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Barriers to referral of anxious youth in pediatric care: an examination of the latent structure

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Barriers to Referral of Anxious Youth in Pediatric Care: An Examination of the Latent Structure

by

Erin Fletcher Swedish

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Master of Arts Degree in Psychology

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May 2013
An Abstract of

Barriers to Referral of Anxious Youth in Pediatric Care: An Examination of the Latent Structure

by

Erin Swedish

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the Master of Arts Degree in Psychology

The University of Toledo
May 2013

Anxiety disorders are the most prevalent form of psychopathology affecting youth, causing significant distress and impairment (Ginsburg et al. 2004). Youth with anxiety disorders often present to a family physician or pediatrician, not to a mental health specialist (Katoka, 2006). Currently over 25 empirically supported treatments for youth with anxiety disorders have been identified which offer hope for youth with anxiety disorders ranging from specific phobias (Davis, Ollendick & Öst, 2009) to generalized anxiety disorder (Kendall, 1994). However, many children and adolescents will not receive these treatments if the child’s physician fails to provide a referral. Thus the aim of the current study was to examine barriers to physician referral of youth with anxiety disorders. Based on past research and theory, the current study used confirmatory factor analysis (CFA) to evaluate a three-factor model of the perceived barriers that physicians face when referring youth with anxiety disorders. Participants were 211 pediatric providers who completed the Barriers to Referral of Youth with Anxiety Disorders in Pediatrics Survey (BRYAS) a 17-item survey assessing barriers to referral. This study represents the first attempt to systematically evaluate barriers to
physician referral of anxious youth in pediatric settings. Consistent with the hypothesis, the present findings provide evidence for three meaningful factors (i.e., physician, parent, and organizational barriers). Importantly, the identification of potential barriers may provide insight for improving strategies to increase referral of youth with anxiety disorders in primary care facilities, thus, facilitating the referral process.
Dedication

To my family and friends, for supporting everything I do.
Acknowledgements

I would like to thank my committee chair, Dr. Laura Seligman, for her guidance and mentorship. I would also like to thank my thesis committee members Dr. Jon Elhai and Dr. Joseph Hovey for their feedback and support. I would further like to thank my lab members Jessica Gahr and Gaby Hurtado for all their encouragement; I could not have done this without you.
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Chapter One

Introduction

Anxiety disorders are the most prevalent form of psychopathology affecting children and adolescents (Anderson, Williams, McGee, & Silva, 1987; Kashani et al., 1987; Kashani & Orvaschel, 1990). In fact, among community samples prevalence rates range from 5.7% -12.8% (Costello, Mustillo, Keeler, Angold, 2003), while in clinical samples rates as high as 27.1% to 44.7% have been reported (Kashani & Orvaschel, 1990). Anxiety can be a natural developmental occurrence; however, when situations or objects that are not truly threatening elicit anxiety this response becomes maladaptive. Alternatively, anxiety may be evoked in response to a realistic threat but may be disproportionate. Excessive anxiety is often distressing to the child/adolescent and results in impairment of daily functioning and avoidant behavior that frequently interferes with the child’s ability to engage in developmentally appropriate activities (Vasey & Dadds, 2001). In addition, research has shown that youth with anxiety disorders experience problems with academics and social problems (Mazzone et al., 2007). Untreated anxiety disorders often lead to hospitalization and poor developmental outcomes for affected children. As such, anxiety disorders include some of the most debilitating of all psychiatric disorders (Mash & Wolfe, 2010). Moreover, anxious children over utilize medical health care services resulting in a financial burden to society (Finney, Riley, & Cataldo, 1991; Greenberg et al., 1999).

In sum, although childhood anxiety disorders were once viewed as ephemeral it is now clear that anxiety disorders engender significant distress and impairment (Egger, Costello, Angold, 2003; Strauss, et al., 1987; Williams, Klinepeter, Palmes, Pulley, &
Foy, 2004). The potential for such problems in children with anxiety makes early identification and referral for effective treatment essential. Importantly, research suggests that identification and referral often takes place in primary care settings (Katoka, Zhang & Wells, 2002). Specifically, there are two main reasons why primary care settings are opportune settings to identify and refer children with anxiety disorders. First, children routinely interact with primary care physicians and most youth visit their pediatrician multiple times a year (Frankenfield et al., 2000). Second, as indicated previously, research has shown that anxious youth demonstrate increased use of medical health care (e.g., Finney, Riley, & Cataldo, 1991) and thus they are more likely than the average child to come into regular contact with a primary care physician. Therefore, it is important to understand the barriers to referral of youth with anxiety disorders in pediatric care settings.

**Prevalence of Anxiety Disorders in Pediatric Care**

As the practice of pediatrics has evolved, primary care providers have more often had to treat mental health issues in addition to the physical health conditions that define their training (AAP committee on psychosocial Aspects of Child and Family Health, 2009). In fact, primary care providers are now considered a *de facto* part of the mental health system for children and adolescents (Norquist & Regier, 1996) as up to 50% of pediatric care office visits may involve mental health concerns. Over three decades ago, Haggerty, Roghmann, and Pless (1975) coined the term *the new morbidity*, describing the overwhelming increase in patients presenting with behavioral and psychosocial problems in pediatric care facilities. In fact, the predominance of psychosocial problems in pediatric settings has led to the recommendation by the American Academy of Pediatrics
(AAP) that pediatric providers spend less time on physical problems during a well-child visit and devote more time assessing and managing mental health concerns (AAP, 2009).

Given this growing recognition that so many youth with mental health problems present in pediatric care, several studies have investigated the prevalence of mental health problems in this population. For instance, it is estimated that 15% to 21% of children present in primary care with mental health concerns (Kelleher, et al., 1997; Lavigne, Gibbons, Arend, Rosenbaum, Binns, & Christoffel, 1999). In addition, Horwitz et al. (1992) found rates of psychiatric diagnosis to be as high as 27% in youth 4 to 16 years old presenting in primary care using a 13-category checklist of mental health problems based on the World Health Organization classification system.

