>38 (15.0 %)</td>
<td>6.66 *</td>
</tr>
<tr>
<td>Minority</td>
<td>180 (75.3 %)</td>
<td>59 (24.7 %)</td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .05
**T – Test Analyses**

*Parent report.* Clinical variables at intake (functioning, internalizing, externalizing, and delinquency scores) and age at intake did not significantly differentiate between presence/absence of primary anxiety diagnosis at 1-year follow-up (see Table 11).

Table 11

**T – Test Analyses of Predictors of Internalizing Change Score on Parent Report**

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age at intake</td>
<td>10.63</td>
<td>3.08</td>
<td>10.25</td>
</tr>
<tr>
<td>Internalizing score</td>
<td>13.33</td>
<td>8.4</td>
<td>11.50</td>
</tr>
<tr>
<td>Externalizing score</td>
<td>15.88</td>
<td>9.80</td>
<td>16.58</td>
</tr>
<tr>
<td>Delinquency score</td>
<td>1.16</td>
<td>1.84</td>
<td>1.07</td>
</tr>
<tr>
<td>Functioning score</td>
<td>46.09</td>
<td>14.34</td>
<td>46.12</td>
</tr>
</tbody>
</table>

*Note.* The number of children in the “yes” category ranged from 365 to 380; the number of children in the “no” category ranged from 85 to 86.

*p < .05*
Youth report. There were no significant differences between two groups (presence/absence of anxiety diagnoses at 1-year follow-up) on any of the clinical variables collected at intake (see Table 12). In terms of age at intake, older children \((M = 14.3, SD = 1.4)\) were significantly more likely than younger children \((M = 13.7, SD = 1.3)\) to have anxiety diagnoses at follow-up.

Table 12

*T – Test Analyses of Predictors of Internalizing Change Score on Parent Report*

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at intake</td>
<td>M 14.34</td>
<td>SD 1.45</td>
<td>M 13.73</td>
</tr>
<tr>
<td>Internalizing score</td>
<td>12.73</td>
<td>8.72</td>
<td>10.87</td>
</tr>
<tr>
<td>Externalizing score</td>
<td>11.94</td>
<td>7.85</td>
<td>9.13</td>
</tr>
<tr>
<td>Delinquency score</td>
<td>1.00</td>
<td>1.90</td>
<td>1.13</td>
</tr>
<tr>
<td>Functioning score</td>
<td>56.08</td>
<td>12.64</td>
<td>58.27</td>
</tr>
</tbody>
</table>

Note. The number of children in the “yes” category ranged from 143 to 145; the number of children in the “no” category ranged from 30 to 31.

\(*p < .05\)
Agency worker report. Externalizing and delinquency symptoms at intake did not differentiate between presence/absence of anxiety disorders at follow-up (see Table 13). Severity of internalizing symptoms at intake emerged as a significant predictor of diagnostic status at follow-up: children with an anxiety diagnosis at follow-up had significantly higher levels of internalizing symptoms at intake ($M = 15.23, SD = 8.0$) compared to children who were free of any anxiety diagnoses at follow-up ($M = 12.7, SD = 8.0$). ROLES and age at intake did not differentiate between the presence/absence of diagnoses at the follow-up.

Table 13

<table>
<thead>
<tr>
<th>Anxiety Diagnosis</th>
<th>Yes</th>
<th>No</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age at intake</td>
<td>10.53</td>
<td>3.03</td>
<td>10.52</td>
</tr>
<tr>
<td>Internalizing score</td>
<td>15.23</td>
<td>8.00</td>
<td>12.66</td>
</tr>
<tr>
<td>Externalizing score</td>
<td>15.41</td>
<td>8.44</td>
<td>15.11</td>
</tr>
<tr>
<td>Delinquency score</td>
<td>1.17</td>
<td>1.79</td>
<td>.81</td>
</tr>
<tr>
<td>Functioning score</td>
<td>43.05</td>
<td>13.26</td>
<td>43.61</td>
</tr>
<tr>
<td>ROLES</td>
<td>2.58</td>
<td>1.02</td>
<td>2.70</td>
</tr>
</tbody>
</table>

Note. The number of children in the “yes” category ranged from 400 to 422; the number of children in the “no” category ranged from 94 to 99.

* $p < .05$
Predicting Internalizing Change Scores

Simple Correlations

Simple correlations were conducted for each rater between the hypothesized variables and the internalizing change scores (See Table 14).

Parent report. There were positive correlations between the change score and the internalizing, externalizing, and delinquency scores. Youth with higher internalizing, externalizing and delinquency scores at intake were more likely to change than youth with lower symptoms on these clinical variables (higher scores on the subscales of Problem Severity indicate greater severity). Initial functioning exhibited a significant negative correlation with the change score, indicating that youth with greater functional impairment at intake had greater change scores than youth who had higher levels of functioning (lower functioning scores represent more impairment). In terms of the demographic variables, only age at intake had a significant positive relationship with the change score. Older children were more likely to change than younger children.

Youth report. All the clinical variables were significantly correlated with the change score. There were positive correlations between the change score and the internalizing, externalizing, and delinquency scores. Initial functioning had a significant negative correlation with the change score. None of the demographic variables were significantly related to the change score.

Agency worker report. Internalizing, externalizing, and delinquency scores reached significant positive correlations with the change score. Initial functioning showed a significant negative correlation with the change score. Gender was not related to the change score. Age at intake had a significant positive correlation with the
internalizing change score, with older children experiencing more change than younger children. Furthermore, race reached significant positive correlation with the change score. In the dataset, race is coded into two groups: a) the majority (white) represented by a “2”; and b) the minority (African Americans and Others) represented by a “1.” Therefore, a positive correlation indicated that the majority group was more likely to experience change than the minority group.