Studies using checklists may overestimate rates of psychopathology; however, studies examining well-child visits in pediatric care settings using structured interviews and the Diagnostic and Statistical Manual of Mental Disorders (DSM, APA) have found similar prevalence rates. For instance, Lavigne et al. (1996) investigated the prevalence of mental health disorders in preschool aged children in pediatric care. More specifically, parents of 3,860 children aged 2 to 5 years old were recruited from 68 primary care practices and screened using the Child Behavior Checklist (CBCL; Achenbach, Conners, Quay, Verhulst, & Howell, 1989). Those who screened high on the CBCL were seen a second time by clinical psychologists to assess DSM-III-R disorders. The prevalence of DSM-II-R disorder was 21.4%, which is above the expected rate in the general population, indicating that these disorders are present in pediatric settings at higher than expected rates, even in very young children.
While there are high rates of mental health disorders in pediatric care generally, studies show that anxiety disorders, in particular, are extremely common in this setting. In fact, a landmark study found anxiety disorders to be the most prevalent disorder out of all other psychiatric disorders that was unrecognized and untreated in a pediatric primary care setting (Costello, 1989). In this study, 300 parents and their children aged 7 through 11 attending primary care facilities were interviewed using the NIMH Diagnostic Interview Schedule for Children (DISC; Costello, 1989) to make a DSM-III diagnosis. The rate of any anxiety disorders reported by parents was 6.6%, whereas the child reported prevalence of anxiety disorders was 10.5%. Weighted prevalence rates across the specific anxiety disorders ranged from 1.0-9.2% (separation anxiety = 4.1%, avoidant disorder = 1.6%, overanxious disorder = 4.6%, simple phobia = 9.2%, social phobia = 1.0%, and agoraphobia = 1.2%). Similarly, anxiety disorders have been found to be the most prevalent disorder in other pediatric care samples. For example, in a sample of 5-9 year-olds from a primary care setting, approximately 6.1% of these youth had an anxiety disorder based on the DISC making it the most prevalent psychiatric disorder (Briggs-Gowan, Horwitz, Schwab-Stone, Leventhal, and Leaf, 2000). Additionally, Benjamin (1990) examined the prevalence of anxiety disorders in a pediatric sample of 300 children ages 7 to 11 selected from a sequential sample of 789 children visiting a Health Management Organization (HMO). Psychiatric interviews with both the child and parent using the DISC yielded a prevalence of 15.4% for one or more DSM-III anxiety disorders, making anxiety disorders the most common psychiatric diagnosis.

This high rate is seen still with the most recent version of the DSM. That is, more recently, Chavira, Stein, Bailey, and Stein (2004) investigated the prevalence of
commonly occurring childhood anxiety disorders and comorbid disorders in pediatric primary care settings using up-to-date (i.e., DSM-IV) diagnostic criteria. A total of 714 families participated in the initial phase of the study and completed multiple child and parent reports of child anxiety. The results indicated that 22-35% of children met criteria for an anxiety disorder, well above the rate that would be expected in a general community sample. In the second part of the study, 190 families agreed to participate in a telephone interview conducted using the Anxiety Disorders Interview Schedule for Children-Parent version (ADIS-C/P; Albano & Silverman, 1996), a semi-structured interview assessing DSM-IV anxiety disorders. The results showed a 1-year prevalence rate of DSM-IV child anxiety disorders to be about 17% (specific phobia, 10%, social phobia 6.8%, generalized anxiety, .5%) showing that rates of anxiety disorders are still high when stricter criteria are imposed.

In sum, anxiety disorders are common in pediatric primary practice. This means that the physician behavior (i.e., the ability to identify a mental health problem and referral and treatment behavior) often determines the type of care received by many children and adolescents with mental health disorders in general, and anxiety disorders in particular.

**Identification**

Thus it is clear that children with mental health concerns and particularly anxiety disorders are likely to come into contact, even frequent contact, with their primary care physicians. As such, it is reasonable to ask how well pediatricians are identifying and responding to mental health concerns. Unfortunately, past research has indicated that pediatricians identify less than half of patients with a psychiatric diagnosis. For example,
Costello et al. (1988) conducted a large study with youth aged 7 to 11 years old and found that primary care providers failed to diagnose a mental health problem in 75 out of 110 (68%) of children scoring in the clinical range on the Child Behavioral Check List (CBCL; Achenbach, 1981). Further, Goldberg et al. (1984) also found that pediatricians had a difficult time indentifying youth with mental health problems. More specifically, Goldberg et al. (1984) found that 10% of the children visiting pediatricians had mental health problems; however, pediatricians only identified half of these children. Similarly, even in a longitudinal study of 166 youth attending a large multispecialty primary care clinic, primary care providers identified only 20% of patients who received a mental health diagnosis based on a diagnostic interview (Kessler, Cleary, & Burke, 1985).

Given the low rate of identification of mental health disorders in youth by primary care providers and the considerable amount of evidence indicating that primary care providers have an important role in identifying mental health issues in youth, over the past 30 years various strategies have been employed to improve pediatricians’ abilities to identify mental health concerns of children and adolescents during routine health visits. For instance, standard assessments such as the Pediatric Symptom Check list (PSC; Jellinek & Murphy, 1988) are now being used in some primary care settings. Studies have found that the PSC is an effective tool for identifying mental health disorders across all outpatients setting. Possibly, partially as a result of such screening tools, current research suggests that pediatricians are identifying more children with mental health problems than they did thirty years ago (Kelleher, McInerny, Gardner, Childs, & Wasserman, 2000). For example, in an analysis of videotapes of children between 5 and 12 years old visiting primary care offices for a well-child visit, 88% of the visits
physicians created the opportunity for mental health problems to be discussed (Sharp, Pantell, Murphy, & Lewis 1992). Although there was no objective indicator of whether or not the child had a clinically significant mental health problem and whether this was detected during these discussions, this study does suggest that physicians are now commonly engaging in behaviors that should lead to identification. Moreover, more recent research suggests that the rate of identification of mental health problems has increased from 6.8% in 1979 to 18.7% in 1996 (Kelleher et al., 2000).

Additionally, efforts have been made to educate physicians about signs and symptoms of mental health problems in youth (e.g., Walders, Childs, Comer, Kelleher, & Drotar, 2003). For example, the American Board of Pediatrics increased the requirements for training about emotional and behavioral health problems for pediatricians. Also, publications such as Bright Futures, a promotion initiated by the American Academy of Pediatrics (AAP) to educate primary care providers about mental disorders by providing descriptions and interventions, have increased awareness about mental health problems in pediatric primary care (Duncan, n.d).

In sum, there has been an increase in the identification of psychosocial problems in pediatric practice over the past several decades. That is, primary care providers more often identify mental health problems, an important step for children and adolescents to receive effective treatment for mental health disorders.

Importance of Referral

After a physician identifies a patient as having mental health issues, referral is the next highly important step in facilitating access to mental health services for youth with psychological disorders. Physician referral has shown to be an important predictor of
mental health service utilization (Lavigne et al., 1998). For youth with anxiety disorders such a referral can make an important difference in the course of the child’s disorder because effective treatments exist but these treatments are typically only available through trained mental health clinicians.

In particular, pediatric referral for anxious youth to mental health clinicians that specialize in using empirically supported treatments is essential. More specifically, cognitive-behavioral therapy (CBT) is among the most effective treatment for reducing and eliminating childhood anxiety disorders (Silverman, Pina, & Viswesvaran, 2008). Research shows that 64% of youth treated for anxiety disorders are helped by CBT (Kendall, 1994). Early detection and effective CBT treatment for anxious youth has also been shown to reduce long-term problems (Lavigne et al., 1993). Although childhood anxiety disorders have repeatedly been shown to respond to CBT, this type of treatment is not typically provided in pediatric primary care settings. For youth with emotional problems such as anxiety, pediatric referral has shown to be a critical predictor of mental health service use (Lavigne et al., 1996). Furthermore, a referral from a primary care provider increases the probability that parents will follow-up and make contact with the referred specialist (Briggs-Gowan et al., 2000). In sum, evidence from numerous studies highlights the important role of pediatrician referral in ensuring that children with anxiety disorders receive appropriate and effective treatment.

**Referral Patterns**

Given the importance of pediatric referral for youth with mental health problems and given the prevalence of youth with these problems in pediatric settings, primary care providers are in the important position of referring children and adolescents with such
problems to the necessary specialist in order for them to receive appropriate care.

However, the majority of children and adolescents with mental health concerns are not being referred to specialists (Merikangas et al., 2011). For example, one study found that of the 58,771 offices visits made to 142 pediatric care facilities pediatricians reported referring only 6.7% of patients to mental health specialists, considerably below the estimated prevalence rate of 15%-21% for youth with mental health disorders who visit pediatric settings (Forrest et al., 1999). Similarly, other studies indicate that primary care providers fail to refer 75% of youth with mental health problems Horwitz et al, 2007; Rushton, Bruckman, & Kelleher, 2002; Stein et al., 2008). For example, Rushton et al. (2002) investigated the prevalence of referral for mental health issues in over 4000 patients who visited 127 pediatricians over the course of 20 days. Most patients identified by the physician as having mental health problems were managed in the primary care office without referral. In fact, 76% of all patients identified as having a mental health problem in this study were not referred. In addition, a study conducted by Olson et al. (2001) examining referral to specialized mental health personnel found similar prevalence rates of referral. That is, across 19 pediatric settings, clinicians identified a total of 515 children aged 4 to 8 years as having at least one psychosocial problem, and of these 515 children, only 16% were referred to specialty services.

Similarly, Goldberg et al. (1984) also sought to obtain prevalence rates of referral for mental health problems among children in pediatric care. During a 2-month period, 30 pediatricians reported whether a referral was made for all office visits. During the 2 months, 21,575 youth visited the pediatric practices, and there were 935 children/adolescents detected at the first visit as having a mental health problem and
another 48 children/adolescents at a repeat visit. Pediatricians were asked whether the patients identified as having mental disorders were ever referred to a mental health specialist. Pediatricians reported only 9.3% of the patients they identified as having a mental health problem were referred to a mental health specialist. Additionally, in a study that included 4,891 children ages 2 to 5 years only 19% were referred to a mental health specialist (Lavigne et al. 1996).

Although currently there is limited research examining the prevalence of referral for youth with anxiety disorders in particular in a pediatric setting in part because the majority of studies look at mental health issues as a whole, one study has specifically investigated how frequently youth with anxiety disorders were referred to mental health specialists (Chavira et al., 2004). In this study, families were recruited from a pediatric patient list. Out of 190 families interviewed from the pediatric practice list, 17% of children and adolescents met criteria for an anxiety disorder based on DSM-IV criteria. However, 72% of children with an anxiety disorder were not referred for further treatment (Chavira et al., 2004).

In sum, youth with mental health problems are not being referred to the appropriate mental health specialists to receive effective care. Furthermore, studies also indicate that youth with anxiety disorders, in particular, are not being referred. A visit to the pediatrician’s office represents an opportunity for discussion of emotional issues with the child and the parent, but referral rates continue to be low relative to need. Therefore, it is necessary to understand the barriers to referral in order to shed light on why youth are not receiving appropriate treatment.

Why Pediatricians are Not Referring
As the number of children visiting primary care settings with mental health problems has increased, research has assessed pediatricians’ referral practices. For example, Williams et al. (2005) evaluated primary care clinicians’ behavioral health referral practices and the level of communication with mental health providers. More specifically, 47 pediatricians in private practice were administered a standard interview to examine referral practices and communication patterns. Results suggested that pediatricians most frequently referred if the diagnosis was complicated (e.g., comorbid presentations, severe mental health illness). Also, oftentimes pediatricians referred in response to failure to medication or non-medication (i.e., supportive counseling) treatments. Moreover, pediatricians reported that they felt the need for increased knowledge and communication with mental health providers.

Similarly, Williams et al. (2004) used a standard interview with forty-seven private practice pediatricians to examine primary care provider’s behavior in response to a patient identified with a mental health disorder. When a mental health problem was identified, about half of the pediatricians used selective serotonin reuptake inhibitors (SSRIs) as a first line treatment. Furthermore the vast majority of physicians provided non-medication interventions including supportive counseling, education interventions, and stress management. However, referral to a mental health specialist was not regularly provided.

Additionally, primary care provider referral patterns for youth with psychosocial problems were examined in an office-based survey conducted over a three-year period focusing on 4,012 patients diagnosed with psychosocial problems from 401 clinicians (Rushton et al., 2002). Access to mental health providers was the most frequent barrier
reported by clinicians with only 12.7% reporting services were “very accessible.”

Pediatricians also reported often being restricted by managed care in their referral to psychologists (56%). Primary care providers reported several barriers for children with managed care such as obtaining an appointment (65.6%), lack of pediatric specialists (61.1%), and complex authorization (44.7%).

Hankin and Starfield (1986) noted that mental health specialists see fewer than half of children identified by primary care providers. To investigate why children are not seen by mental health specialists several studies have asked primary care providers about their reasons for not referring an identified patient (Dulcan et al., 1990; Pidano, Kimmelblatt, & Neace, 2011). Primary care providers reported several reasons for not referring youth with mental health problems including feeling uncertain about diagnosis, not possessing knowledge or information about the disorder and its treatment, and fearing the stigma and negative effects that the diagnosis would have on the child (Pidano, Kimmelblatt, & Neace, 2011). Furthermore, primary care providers report that barriers to referral of mental health disorders also involve the lack of specialists to provide counseling, the lack of specialists to whom they can refer, and a lack of specialists for medication management. These findings suggest that primary care providers have considerable hurdles with regard to referrals for youth with mental health disorders to mental health specialists.

In addition, Olson et al. (2001) assessed pediatricians’ perception of barriers in the referral of depressed youth. In a national cross-sectional survey, primary care providers assessed barriers that limited their ability to refer a child/adolescent with depression. The barriers were organized into three domains: physician barriers, patient
barriers, and organizational barriers. The two most frequently reported barriers were inadequate time for obtaining history and inadequate time for providing counseling or education.