Table 14

*Simple Correlations between Predictors and the Change Scores across Three Raters*

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Agency worker</th>
<th>Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at intake</td>
<td>.111*</td>
<td>.123**</td>
<td>-.029</td>
</tr>
<tr>
<td>Race (majority vs. minority)</td>
<td>.075</td>
<td>.125**</td>
<td>.044</td>
</tr>
<tr>
<td>Gender</td>
<td>.017</td>
<td>.043</td>
<td>.019</td>
</tr>
<tr>
<td>Internalizing scores at intake</td>
<td>.650**</td>
<td>.704**</td>
<td>.735**</td>
</tr>
<tr>
<td>Externalizing scores at intake</td>
<td>.286**</td>
<td>.234**</td>
<td>.397**</td>
</tr>
<tr>
<td>Delinquency scores at intake</td>
<td>.271**</td>
<td>.165**</td>
<td>.352**</td>
</tr>
<tr>
<td>Functioning at intake</td>
<td>-.282**</td>
<td>-.332**</td>
<td>-.273**</td>
</tr>
<tr>
<td>ROLES</td>
<td></td>
<td></td>
<td>-.069</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05 . **p** < .01.

*Regressions*

Separate hierarchical regressions were performed for parent, youth and agency worker reports to examine the joint effect of predictors on persistence of internalizing symptomatology. Across all raters, age, gender, and initial severity of internalizing symptoms were included into the regression, as they composed the interaction terms. According to Cohen’s criteria for effect sizes in multiple regressions (1988), effects
accounting for 2% to 13% of the variance in the dependent variable were considered small; effects accounting for 13% to 26% medium, and effects accounting for more than 26% large.

**Assumptions.** The dependent variable (internalizing change score) met the assumptions of regression. Change scores were normally distributed with a slight negative skew, indicating a ceiling effect on the change scores. The dependent variable also met the assumption of homoscedasticity; variance was constant at every level of the change score. However, the ceiling effect of the change scores was evident again, as there was a greater cluster of scores at the positive end of residuals.

**Parent report.** To control for the effects of the initial severity of internalizing symptoms, initial severity was entered as Block 1 into hierarchical multiple regression (see Table 15). Initial severity of internalizing symptoms was a significant predictor of the change score, \( F \text{ Change (1, 445) = 321.14, } p < .001 \), accounting for 42% of the variance. Higher initial levels of internalizing symptomatology predicted greater reduction of symptoms, \( t (445) = 17.92, p < .001 \).

Demographic and clinical variables that showed significant simple correlations with the change score were entered as Block 2, along with age and gender, which were of specific interest to the study (See Table 15). As a result, initial functioning, externalizing symptoms at intake, and delinquency symptoms at intake, along with age and gender, were entered as Block 2. Block 2 was a significant predictor of change score, after controlling for initial severity of internalizing symptoms, \( F \text{ Change (5, 440) = 4.25, } p = .001, R^2 \text{ change = .027} \). However, Block 2 accounted for only 2.7% of additional variance in the internalizing change scores, after controlling for the initial levels of
internalizing symptomatology. Within Block 2, youth with higher functioning scores (better functioning) at intake had greater changes scores than youth with lower scores, \( t(440) = 2.85, p = .005 \), after holding all the other variables in the model constant. Simple correlations, discussed earlier, presented an opposite pattern. Children with higher functioning scores were less likely to change \((r = -.282, p < .001)\). Thus the presence of other predictors in the model had an impact on the relationship between functioning and the change scores.

In terms of the demographic predictors, younger children experienced less change in their internalizing symptoms than older children \( t(440) = 2.34, p = .02 \), after partialling out effects of the other variables in the model. This finding was consistent with simple correlations, which indicated that younger children were less likely to change on their internalizing symptoms than older children. Although gender did not have significant simple correlation with the change score, it had to be included in Block 2, as it was part of the interaction term in the Block 3. Gender turned out to be a significant predictor of change, with females having smaller change score than males, \( t(440) = 2.14, p = .03 \), after taking all other variables in the model into account.

Gender by age and gender by severity interactions were entered as Block 3, accounting for no addition variance after initial severity and predictors in Block 2 were in the model, \( F \text{ Change (2, 438) } = .907, p = .40, R^2 \text{ change } = .002 \). Both interactions evidenced high levels of multicollinearity; variance inflation indices were high, ranging between 9 and 10.
Table 15
Hierarchical Regression: Predictors of the Change Score on the Parent Report

<table>
<thead>
<tr>
<th>Block</th>
<th>Unstandardized Coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial internalizing score</td>
<td>.683</td>
<td>17.920 **</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at intake</td>
<td>.261</td>
<td>2.338*</td>
</tr>
<tr>
<td>Initial functioning</td>
<td>.090</td>
<td>2.853**</td>
</tr>
<tr>
<td>Initial externalizing score</td>
<td>.001</td>
<td>.015</td>
</tr>
<tr>
<td>Initial delinquency score</td>
<td>.377</td>
<td>1.946</td>
</tr>
<tr>
<td>Gender</td>
<td>.1383</td>
<td>2.139 *</td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender by age</td>
<td>-.107</td>
<td>-.490</td>
</tr>
<tr>
<td>Gender by initial internalizing score</td>
<td>-.092</td>
<td>-1.218</td>
</tr>
</tbody>
</table>

*Note. N = 447; R² = .42 for Block 1; ΔR² = .03 for Block 2; ΔR² = .002 for Block 3. * p < .05. ** p < .01.

Youth report. To control for the effects of initial internalizing symptoms, initial severity was entered into hierarchical multiple regression as Block 1 (see Table 16). Initial severity of the internalizing symptoms was a significant predictor of the change score, $F_{\text{Change}} (1, 171) = 202.0, p < .001$, accounting for 54% of the variance. Higher initial levels of internalizing symptomatology predicted greater reduction of symptoms, $t (171) = 14.02, p < .001$.

Demographic and clinical variables that evidenced significant simple correlations with the change score (initial functioning, externalizing symptoms, and delinquency
symptoms at intake) were entered as Block 2, along with age and gender, which were of specific interest to the study. Block 2 was a significant predictor of the change score, after controlling for initial severity of internalizing symptoms, $F$ Change (5, 166) = 2.54, $p = .031$, $R^2$ change = .033. However, Block 2 accounted for only 3.3 % additional variance in the internalizing change scores, after controlling for the initial levels of internalizing symptomatology. Within Block 2, only one variable, initial delinquency scores, was a significant predictor of change score, $t$ (166) = 2.58, $p = .011$, after controlling for all the other variables in the model. Children with lower delinquency scores at intake had less change during the course of a year, than children with higher initial delinquency scores.

Gender by age and gender by severity interactions were entered as Block 3, accounting for no addition variance after initial severity and predictors in Block 2, $F$ Change (2, 164) = .072, $p = .93$, $R^2$ change = .0. Both interactions evidenced high levels of multicollinearity; variance inflation indices for both interactions ranged between 9 and 10.
Table 16

Hierarchical Regression: Predictors of the Change Score on the Youth Report

<table>
<thead>
<tr>
<th>Block 1</th>
<th>Unstandardized coefficients</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internalizing symptoms at time 1</td>
<td>.760</td>
<td>14.202**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Block 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at intake</td>
<td>-.132</td>
<td>-.377</td>
</tr>
<tr>
<td>Functioning at time 1</td>
<td>.060</td>
<td>1.356</td>
</tr>
<tr>
<td>Externalizing symptoms at time 1</td>
<td>-.098</td>
<td>-1.258</td>
</tr>
<tr>
<td>Delinquency symptoms at time 1</td>
<td>.675</td>
<td>2.577*</td>
</tr>
<tr>
<td>Gender</td>
<td>1.609</td>
<td>1.555</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Block 3</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender by age</td>
<td>.007</td>
<td>.010</td>
</tr>
<tr>
<td>Gender by internalizing symptoms at time 1</td>
<td>-.041</td>
<td>-.380</td>
</tr>
</tbody>
</table>

Note. N = 176; $R^2 = .54$ for Block 1; $\Delta R^2 = .03$ for Block 2; $\Delta R^2 = .000$ for Block 3.

* $p < .05$. ** $p < .01$. 
Agency worker report. To control for the effects of the initial severity of internalizing symptoms, initial severity was entered into hierarchical multiple regression as Block 1 (see Table 17). Initial severity of the internalizing symptoms was a significant predictor of the change score, $F_{\text{Change}}(1, 480) = 473.12, p < .001$, accounting for 50% of the variance. Higher initial levels of internalizing symptomatology predicted greater reduction of symptoms, $t(480) = 21.75, p < .001$.

Demographic and clinical variables that showed significant simple correlations with the change score (functioning, externalizing symptoms, delinquency symptoms, and race) were entered as Block 2, along with age and gender, which were of specific interest to the study. Block 2 was not a significant predictor of the change score, after controlling for initial severity of internalizing symptoms, $F_{\text{Change}}(6, 474) = 1.07, p = .381, R^{2 \text{change}} = .007$. Block 2 accounted for less than 1% of the variance after taking initial severity of internalizing symptoms into account. None of the variables in Block 2 emerged as significant predictors of the change score, after controlling for all the variables in the model.

Gender by age and gender by severity interactions were entered as Block 3, accounting for no additional variance, $F_{\text{Change}}(2, 472) = 2.09, p = .124, R^{2 \text{change}} = .004$. Similar to findings on parent and youth reports, both interactions had high levels of multicollinearity. Variance inflation indices for both interactions ranged between 9 and 10.
Table 17

*Hierarchical Regression Analysis: Predictors of the Change Score on the Agency Worker Report*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized coefficients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>( t )</td>
</tr>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial internalizing score</td>
<td>.765</td>
<td>21.751 **</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at intake</td>
<td>.136</td>
<td>1.352</td>
</tr>
<tr>
<td>Race</td>
<td>.139</td>
<td>.234</td>
</tr>
<tr>
<td>Gender</td>
<td>.921</td>
<td>1.534</td>
</tr>
<tr>
<td>Initial functioning</td>
<td>.028</td>
<td>.903</td>
</tr>
<tr>
<td>Initial externalizing score</td>
<td>-.028</td>
<td>-.614</td>
</tr>
<tr>
<td>Initial delinquency score</td>
<td>-.048</td>
<td>-.257</td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender by age</td>
<td>-.329</td>
<td>-1.675</td>
</tr>
<tr>
<td>Gender by initial internalizing score</td>
<td>.095</td>
<td>1.340</td>
</tr>
</tbody>
</table>

*Note.*  \( N = 482; R^2 = .50 \) for Block 1; \( \Delta R^2 = .007 \) for Block 2; \( \Delta R^2 = .004 \) for Block 3. ** \( p < .001 \).

**Summary**

Results demonstrated that older age (youth sample), higher levels of internalizing symptoms at intake (agency worker sample), and Caucasian race (agency worker sample) predicted presence of anxiety diagnoses at a 1-year follow-up. In terms of the persistence of internalizing change scores, initial levels of internalizing symptomatology accounted for 50% of variance in the change scores. Children who entered treatment
with higher levels of internalizing symptomatology had greater change scores than children who had lower levels of symptoms. Other variables accounted for less than 3% in the change score; gender interactions had high levels of multicollinearity and did not account for additional variance in the change scores. For the summary of results see Table 18.

Table 18

_Predictors of Diagnostic Persistence and Smaller Change Scores at a Year Follow-Up_

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Youth</th>
<th>Agency Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of anxiety diagnoses</td>
<td>none</td>
<td>older age</td>
<td>a) Caucasian race</td>
</tr>
<tr>
<td>Smaller change score</td>
<td>a) lower internalizing score</td>
<td>a) lower internalizing score</td>
<td>b) greater internalizing score</td>
</tr>
<tr>
<td></td>
<td>b) younger age</td>
<td>b) lower delinquency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) female gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) higher functional impairment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Initial internalizing score explained 42% to 54% of the variance in the internalizing change scores across reporters. Other variables predicting change scores explained for less than 3% of the variance.
Discussion

The present study extended the literature by examining the relationship of clinical and demographic variables to persistence of anxiety diagnoses and internalizing symptomatology in an outpatient sample. This is the first study to the authors’ knowledge to assess predictors of anxiety persistence in a sample of children and adolescents from real-world clinical settings, allowing for the generalizability of the findings. Previous studies primarily focused on assessing the effects of variables on diagnostic outcome in children receiving treatment as part of randomized clinical trial or at the university-based anxiety clinics; in these studies a number of factors were controlled for (comorbid conditions, use of medication) and structured diagnostic procedures were used. As laboratory studies lack external validity, there has been a move in the past decade to conduct studies in clinical settings to increase applicability of findings (Weisz & Jensen, 2001).