Similarly, pediatricians’ perceived barriers to referral for youth with behavioral health disorders were examined in a large-scale cross-sectional survey of 832 members of the American Academy of Pediatrics. The survey was modeled on the Williams et al. (1999) and Olson at al. (2001) studies and assessed perceived barriers to referral for youth with behavioral health disorders (Horwitz et al., 2007). More specifically, Horwitz et al. (2007) used factor analysis to explore the latent structure for barriers that pediatricians face when referring children with mental health disorders based on the adult literature which suggests that barriers fall into 3 areas: patient, physician, and organizational domains (Olson et al., 2001; Williams et al., 1999). Pediatricians endorsed several barriers they encounter in the management of children’s psychosocial problems; the most frequent barrier reported was the lack of time to treat mental health problems (77%). Other reported barriers included long waiting periods for mental health specialists (74%), lack of training (65%), and lack of providers to refer children (61%). In fact, an exploratory factor analysis found that barriers cluster into a 3-factor structure: (1) physician-child barriers (e.g., incomplete knowledge of treatment/lack of effective treatment for child/adolescent), (2) organization-systems barriers (e.g., inadequate reimbursement for treating child/adolescent with mental health problems), and (3) organization-local services barriers (e.g., too few community resources/long waiting periods for the referred specialists).
Researchers have also examined how well pediatricians are trained to handle patients with mental health concerns. Cawthorpe (2005) presented results from two different surveys indicating that 87% and 67% of primary care providers reported not having enough knowledge about the importance of referral for mental health problems. Stein et al. (2008) also investigated primary care providers training and found that only 28.3% of the participants completed a fellowship in child mental health. Together, these studies show that primary care providers may need more education about the importance of referral for youth with mental health disorders in order for these children and adolescents to receive the appropriate care.

In sum, surveys have asked primary care providers about referral behavior for mental health problems overall (Stein, et al., 2008; Williams, et al., 1999) and this research suggests that barriers may result from various factors, such as lack of knowledge, limited time, and limited accessibility to mental health specialists (Briggs-Gowan, et al., 2000; Horwitz, et al., 2007). Research also indicates that barriers for referral of psychosocial problems may fall into three domains: physician, patient, and organizational (Horwitz et al. 2007; Olson et al. 2001). Although research has investigated the barriers primary care providers encounter for the referral of mental health problems overall there is little research on perceived barriers for pediatric referral for children and adolescents with anxiety disorders.

Current Study

In summary, the literature suggests that anxiety affects a substantial number of children, causing distress and impairment (Mazzone et al., 2007; Ginsburg, Siqueland, Masia-Warner, & Hedtke, 2004). It is particularly noteworthy that anxiety disorders are
extremely prevalent in pediatric care settings. As a result, pediatric referral is important for these youth to receive the most effective treatments (Rushton et al., 2002; Williams, et al., 2004). Thus, judicious referral of patients to appropriate services during well-child visits is a key component of pediatric primary care provider’s patient care. However, children with anxiety disorders are not being referred to mental health specialists (Chavira et al. 2004). Since pediatricians are in the important position as gatekeepers to refer so youth receive appropriate treatment, understanding the barriers pediatricians’ face when referring youth with anxiety disorders is critical for children’s health and development. Thus, the limited information on barriers pediatrician’s face when referring youth with anxiety disorders warrants considerable concern.

To date, research examining the barriers physicians face when referring patients to mental health specialists has primarily focused on mental health problems as a whole. Further, past factor analytic research investigating the perceived barriers that physicians encounter when referring youth with mental health problems is limited by the use of exploratory factor analysis (EFA; Horwitz et al. 2007). Although EFAs aid in understanding latent structures they are limited because they can be influenced by sampling error and are not driven by theory. Thus, the present study builds upon past research on physician referral of mental health problems; specifically, a confirmatory factor analysis (CFA) was conducted to examine the latent structure underlying the barrier domains pediatricians face when referring youth with anxiety disorders to mental health specialists. In contrast to an EFA, a CFA evaluates a priori hypotheses corresponding to prior theoretical notions, making it a more powerful approach to studying factor structures. A hypothesized model in CFA is tested statistically to
determine the adequacy of its goodness-of-fit to the sample data. Therefore, consistent with theory, it is hypothesized that barriers physicians perceive as problematic when referring youth with anxiety to mental health professionals will fit a three-factor model comprised of patient, organizational and physician factors as shown in Table 1. Further, the three-factor model was compared to an alternative model in which all barriers represent one underlying factor to determine if the three-factor model better fits the data. Given the limited research on the factor structure for barriers pediatricians encounter when referring youth with anxiety disorders, the current investigation’s aim is to provide empirical support for a three-factor model and offer a foundation for improving strategies to increase referral of anxiety disorders in primary care facilities.
Chapter Two

Method

Participants

Participants were 216\(^1\) pediatric and family medicine physicians. However, five surveys were not usable (more than 75% of data incomplete), leaving 211 participants. The final sample of 211 participants resulted in an observed power of .80 (McCallum et. al., 1996). Providers were contacted by email or through mail in outpatient and hospital settings in a variety of urban, suburban and rural locations nationwide. Of the 211 participants that completed the survey, 47% were male (n = 100) and 53% were female (n = 111). Participants ranged in age from 27 to 76 years with an average age of 46 years (SD =12.50). The majority of the participants were Caucasian/White (n = 176, 81.5%) followed by Asian/Asian American (n = 19, 8.8%), African American (n = 12, 5.6%), Hispanic/Latino (n = 3, 1%), other (n = 4, 1.9%); two participants (0.4%) did not provide their ethnicity. The primary employment setting of the participants was in a medical or university hospital (n = 86, 39.8%), pediatric group practice of 3-10 physicians (n = 37, 17.1%), multispecialty group practice with primary and specialty care (n = 30, 13.9%), hospital/clinic (n = 20, 9.3%), government hospital (n = 5, 2.3%), health maintenance organization (n = 5, 2.3%), solo practice (n = 4, 1.9%), and 4.3% identified other primary employment settings (n = 24). Demographics for the full sample are listed in Table 2.

Measures

**Demographics Questionnaire.** Respondents completed a demographic questionnaire that included questions on personal sociodemographic characteristics (e.g.,

\(^1\) A total of 216 (6% of 3,615 distributed) surveys were returned.
age, race, and gender) as well as information on professional characteristics including practice setting (e.g., solo or multispecialty, location of practice and type of practice; Appendix A).