Studies conducted in the research settings concluded that such variables as age at intake, gender, ethnicity, socioeconomic status, comorbid internalizing and externalizing disorders had no effects on the presence or absence of anxiety diagnoses posttreatment (Berman et al., 2000; Kendall et al., 1997; Last et al., 1996; Southam - Gerow et al., 2001; Treadwell et al., 1995). However, there were no consistent findings about the effects of initial levels of anxiety on diagnostic persistence (Berman et al., 2000; Cohen et al., 1993; Dadds et al., 1999; Last et al., 1996; Southam – Gerow et al., 2001). Despite a number of consistent findings in the previous research, it cannot be assumed that similar outcomes would apply to children and adolescents with anxiety disorders in outpatient mental health settings. Furthermore, there were some limitations in the
previous studies (e.g. small ethnic samples, small sample sizes) that could have affected the findings.

In the adult literature, a number of demographic and clinical variables were examined to predict positive treatment outcome from behavioral and cognitive–behavioral treatments. Presence of anxiety diagnoses posttreatment was predicted by greater severity of primary anxiety disorder pre-treatment (Basoglu et al., 1994; Turner, Beidel, Wolff, Spaulding, & Jacob, 1996), comorbid affective and anxiety states (Brown, Antony, & Barlow, 1995; Turner et al., 1996), and comorbid Axis II disorders (Stanley & Turner, 1995).

Rates of Diagnostic Persistence

In the current study the number of children who retained their primary diagnoses after one year of treatment at outpatient mental health facilities was high compared to the rates of diagnostic persistence of children in controlled anxiety treatment studies. Eighty–two percent of children and adolescents retained their primary anxiety diagnoses at the 1–year follow-up, compared to 30 % - 45 % in treatment studies (Last et al., 1996; Leonard et al., 1996). Children diagnosed with posttraumatic stress disorder constituted more than half of the sample. Longitudinal studies indicate that the course of posttraumatic stress disorder in children is often pervasive and a number of children continue to meet criteria for the disorder years later (Mannarino et al., 1991; Thabet & Vostanis, 2000; Yule et al., 2000). Thus, we calculated separate rates of diagnostic persistence for the other half of the sample. The pattern evidenced little change; 78 % to 84 % of children continued to retain their primary anxiety diagnoses. Another anxiety disorder that tends to have a pervasive course is obsessive-compulsive disorder (Leonard
et al., 1996; Wewetzer et al. 2001). Six percent of children and adolescents had a primary diagnosis of obsessive-compulsive disorder. Seventy-seven percent of these children and adolescents maintained their diagnosis at the 1-year follow-up, compared with 36% - 45% of children in the research studies of obsessive-compulsive disorder (Leonard et al., 1996; Wewetzer et al. 2001).

There are several explanations that can account for high rates of diagnostic persistence in the outpatient setting. First, it can be estimated from the publicly available data in the state of Ohio that children and adolescents receive limited treatment, averaging nine sessions in the course of a year. The effectiveness of nine sessions spread out over a course of a year is debatable. Second, in conversation with clinicians at agencies, the current results of diagnostic persistence may be an overly conservative estimate, since clinicians do not reassesses diagnostic standing until termination; thus the diagnosis given at intake may be reentered into the outcome system throughout the year. Finally, the rates of drop-out and termination during the course of a year were not available in the current study; thus, it is not possible to compare whether children who left treatment prior to 1-year follow-up had lower rates of diagnostic persistence.

*Predicting Presence of Anxiety Diagnoses at a Year Follow-up*

The presence of anxiety diagnoses at a 1-year follow-up was predicted by (a) older age (in the youth sample); (b) higher levels of internalizing symptoms (on the worker report); and (c) Caucasian race (in the agency worker sample). The first two findings were in line with the hypotheses of our study, stating that older children and children with higher initial levels of internalizing symptomatology will be more likely to maintain their diagnoses. Contrary to our hypotheses, initial levels of externalizing
symptoms and delinquency, as well as functional impairment did not emerge as significant predictors of diagnostic persistence. Gender had no effects on presence of anxiety diagnoses. Rationales for including predictors in the current study along with the findings are delineated below.

Race. Since there is a lack of studies about anxiety disorders in minority children (Safren et al., 2000) and a push to include ethnic samples in research studies to allow generalizability of results (Sue, Kurasaki, & Srinivasan, 1999), we included a large sample of African American/Others in the present study. Similar to previous several studies we found minor differences between Caucasian children and minority children in the predictors of their anxiety persistence (Berman et al., 2000; Kendall, 1994; Last & Perrin, 1993; Southam – Gerow et al. 2001,); the present study found no effects of race on the presence of anxiety diagnoses at the follow-up in the parent and youth samples. Interestingly, in the agency workers’ sample Caucasians were more likely to maintain their anxiety diagnoses at follow-up than African Americans/Others. Also only agency worker rated Caucasians as having higher levels of initial internalizing symptomatology than African Americans/Others. Cautious interpretation of this finding is warranted, as it was present only on agency worker’s report and may reflect agency worker’s bias of interpreting anxiety as more acceptable in African American/Other group, but more pathological for the Caucasian group. However, it is also possible that Caucasians have higher levels of anxiety than African Americans/Others. In fact, three major epidemiological studies reported that African American adults had lower lifetime prevalence rates of a range of psychological disorders, including anxiety and depressive disorders, than non-Hispanic whites (for summary, see Sue & Chu, 2003). This finding
remained true even without controlling for demographic and socioeconomic factors in the National Comorbidity Survey.

It is important to note that African Americans/Others had higher number of posttraumatic stress disorder (PTSD) diagnoses than White children both at intake and at 1 - year follow-up, which is similar to Last and Perrin’s (1993) finding. However, Last and Perrin explained the different rates in diagnosis by the fact that more African American children were from lower SES, which was related to higher rates of PTSD. Socioeconomic status was not collected in this study, thus limiting our ability to make interpretations about the difference in PTSD rates between races.

*Age at intake.* Symptomatology of anxiety disorders often varies across different age groups. As children mature emotionally and cognitively they may be more able to understand implications of some traumatic events (for children with PTSD) and start recognizing the excessive or unreasonable nature of their fears (Albano et al., 2003; Fletcher, 2003). Furthermore, children and adolescents face different developmental challenges. Starting puberty, adolescents face a number of challenging tasks, such as identity development, gaining of independence and building social support system outside the home. These demands during the adolescence can further exacerbate anxiety disorders in youth and lead to development of new anxiety disorders (Albano et al., 2003). Considering these additional demands of adolescence, it is important to continue examining effects of age on anxiety persistence.

In the present study, older children were more likely than younger children to maintain their anxiety diagnosis at the follow-up; this finding was present in the youth sample but not in the parent and agency worker samples. None of the other studies found
effects of age on diagnostic persistence at a 1-year follow-up. Southam – Gerow et al. (2001) found effects of age at intake on diagnostic persistence posttreatment. Both the current and Southam - Gerow et al.’s study found that initial severity of psychopathology did not correlate with age; thus effects of age cannot be attributed to greater initial severity of symptoms in the older children. Although the age effects were statistically significant, in the current study the age difference between older ($M = 14.3$ years – old) and younger children ($M = 13.7$ years – old) was small with standard deviation of over one year. Thus, the finding may be of little clinical utility.

Similar to previous research (Berman et al. 2000; Kendall et al. 1997; Last et al., 1996), the present study found no effects of age at intake on anxiety persistence in the two other samples (parent and agency worker samples). Previous studies that reported a lack of relationship between age and anxiety persistence, did not detail the reasons for this lack of relationship.

Gender. It is important to examine possible effects of gender on persistence of anxiety disorder and internalizing symptomatology, as there are gender effects in the manifestation of anxiety and depression. First, both anxiety and depressive disorders have equal prevalence rates for both genders in childhood but evidence twofold increase in prevalence in puberty. A number of explanations have been generated in attempts to explain these differences in prevalence rates. Sociocultural theories posit that women have a greater risk for anxiety disorders because of their lower status in society compared to men, resulting in women having to cling to other and be more passive (Miller, 1976). As women suppress their desires and fear loss of relationships, they are vulnerable to feelings of anxiety. Other perspectives state that society influences how men and women
cope with distress, with men finding it socially unacceptable to express anxiety and being more likely to confront it or “self-medicate.” Whereas for women it is more acceptable to stay at home and thus avoid anxiety-provoking situations. Further, it is more acceptable for women to express their feelings of anxiety and helplessness (Bruch & Cheek, 1995).

Second, studies on fears of children with anxiety disorders consistently find that girls indicate more intense fears and more severe anxious symptomatology than boys (Ginsburg & Siverman, 2000; Muris et al., 1998a, b; Pfefferbaum, 1997). The most frequent explanation for this finding is that gender role orientation (masculinity or femininity) affects expression of fearfulness (Ollendick, Yang, Dong, Xia, & Lin, 1995). Gender development theories posit that as boys and girls are socialized to develop certain behaviors and traits, expressing fearfulness is more consistent with the feminine gender role (Golombok, & Fivush, 1994). In fact, fearful behaviors in girls are often tolerated by adults and even encouraged, whereas males are expected to overcome their fears and be self-confident. A number of studies with adults supported the presence of a relationship between gender role orientation and fearfulness; males and females who were classified as feminine scored higher on fear inventory than those who were classified as masculine. The only study conducted with children who have anxiety disorders also supported this relationship (Ginsburg & Silverman, 2000).

Although there are gender differences in anxiety manifestation, studies report that gender is not related to persistence of anxiety diagnoses (Berman et al., 2000; Ferguson, 2002; Southam – Gerow et al., 2001; Treadwell et al., 1995). The same finding was observed in the present study. However, it may be possible that some other variables
interact with gender and mask gender effects. Thus the present study examined two gender interactions (discussed later); none of the previous studies examined gender interactions.

Initial severity of internalizing symptoms. There is evidence in adult literature that greater severity of primary anxiety disorders predicts diagnostic persistence (Basoglu et al., 1994; Turner et al., 1996). This is not a surprising finding as it makes intuitive sense that more severe cases will be more likely to continue meeting diagnostic criteria. However, studies in the child literature disagree about the effects of initial levels of anxiety on presence/absence of anxiety diagnoses posttreatment or at follow-up (Berman et al., 2000; Cohen et al., 1993; Dadds et al., 1999; Last et al., 1996; Leonard et al., 1993; Southam-Gerow et al., 2001). Discrepant findings in the child literature suggest that the effects of initial levels of anxiety on anxiety persistence may be contingent upon a number of factors, such as amount of variability in the initial scores of anxious symptomatology, definitions of treatment outcome, operationalization of anxiety severity at intake, informants, and statistical approaches applied to data analyses.

Higher levels of internalizing problems at intake predicted the presence of anxiety diagnoses at the follow-up in the worker sample only. As mentioned previously, rates of diagnostic persistence were high in the current sample. The persistence of anxiety diagnoses at follow-up was independent of the initial severity of internalizing symptoms on youth and parent report. A caveat to this finding is that children presented with low levels of internalizing symptoms at intake, with an average around 13, out of the possible 0 to 45 points. This restricted range of internalizing symptoms at intake resulted in little room for variability and could have affected predictive power of initial levels of
internalizing symptoms on diagnostic persistence. Another possible explanation for detecting this relationship only on agency workers’ reports could be shared method variance, as agency workers completed the Ohio Scales and were the ones making diagnostic decisions.