**Barriers to Referral of Youth with Anxiety Disorders in Pediatrics Survey (BRYAS).** Based on the literature regarding barriers to physician referral for youth with mental health disorders, a survey was developed to assess barriers pediatricians encounter when referring youth with anxiety disorders (Appendix B). The 19-item survey used in the current study was developed to be self-administered in 15 minutes or less and includes multiple-choice questions. Pediatric care providers used a 5-point likert scale, ranging from 1 *(strongly disagree)* to 5 *(strongly agree)* to respond to 19 questions about barriers they encounter when referring youth with anxiety disorders (e.g., accessibility of mental health specialists, lack of time to refer the patient, concern about coverage patient will receive if referred). An overall score is calculated by summing physicians’ responses for all the items; thus the total score can range from 19 to 95, with higher scores indicating more perceived barriers to referral.

The BRYAS was adapted from the questionnaires developed by Olson et al. (2001) and Horwitz et al. (2007). More specifically the original scale was developed by Williams et al. (1999) to examine barriers to physician referral in adults with depression and Olson et al. (2001) adapted the scale to investigate barriers to physician referral for youth with depression. Finally, Horwitz et al. (2007) adapted the scale to investigate barriers to physician referral for youth with mental health problems. In addition, the BRYAS included two additional barriers (i.e., ‘Use counseling as a first line treatment for children/adolescents with anxiety disorders’ and ‘Use medication as a first line treatment
for children/adolescents with anxiety disorders’) based on research that found physician
use of medication/counseling to be barriers to referral of youth with mental health
disorders (Rushton et al., 2002; Williams et al., 2004).

**Procedure**

Providers were identified through the Ohio Board of Medicine, accredited
medical universities, and professional meetings. Participants were either contacted in
person (e.g., at their office or at a professional meeting) or by email. For providers
recruited through email a recruitment message with a link to a web survey was sent and a
reminder was sent three weeks later. Those participants contacted in person at their
offices were given the survey and a cover letter. After three weeks, the completed
surveys were picked up from the pediatric offices. If the physician had not completed the
survey they were given a reminder with a three-week extended deadline. Some
participants were given a cover letter with the survey at professional meetings so no
follow-up was possible. One hundred and forty (66%) useable surveys were completed
online and 71 useable surveys were hand completed (34%). Additional measures not
described here were given as part of a larger study.
Chapter Three

Results

The data were screened for missing values and non-normality. Among the 211 completed surveys there were nominal amounts of missing item-level data (17 missing items). Missing items were found to be missing completely at random according to Little’s Missing Completely at Random (MCAR) test, \( \chi^2(62, N = 211) = 56.88, p = .660 \). Therefore missing values were estimated using maximum likelihood (ML) procedures (Graham, 2009). Univariate tests revealed all skewness and kurtosis values within an acceptable range (< 2, and < 10, respectively) providing evidence of normality.

CFA Results

In order to test the hypothesized three-factor model (i.e., organizational, parent, and physician barriers) a CFA using maximum-likelihood estimation with residual error covariances fixed to zero was performed.

Several goodness-of-fit statistics were used to examine model fit, (i.e., the chi-square test, root mean square error of approximation (RMSEA), standard root mean square residual (SRMR), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI)). A chi-square value of zero or near zero indicates that the null-hypothesis of a correct model fit is not rejected (Kline, 2004). A RMSEA value of .06 or less indicates a close approximate fit while a value greater than .10 indicates poor fit. A SRMR value of .08-.09 suggests an excellent fit while values greater than .10 indicate a poor fitting model. Finally, models with CFI/TFL values greater than 0.95 are considered an excellent fitting models and a good fitting model if between .90 and .95 (Hu & Bentler, 1999).
The chi-square test of model fit was significant, \( \chi^2_M (149, N = 211) = 509.24, p < .0001 \) indicating that differences between the hypothesized model and the observed data. Although, the chi-square test is not always sensitive to an adequate fitting model and is heavily influenced by sample size, other fit indices also indicated less than adequate support for the hypothesized model. Specifically, the CFI and TLI values fell well below 0.90. In addition, RMSEA and SRMR were both above 0.10, which suggest an inadequate fit (see Table 3).

Evaluation of localized areas of misidentification in the solution indicated evidence that four items (7, ‘Lack of time to refer child/adolescents with anxiety disorders;’ 9, ‘Financial disincentive to refer;’ 15, ‘Use counseling as a first line treatment for children/adolescents with anxiety disorders;’ and 18, ‘Use medication as a first line treatment for children/adolescents with anxiety disorders’) should be dropped from the model. Two of these items were the additional items added to the BRYAS based on research that found physician use of medication/counseling to be barriers to referral of youth with mental health disorders. The other two items asked about financial and time constraints. The results showed that the factor loadings for each of these barriers were not statistically significant \( (p > .05; \text{see Table 4}) \) and therefore these items were not sufficiently measuring the underlying factor as hypothesized. All subsequent models were respecified without these items.

Thus, the three-factor model was respecified without items 7, 9, 15 and 18. Since the three-factor model and the respecified model with the deleted items were not subsets of each other fit indices were used to determine which model better fit the data. The respecification of the model with the four items deleted was a better fitting model than
the original model (see Table 3 for exact fit indices), providing support that the deletion of the items resulted in improved fit; however, the respecified model still did not provide an adequate fit for the data (see Table 3).

Next, statistical and conceptual evaluation of the respecified model suggested evidence of correlated residuals. Research has shown that for measures that contain items with similar content or wording it may be necessary to specify correlated residuals that represent nonrandom error stemming from method effects (Byrne, Shavelson & Muthen, 1989; Floyd & Widaman, 1995). Evaluation of modification indices revealed the existence of correlated residuals between barrier items 2 and 5 (‘Parent’s/Patients insurance limits treatment options’ and ‘Mental health care professionals not affordable’), items 12 and 13 (‘Poor relationships with child/adolescent anxiety disorder providers’ and ‘Lack of feedback on referrals’) and items 6 and 5 (‘Lack of competent providers to refer children/adolescents with anxiety disorders’ and ‘Mental health care professionals are not affordable;’ see Table 5 for modification indices and standardized expected parameter change). Consideration of these results suggested that the latent factor was not accounting for the covariance of these items that likely resulted from content overlap. Therefore, the item residuals for 2 and 5, 5 and 6, and 12 and 13 were correlated in the subsequent model.²

Next, the three-factor model was specified allowing correlated residuals among the aforementioned items. The respecification of the model demonstrated improvement in all fit indices, suggesting an adequate fitting model. The chi-square difference test for the nested model revealed that the respecified model performed significantly better than

---

² All models were respecified one change at a time.
the three-factor without the correlated residuals $\chi^2_{Diff}(1) = 163.03$, $p < .001$. The significance tests of the correlations between item residuals were significant ($r_{5,2} = .51$ $p < .001$, $r_{12,13} = .48$ $p < .001$, and $r_{5,6} = .22$ $p < .001$) indicating that allowing the item residuals to be correlated, the model fit the data significantly better. Specifically, the CFI were at .90 (values greater than .90 indicates adequate fit) while the TFI fell slightly below .90. The RMSEA and SRMR both fell in the .06-.08 range also indicating an adequate fit (see Table 3 for all exact fit indices). Figure 1 displays the standardized factor loadings for the three-factor model with correlated item residuals. Factor loadings ranged from .16 to .93; all factor loadings were statistically significant. The internal consistency of the overall score in the current sample was relatively poor ($\alpha = .66$); the internal consistency for the three factor scores were variable with factor 1, parent barriers $\alpha = .60$, factor 2, organizational barriers, $\alpha = .72$, factor 3, $\alpha = .66$.