In line with the current findings, two studies using clinician-rated symptoms of anxiety and utilizing an epidemiological (Cohen et al., 1993) and a school sample (Dadds et al., 1999) reported that greater levels of initial anxiety predicted the presence of anxiety diagnoses. From all the previous research, the samples in these two studies would be most equivalent to the sample of the present study. Three other studies that used clinician-rated symptomatology, but were conducted as part of randomized treatment trials or at university-based anxiety clinics (Berman et al., 2000; Last et al., 1996; Leonard et al., 1993) concluded that initial severity of anxiety had no effect on diagnostic persistence. These differences in findings may be due to the nature of the samples and methodology of the studies; generally, children from community samples present with greater severity of symptoms, allowing for greater range of variability in outcome, and higher rates of comorbid conditions than children in the research samples. In terms of differences in methodology, randomized trials place greater priority on internal validity than studies in real-clinical settings, by randomizing participants and adhering to strict selection criteria, to name a few.

The present study found that parent ratings of children’s internalizing symptomatology were not related to diagnostic persistence. Similarly, Berman et al. (2000) found that parental ratings of initial severity of internalizing symptoms had no effects on diagnostic persistence. A possible explanation of this lack of finding is that
parents are not accurate reporters of their children’s internalizing states, underreporting levels of internalizing symptomatology (Tarrulo et al., 1995).

On the youth report, severity of initial internalizing symptoms was not related to the presence of diagnoses at follow-up in the present study. The only other study that included youth report concluded that youth ratings of initial severity of anxious symptomatology had no effects on the presence of anxiety diagnoses posttreatment. However, youth-rated measures of trait anxiety and depression predicted presence of anxiety diagnoses (Berman et al., 2000). The authors speculated that children with “traitlike” anxiety were more likely to persist than children with anxiety symptoms triggered by some environmental factors. The present study did not include measures of trait anxiety and was not able to examine this relationship.

It is difficult to draw direct comparisons between the results of the current study and previous findings for several reasons. First, the present study assessed the effects of internalizing symptoms on diagnostic persistence versus effects of purely anxiety symptoms. And second, initial severity was measured by a continuous measure of outcome in the present study versus clinician-rated index of severity that was frequently employed in the previous studies. The advantage of the current study is that results have ecological validity due to the nature of the sample.

**Delinquency.** None of the previous studies have examined the relationship between delinquent behaviors and anxiety persistence. The relationship between anxiety disorders and substance use disorders is not clear (Costello, Erkanli, Federman, & Angold, 1999). Some studies report that depression and anxiety are comorbid with adolescent substance use disorders and are related to the onset of substance use
The Delinquency subscale in the present study included three items that measured youths’ use of drugs and alcohol, breaking rules/laws, and skipping school/classes. In the current study, higher levels of delinquent behaviors at intake did not predict the presence of anxiety diagnoses. However, a floor effect on delinquency scores at intake, created lack of variability that may have limited the ability to find the statistical relationships. Secondary diagnoses were not assessed in this study; thus, we do not know whether low scores on delinquent subscale could be explained by a small number of such comorbid diagnoses as substance abuse, and conduct disorder in the sample.

**Functioning.** Treatment studies have often neglected to include measures of functioning, focusing primarily on persistence of symptoms and diagnoses (Kazdin, 2003). However, in the last decade there has been an increased interest in measuring functional impairment in clients (Winters, Collett, & Myers, 2005). It is important to consider how children’s functioning affects the persistence of their anxiety disorders, as it is usually the functional impairment rather than a cluster of symptoms that brings children to treatment (Pelham & Fabiano, 2001; Winters et al., 2005). Furthermore, studies have demonstrated that functioning and symptomatology are only moderately overlapping constructs (Kazdin, 1993) and symptom improvement does not necessarily correlate with psychosocial improvement (Geller, Zimerman, Williams, Bolhofner, & Craney, 2001; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2003).

The current study was the first study to examine the effects of functioning on persistence of anxiety disorders; previous studies primarily investigated how symptoms of anxiety affect persistence of anxiety diagnoses. Initial levels of functioning had no
effects on the presence of anxiety diagnoses at a year follow-up across all three reporters. It is important to note that the Functioning scale used in this study was global, measuring youths’ functioning in different areas of daily life (e.g. recreation, interpersonal relationships, self-direction and motivation). One of the disadvantages of using global scales of functioning is that they do not adequately measure more specific areas of functioning (Winters et al., 2005). Moreover, studies indicated that global measures of functioning may confound functioning with diagnoses or severity of a disorder (Bird, Andrews, Schwab-Stone, Goodman, Dulcan, et al., 1996). The lack of relationship between functioning and diagnostic persistence in the current study can be due to the lack of specificity of the scale and its overlap with symptomatology. Furthermore, children in the sample did not present with great levels of functional impairment at intake, possibly creating lack of power to detect differences.

*Initial severity of externalizing symptoms.* The rates of comorbidity with externalizing disorders reach up to 40 % in some clinical samples (Walker et al., 1991), which can probably be explained by the referral bias (Caron & Rutter, 1991). Thus it is important to examine whether these present comorbid externalizing disorders and externalizing symptomatology have a detrimental effect on the course of anxiety disorders.

Consistent with previous studies, the current study found that levels of externalizing symptoms at intake had no effects on presence/absence of anxiety disorders. One of the reasons for this finding in the current study can be that children with primary anxiety diagnoses had low levels of externalizing symptoms at intake, resulting in restricted range of scores. Previous studies also reported low levels of externalizing
symptoms in their samples. For example, Southam – Gerow et al. (2001) stated that children in their sample presented with few externalizing problems, which reduced variability to detect a relationship between externalizing behavior problems and diagnostic persistence. The absence of relationship between externalizing symptoms and diagnostic persistence could be explained by the lack of variability in externalizing symptoms. Another explanation could be that children with primary anxiety diagnoses may not have severe externalizing problems; as a result, their externalizing behavior problems are not going to interfere with recovery from anxiety disorders. However, studies do report higher than expected by chance comorbidity between anxiety disorders and disruptive behavior disorders (Walker et al., 1991). The present study extended upon previous research by investigating the effects of externalizing symptoms versus effects of comorbid externalizing diagnoses.

**Summary.** Anxiety diagnoses at a year follow-up were predicted by: (a) older age (in the youth sample); (b) higher levels of internalizing symptoms (on the worker report); and (c) Caucasian race (in the worker sample). Initial levels of externalizing symptoms, delinquency, functional impairment, gender and restrictiveness of living environment had no effects on the presence of anxiety diagnoses.

**Persistence of Anxiety Diagnoses versus Persistence of Internalizing Symptoms**

The existing research on predictors of anxiety persistence has mostly defined anxiety persistence as the presence of anxiety diagnoses; the range of internalizing symptoms was rarely assessed. The importance of measuring a range of internalizing symptoms versus focusing mainly on anxiety symptoms becomes apparent when one considers the shared etiology of anxiety and depression, as well as high rates of
comorbidity between anxiety and depressive disorders (Kovacs & Devlin, 1998). The etiological models of anxiety and depression, incorporating genetic research, conclude that shared genetic risk factor (neuroticism, negative affect, low extraversion) may be responsible for general vulnerability for anxiety or depression, and unique experiences modify the specific expression of this vulnerability (Barlow, 2000; Clark & Watson, 1991). Thus it is not surprising that numerous empirical studies indicate one broad factor of internalizing symptomatology across different samples (Achenbach, 1991).

As previous studies have mainly examined diagnostic persistence, they have rarely included a continuous measure of outcome. There is ongoing debate about the appropriateness of categorical classifications for variables that are continuous and normally distributed in the population, such as levels of anxiety (Widiger & Coker, 2003). From the statistical perspective, diagnostic categories, being dichotomous variables, reduce variability in outcome. Thus it may be harder to detect relationships between predictors and outcome, whereas, using continuous measures of outcome gives us an opportunity to detect incremental changes in the severity and number of symptoms. One of the disadvantages to using continuous measures of outcome is that currently there is a lack of methods that adequately capture change in scores of children who present with lower levels of symptoms. These children have lower change scores, and consequently appear to have less improvement, than children who present with higher initial scores.

To extend upon the previous literature the present study included a continuous measure of internalizing symptomatology. Examining effects of predictors on persistence of anxiety diagnoses versus persistence of internalizing symptomatology are
two inherently different methodological approaches. A good example of differential findings across these two methodological approaches in the current study was the finding about the effects of initial levels of severity on anxiety persistence. Higher scores on Internalizing subscale predicted presence of anxiety diagnoses at 1-year follow-up on the worker report only. On a continuous measure of outcome, higher scores on internalizing subscale predicted greater change scores across in all three datasets, resulting in reduced symptomatology. These two findings are not contradictory, considering that the amount of change and presence/absence of diagnoses are two different concepts. Clinicians take a number of factors into consideration (symptomatic presentation and impairment in multiple settings) when deriving diagnoses, whereas a change score reflects only a reduction in symptomatology. For example, a child can move from 50 points to 40 points on the Ohio Scales and meets criteria for improvement, which is a 10-point change. However, the child’s symptoms remained in the clinical range. Findings about the effects of predictors on anxiety persistence will depend upon the definitions of outcome. Both categorical and continuous approaches to outcome provide unique pieces of information about the course of disorders. Therefore, studies should consider incorporating both approaches when assessing the effects of predictors on anxiety persistence.

*Extension: Predicting Internalizing Change Scores*

The findings from utilizing a continuous measure of outcome were qualitatively different from the results the current study obtained with the dichotomous approach. When examining relationships between each predictor separately and the internalizing change scores, smaller change scores were significantly related to the following
variables: (a) lower internalizing scores (across three raters); (b) lower externalizing scores (across three raters); (c) lower delinquency scores (across three raters); (d) higher functioning scores, which indicate better functioning (across three raters); (e) younger age (parent and worker samples); and (f) African American/Other race (worker sample). The findings that youth with lower scores on clinical scales were less likely to change can be explained by the fact that scores in the lower ranges of the scale have less room for change. Due to the continuous nature of the scales, clients entering with higher levels of symptoms will have more room for change than clients who present with lower scores. Similar patterns were discovered in the only other study that used a continuous measure of outcome: clients with greater scores on anxiety rating scale at intake improved more than clients with lower scores (Walkup et al., 2003).

**Combined model.** There are consistent findings in the literature that initial levels of symptom severity plus initial treatment response are the best predictors of outcome, accounting for the greatest amount of change (Ogles, Lambert, & Fields, 2002). With this in mind, initial levels of internalizing symptomatology were entered first into the combined model to examine the amount of additional variance that other predictors can account for. The combined effect of the other predictors in the model was exploratory in nature as there is theoretical justification for putting them together in the model and there is lack of previous research to guide this decision.

It was found that initial scores on Internalizing subscale accounted for the greatest amount of variance (ranging between 42 % and 54 %) in the change scores. The combined effects of other predictors were small; together age, gender, functioning, externalizing and delinquency scores accounted for only 3 % of the variance in the
change scores on the parent and youth reports, and did not explain any additional variance on the worker report after initial levels of internalizing symptoms were taken into consideration.

The effects of two gender interactions on persistence of the change scores were of particular interest to the present study. Previous studies found no effects of gender on anxiety persistence (Berman et al., 2000; Dadds et al., 1999; Southam - Gerow et al., 2001; Treadwell et al., 1995, Walkup et al., 2003). This lack of findings may be due to a possibility that gender interacts with other variables, thus masking gender effects. In the present study we tested effects of gender by age and gender by initial severity of internalizing symptoms interactions.

Epidemiological studies demonstrated that although there were almost no gender differences in the prevalence of anxiety disorders in childhood, starting with puberty, anxiety disorders were almost twice as likely to occur in females than in males (Rutter et al., 2003). To examine whether anxiety persistence across genders is related to age, a gender by age interaction was included in the current study. No effects of the gender by age interaction on persistence of internalizing symptoms after controlling for the other variables was found. It is important to keep in mind that the gender by age interaction had large degrees of multicollinearity with other variables. Therefore, the lack of relationship between interaction and change score can be due to the lack of power to detect differences.