Finally, the data were analyzed to determine if the three-factor model with correlated residuals or a one-factor model with correlated residuals best fit the data. The chi-square difference test for the nested model revealed that the three-factor model performed significantly better than the one-factor factor model $\chi^2_{Diff}(3) = 404.91$, $p < .001$(see Table 3 for indices).
Chapter Four

Discussion

Literature suggests that anxiety affects a substantial number of children, causing distress and impairment (Ginsburg et al. 2004). Children and adolescents with anxiety disorders often present to a family physician or pediatrician, not to a mental health specialist (Katoka, 2006). Currently over 25 empirically supported treatments for youth with anxiety disorders have been identified which offer hope for youth with anxiety disorders ranging from specific phobias (Davis, Ollendick & Öst, 2009) to generalized anxiety disorder (Kendall, 1994; Kendall & Hedtke, 2006). However, many children and adolescents will not receive these treatments if the child’s physician fails to provide a referral. Thus the aim of the current study was to examine barriers to physician referral of youth with anxiety disorders. More specifically, based on past research and theory, the current study used CFA to evaluate a three-factor model of the perceived barriers that physicians face when referring youth with anxiety disorders. This study represents the first attempt to systematically evaluate barriers to physician referral of anxious youth in pediatric settings.

Consistent with the hypothesis, the present findings provide some evidence for three meaningful factors (i.e., physician, parent, and organizational barriers). However, contrary to past research that suggests barriers to referral include, physicians’ use of medication management, physicians’ use of supportive counseling and financial and time constraints these did not sufficiently measure the hypothesized underlying factor. After dropping these items the results indicated adequate support for a three-factor model with correlated residuals freely estimated for three pairs of barriers. The presence of the
correlated residuals was revealed after the initial three-factor model specification and appeared to occur from content overlap.

Overall, results suggest that there are three meaningful categories of perceived barriers that hinder the referral of anxious youth in pediatric settings. That is, providers face barriers related to the parent (e.g., reluctance to accept diagnosis), organization (e.g., too few community resources to accommodate referrals) and physician (e.g., lack of training in referring youth with anxiety disorders). However, a considerable range was present for how well each barrier measured the corresponding underlying factor. That is, certain barriers measured the underlying factor (i.e., parent, physician, and organizational) better than other barriers.

More specifically, items regarding parents' hesitations or embarrassment (e.g., parents’ reluctance to seek help from a mental health professional) seemed to be better indicators of parent barriers whereas concerns regarding the presenting medical complaint (i.e., child’s presenting medical complaint as more critical than the child’s problem with anxiety) was a relatively weak indicator of this factor. Importantly, this suggests that physicians’ concerns about parent reluctance/apprehension may best explain the parent barriers hindering referral of anxious youth. Examination of items on the organizational factor reveals that items pertaining to the scarcity of mental health resources (e.g., the lack of qualified mental health specialists, too few community resources, and long waiting periods for appointments with mental health specialists) seem to be better indicators of organizational barriers than those that tapped into physician dissatisfaction with the mental health system (e.g., mental health professionals are not affordable, difficult paperwork or authorization procedures, and not receiving feedback...
from mental health specialist). Finally, when examining the physician factor, items tapping into physicians’ knowledge and confidence concerning referral (e.g., lack of training in the treatment and referral of youth with anxiety and lack of confidence to refer youth with anxiety disorders) seem to be better indicators relative to the concern about losing a patient if anxiety is addressed. Thus, in general the lack of physician training on referral may best explain physician barriers.

**Implications**

In a time when the process of recognition, diagnosis, and referral of anxiety disorders is occurring more frequently in pediatric settings the current study identifies perceived barriers to referral even when youth are accurately diagnosed with an anxiety disorder or problem. Importantly, the identification of potential barriers may provide insight for improving strategies to increase referral of youth with anxiety disorders in primary care facilities, thus, facilitating the referral process.

The physician and parent factors suggest, for example, physicians may benefit from training on techniques such as motivational interviewing to discuss anxiety diagnoses with parents. Motivational interviewing (MI) is a directive, client–centered interviewing method used in medical and clinical settings that has been shown to effectively facilitate motivation within the patient to pursue a goal (Miller, 1994). Motivational interviewing attempts to bring awareness to the consequences and risks associated with the behavior in question. The approach is empathetic, non-confrontational and non-judgmental. MI has successfully been applied in a variety of healthcare settings as a means to promote treatment adherence (Knight, McGowan, Dickens and Bundy, 2006). More importantly, however, physician training in MI has
been effective as an intervention for increased referral for problems ranging from obesity and diabetes to substance abuse and smoking cessation. For example, after training in MI, physicians’ perceptions of barriers, asking about alcohol/drug use, advising, treating/referring, and professional satisfaction improved (Hettema, Sorensen, & Uy, 2009). In addition, individuals admitted into a hospital emergency department with a likely substance use problem were more likely to enter a treatment facility after receiving a brief motivational interview intervention compared to similar individuals who did not receive the intervention (Krupski et al. 2010). More specifically, in a sample of 6,348 patients that screened for a substance abuse disorder during their visit to the emergency room 2,493 received a 5-10 minute brief intervention that consisted of motivational interviewing techniques whereas a matched controlled comparison group of 2,493 patients did not receive the intervention. Of the 2,493 patients that received the MI intervention and were referred to treatment 842 entered specialized treatment within a year compared to only 562 in the comparison group providing evidence that MI training within a medical care setting motivated patients to follow-through on referral recommendations.