Due to the findings of some studies that females exhibited more severe degrees of anxious symptomatology than males (Muris et al., 1998 a; King et al., 1996; Silverman et al., 1995), we were interested in the effects of gender by initial severity interaction on the
internalizing change scores. We predicted that females would have smaller change scores than males due to higher levels of internalizing symptoms in females at intake. Results demonstrated no effects of gender by initial severity of internalizing symptoms on the change scores across all three reporters. In the present study, at intake females had higher levels of internalizing symptoms than males only according to the parent report. Similar to the gender by age interaction, multicollinearity was high for this interaction across all three reporters, reducing the power to detect differences. Moreover, it is difficult to examine effects of higher severity of symptoms on persistence of symptomatology with a continuous measure, as due to the nature of continuous measures, participants with higher scores will have greater change scores.

Summary. Overall, the greatest predictor of internalizing change scores was higher levels of internalizing symptomatology at intake, accounting for 50% of the variance. Children who entered treatment with higher levels of internalizing symptomatology had greater change scores than children who presented with lower levels of symptoms. This phenomenon can be explained by the fact that higher scores on continuous scales have more room for change. The present study found no effects of gender interactions on the change scores, which can be possibly attributed to high levels of multicollinearity.

Limitations

The present study has several limitations, some of which are based on the utilization of the archival data and the fact that the data was derived from real-world clinical settings. First, children and adolescents were diagnosed with anxiety disorders as part of regular clinical practice; there is no data on how diagnoses were derived. This can
raise concerns about the accuracy and reliability of the diagnostic categories. However, at the same time it gives ecological validity to the current study, as clinicians in clinical settings rarely use structured diagnostic interviews to assess for psychiatric conditions. Second, although samples across raters overlapped, data across three reporters was not matched for each child. Due to the robust findings in the literature of low levels of agreement between reporters when rating internalizing symptomatology in children and adolescents (Achenbach, McConaughy, & Howell, 1987; Grills & Ollendick, 2002), it is important to include multiple raters in the studies and compare findings across raters. Third, children in the sample presented with low levels of internalizing symptoms at intake, creating a floor effect. Thus, there was a ceiling effect on the change scores, with scores having more room for change in the direction of deterioration, and less room in the direction of improvement. As a result, current samples had restricted ranges of scores and probably low power to detect potential differences. Fourth, there were high degrees of multicollinearity between interactions examined in this study and other variables. Therefore, this study had limited ability to detect effects of interactions. Fifth, considering that anxiety persistence was assessed at a 1-year follow-up, children who stayed in services for the length of one year may have had more pervasive anxiety disorders than children who ended services earlier. Thus, children in the current sample may not be representative of all children receiving treatment for anxiety disorders at outpatient mental health services. The rates of drop-out and termination were not recorded in the present study; hence, we cannot compare whether children in the present sample differed from the children who dropped out of treatment or terminated prior to the 1-year follow-up assessment.
Implication of Findings and Future Directions

As children in the present sample received outpatient mental health services, the results can be generalized to similar settings. Clinicians working in outpatient clinical settings can benefit from knowing that gender, ethnicity (African American), and initial levels of externalizing symptomatology are most likely to have no effect on the course of clients’ anxiety disorders. Clearly, these are simply general guidelines and will have to be reconsidered in the context of each case. For example, in the present sample children presented with relatively mild to moderate levels of externalizing problems. Therefore, these findings will not be applicable to children who have severe externalizing problems.

The question of whether age affects the course of anxiety disorders has probably crossed the minds of many clinicians. The results of the present study found no age effects in the two samples (parent and worker). However, older adolescents were more likely to maintain their anxiety diagnoses than younger adolescents in the sample that included youth report. Future studies need to clarify effects of age on diagnostic persistence before conclusive statements about this relationship can be made. Nevertheless, the overall summary of the literature indicates that age at intake is most likely to have no effect on persistence of anxiety diagnoses.

An optimistic finding is that from parents’ and children’s perspectives, initial levels of internalizing symptoms had no effects on the presence of anxiety diagnoses at 1-year follow-up. Hence, children and adolescents entering treatment with different levels of severity can be expected to benefit equally from outpatient services. However, initial levels of internalizing symptoms did predict persistence of anxiety disorders when rated by agency workers. Clinicians also need to keep in mind that on rating scales
children with higher levels of initial symptomatology will have more room for change than children who present with lower levels of symptoms. The present study demonstrated that the single best predictor of smaller change scores between intake and 1-year follow-up was lower scores at intake.

Future studies need to continue examining the effects of child and adolescent characteristics on anxiety persistence. Clinicians can greatly benefit from knowing what characteristics of children are likely to affect the course of their anxiety disorders. To increase the ecological validity of findings, future studies need to start examining effects of predictors on the course of anxiety in the samples from real-world clinical settings. Future studies need to continue assessing the effects of the initial levels of anxious symptomatology on anxiety persistence, given the lack of consistent findings in the literature. Future studies will also need to keep in mind that the effects of initial levels of anxiety on anxiety persistence may be contingent upon a number of factors demonstrated in previous research, such as the amount of variability in the initial scores of anxious symptomatology, definitions of treatment outcome, operationalization of anxiety severity at intake, informants, and statistical approaches applied to data analyses. Further, it is recommended that future studies include children with wide ranges of severity of their anxiety symptoms to increase the power of analyses. The effects of age on anxiety persistence also warrant further investigation. The present study was the first study to assess impact of functioning on anxiety persistence. Future studies need to continue investigating the relationship between functioning and anxiety persistence. In particular, future studies need to consider including measures of functioning that tap into more specific areas, such as peer relationships, instead of using broad measures of functioning.
Furthermore, studies need to continue assessing effects of gender by age and gender by severity interactions on anxiety persistence. Finally, effects of psychosocial variables on the persistence of anxiety disorders have been largely ignored in the literature, with the exception of the effects of parental psychopathology. Studies could examine effects on anxiety persistence of such variables as physical abuse, sexual abuse, child neglect, peer relationships, parenting styles, etc.
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Texas Department of Mental Health and Mental Retardation (2004). *Validation and*


Appendix A

The Ohio Scales

1. Youth Rating
2. Parent Rating
3. Agency Worker Rating