The studies examining MI suggests that pediatric providers trained in MI may motivate parents to follow through with referral recommendations and decrease their hesitations, thus decreasing some of the parent barriers physicians perceive as impeding the referral process. Further, not only will MI training decrease parent barriers it may enhance pediatric providers confidence in the diagnostic and referral process resulting in a decrease in providers perception that the lack of training on referring anxious youth is interfering with the referral process.
Further, results from the current study suggest that it is also important to increase the availability and accessibility of mental health resources to potentially decrease some of the organizational barriers physicians identified as impeding their ability to refer. Collaboration between mental health specialists and pediatric providers is necessary to coordinate appropriate care for youth with anxiety. Recent studies have examined a Primary Behavioral Health Model (PBH). In the PBH model, behavioral health consultants (BHC) work alongside primary care physician to enhance preventative and clinical care for mental health problems. Typically, BHCs collaborate with primary care physicians to develop a treatment plan and monitor changes in the patient. The BHC becomes an integral member of the team and works within the existing framework of the primary care setting. Research suggests that, compared to care as usual in general medical settings, integrated care programs produced improved outcomes (Katon et. al, 1996; Robinson, Priest, Susman, Rouse, & Crabtree, 2001). For example, the use of the Integrated Care Program, a program where the physician and behavioral health consultant collaborate to combine cognitive behavioral therapy and pharmacotherapy treatments for individuals with depressive symptoms, resulted in an increase of coping strategies used by patients, better medication adherence, and increased physician and patient satisfaction (Robinson et. al., 2001). Instead of being a referral destination from the physician, psychologists are present and a part of the primary care team; thus, decreasing the numerous barriers that occur from trying to coordinate outside referrals with mental health professionals.

Limitations
As with any study, there were several limitations in the current study and findings should be interpreted with these limitations in mind. First, only 6% of providers who were contacted responded, resulting in a suboptimal response rate, opening the door for sampling and nonresponse limitations (Leiferman et al 2008). Given that a substantial number of providers did not respond, the current sample might not best represent the general population of pediatric providers.

Given that the current study was the first to use the BRYAS to assess the perceived barriers that providers face when referring anxious youth, replication of results is required. This is particularly true given that the current sample was not large enough to divide in order to perform independent sample replication. If this were possible, it would lend support to the reliability and generalizability of the model obtained.

**Future Directions**

As noted, the current study represents the first attempt to examine a model of the barriers to referral of youth seen in primary care, thus, it will be important for future research to replicate the pattern of results found. Further, it will be important to examine whether the perceived barriers to referral do in fact predict actual referral behavior and whether the relevance of specific barriers varies systematically across providers or setting (e.g., are specialists less comfortable talking with patients about an anxiety diagnosis given that they may not have a well-established relationship with the family, are physicians in rural settings more effected by organizational barriers? Armed with this information, researchers could design more effective interventions to encourage referral for anxious youth identified in primary healthcare settings.

**Conclusion**
It is well established that youth have regular contact with their primary care provider (Chavira, et al. 2004; Costello, Mustillo, Keeler, & Angold, 2004). In the United States 70% of adolescents see a physician at least once a year (Frankenfield et al., 2000). There is a growing body of evidence suggesting the importance of referral of youth with anxiety in pediatric care settings. Overall, individuals with anxiety disorders have increased rates of health care utilization and recent studies suggest that 17% of pediatric patients meet criteria for an anxiety disorder diagnosis (Chavira et al., 2004). General population prevalence rates of youth under 18 with anxiety disorders are estimated to be between 5-12 % (Kessler, Chiu, Demler, & Walters, 2005). As such, anxiety disorders are the most prevalent form of psychopathology in children and adolescents. However, most youth with anxiety are not treated with appropriate mental health care (Katoka, 2006). Primary care providers serve as gatekeepers to facilitate and coordinate referrals to mental health specialist. Clearly there is a need to better understand the barriers providers encounter when referring youth with anxiety disorders. The current study provides evidence of a number of provider, parent, and organizational level obstacles that pediatric providers perceive make referral challenging.

In sum, it is useful to understand the challenges that pediatric care providers face when referring anxious youth in order to establish referral networks and close collaborative relationships between general health care providers and mental health specialists in order to provide effective care. Pediatric care physicians identified barriers to referral such as parent reluctance to accept diagnosis (parent), too few community resources to accommodate referrals (organizational), and lack of training in the treatment for youth with anxiety (physician) as obstacles. Although future work on referral
practices is warranted this study provides a step forward in understanding the obstacles pediatric care providers face when referring anxious youth.
References


children and adolescents to specialty care. *Archives of Pediatrics and Adolescent Medicine, 153*(7), 705-714.


Table 1

*Barriers that Primary Care Providers Encounter when Referring Youth with Anxiety Disorders*

<table>
<thead>
<tr>
<th>Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Barriers</strong></td>
</tr>
<tr>
<td>Patient or patient reluctance to accept diagnosis</td>
</tr>
<tr>
<td>Medical problems of patient were more pressing</td>
</tr>
<tr>
<td>Patient or parent reluctance to see mental health care specialist</td>
</tr>
<tr>
<td><strong>Organizational Barriers</strong></td>
</tr>
<tr>
<td>Mental health care professionals are not affordable</td>
</tr>
<tr>
<td>Patient’s insurance limits treatment options</td>
</tr>
<tr>
<td>Lack of competent/qualified providers to refer children/adolescents with anxiety disorders</td>
</tr>
<tr>
<td>Lack of time to refer child/adolescent anxiety disorders</td>
</tr>
<tr>
<td>Difficult paper work or authorization procedures</td>
</tr>
<tr>
<td>Financial disincentive to refer</td>
</tr>
<tr>
<td>Too few community resources to accommodate referrals</td>
</tr>
<tr>
<td>Long waiting periods for appointments with mental health specialists</td>
</tr>
<tr>
<td>Poor relationships with child/adolescent anxiety disorder providers</td>
</tr>
<tr>
<td>Lack of feedback on referrals</td>
</tr>
<tr>
<td><strong>Physician Barriers</strong></td>
</tr>
<tr>
<td>Fear of losing patients if anxiety disorders are addressed</td>
</tr>
<tr>
<td>Use counseling as a first line treatment for children/adolescents with anxiety disorders</td>
</tr>
<tr>
<td>Lack of training in the appropriate care of children/adolescents with anxiety disorders</td>
</tr>
<tr>
<td>Lack of confidence in my ability to refer a child/adolescent with an anxiety disorder</td>
</tr>
<tr>
<td>Use medication as a first line treatment for children/adolescents with anxiety disorders</td>
</tr>
</tbody>
</table>

a Questions taken from Rushton et al. (2002)
Table 2

Sample Demographics

<table>
<thead>
<tr>
<th></th>
<th>Full Sample n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>98 (45.4%)</td>
</tr>
<tr>
<td>Female</td>
<td>115 (53.2%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>176 (81.5%)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>12 (5.6%)</td>
</tr>
<tr>
<td>Asian/Asian American</td>
<td>19 (8.8%)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>3 (1.4%)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (3.0%)</td>
</tr>
<tr>
<td>Years providing healthcare services</td>
<td></td>
</tr>
<tr>
<td>Less than 2</td>
<td>13 (6.0%)</td>
</tr>
<tr>
<td>2-5 years</td>
<td>41 (19.0%)</td>
</tr>
<tr>
<td>6-10 years</td>
<td>33 (15.3%)</td>
</tr>
<tr>
<td>11-15 years</td>
<td>29 (13.4%)</td>
</tr>
<tr>
<td>16+ years</td>
<td>97 (44.9%)</td>
</tr>
<tr>
<td>Employment setting</td>
<td></td>
</tr>
<tr>
<td>Group practice</td>
<td>84 (38.9%)</td>
</tr>
<tr>
<td>Pediatric practice</td>
<td>10 (4.6%)</td>
</tr>
<tr>
<td>Hospital</td>
<td>120 (55.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>Physician specialty</td>
<td></td>
</tr>
<tr>
<td>General pediatrician</td>
<td>124 (57.4%)</td>
</tr>
<tr>
<td>Family practice</td>
<td>25 (11.6%)</td>
</tr>
<tr>
<td>Pediatric specialty</td>
<td>57 (26.4%)</td>
</tr>
<tr>
<td>Administration/research</td>
<td>9 (4.2%)</td>
</tr>
</tbody>
</table>
Table 3

Confirmatory Factor Analysis Fit Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\chi^2$ diff</th>
<th>$\Delta$df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three factor</td>
<td>491.35</td>
<td>149</td>
<td></td>
<td></td>
<td>0.61</td>
<td>0.55</td>
<td>0.104</td>
<td>0.110</td>
</tr>
<tr>
<td>Three factor with 4 items</td>
<td>287.76</td>
<td>87</td>
<td></td>
<td></td>
<td>0.73</td>
<td>0.67</td>
<td>0.105</td>
<td>0.097</td>
</tr>
<tr>
<td>Three factor with $\theta_{2,5}$ free$^a$</td>
<td>228.50</td>
<td>86</td>
<td>59.26**</td>
<td>1</td>
<td>0.81</td>
<td>0.77</td>
<td>0.089</td>
<td>0.090</td>
</tr>
<tr>
<td>Three factor with $\theta_{2,5},\theta_{12,13}$ free$^b$</td>
<td>174.60</td>
<td>85</td>
<td>53.90**</td>
<td>1</td>
<td>0.88</td>
<td>0.85</td>
<td>0.071</td>
<td>0.082</td>
</tr>
<tr>
<td>Three factor with $\theta_{2,5},\theta_{12,13},\theta_{5,6}$ free$^c$</td>
<td>163.03</td>
<td>84</td>
<td>11.57**</td>
<td>1</td>
<td>0.90</td>
<td>0.87</td>
<td>0.067</td>
<td>0.081</td>
</tr>
<tr>
<td>One factor with $\theta_{5,2},\theta_{12,13},\theta_{5,6}$ free$^d$</td>
<td>576.94</td>
<td>87</td>
<td>404.91**</td>
<td>3</td>
<td>0.34</td>
<td>0.20</td>
<td>0.163</td>
<td>0.156</td>
</tr>
</tbody>
</table>

$\chi^2$ diff, nested $\chi^2$ difference; CFI comparative fit index; TLI Tucker-Lewis index; RMSEA, root square error of approximation; SRMR, standardized root mean square residual.

**P < .001

$^a$ Correlated residuals between items 2 and 5.

$^b$ Correlated residuals between items 2 and 5, 12 and 13.

$^c$ Correlated residuals between items 2 and 5, 12 and 13, 5 and 6.

$^d$ $\theta_{5,2},\theta_{12,13},\theta_{5,6}$ freely estimated in a one-factor model.
Table 4

*Parameter Estimates for Items that Poorly Measure the Factor*

<table>
<thead>
<tr>
<th>Item</th>
<th>Standardized Estimate</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 7</td>
<td>0.055</td>
<td>.47</td>
</tr>
<tr>
<td>Item 9</td>
<td>-0.011</td>
<td>.88</td>
</tr>
<tr>
<td>Item 15</td>
<td>0.075</td>
<td>.36</td>
</tr>
<tr>
<td>Item 15</td>
<td>0.135</td>
<td>.09</td>
</tr>
</tbody>
</table>
Table 5

*Modification and Standard Expected Parameter Change Values for Correlated Residuals*

<table>
<thead>
<tr>
<th>Correlated item residuals</th>
<th>Modification index</th>
<th>Standard expected parameter change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlated residuals between items 2 and 5</td>
<td>52.27</td>
<td>0.48</td>
</tr>
<tr>
<td>Correlated residuals between items 12 and 35</td>
<td>48.04</td>
<td>0.50</td>
</tr>
<tr>
<td>Correlated residuals between items 5 and 6</td>
<td>11.13</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Figure Caption

*Figure 1.* Three-factor model for barriers to referral of youth with anxiety disorders in pediatric care. *Note:* Squares denoting barrier items represent observed variables, and circles represent latent variables. Factor scores and correlated residuals between items 2 and 5, 12 and 13, 5 and 6 are presented.
Appendix A

**DEMOGRAPHICS QUESTIONAIRRE**

1. Approximately what percentage of your professional time is spent in the following areas?

   General Pediatrics................................................... %

   Other specialty/subspecialty (specify)
   _______________________________ ........... %
   _______________________________ ........... %

2. Please describe the community in which your primary practice/position is located. *Circle One*

   Urban, inner city..................................................1
   Urban, not inner city.............................................2
   Suburban................................................................3
   Rural.......................................................................4

3. Please indicate your primary employment setting, that is, the setting where you spend most of your time.
   Please circle only ONE response

   Self-employed solo practice.....................................1
   Health Maintenance Organization (staff model)............2
   Two physician practice ...........................................3
   Medical School or parent university........................4
   Pediatric group practice, 3-10 pediatricians...............5
   Non-government hospital/clinic...............................6
Pediatric group practice, >10 pediatricians........................................7
Non-profit community health center..................................................8
Multispecialty group practice with primary care only..........................9
City/county/state government hospital or clinic ..................................10
Multispecialty group practice with specialty care only ......................11
US government hospital or clinic .....................................................12
Multispecialty group practice with primary and specialty care ..........13
Other .................................................................................................14

4. Following any fellowships, how many years have you been in practice?
   Years_______

   Not currently in practice ☐

5. What is your gender? Male._____ 1 Female_____2

6. In what year were you born?......................19_______

7. With what racial or cultural group do you identify yourself? Circle all that apply

   White, non-Hispanic/Latino.........................................................1
   Hispanic/Latino...........................................................................2
   Black/African American..............................................................3
   Asian ..............................................................................................4
   Native Hawaiian/other Pacific Islander ......................................5
   American Indian/Alaska Native...................................................6
   Other (specify) ............................................................................7
Appendix B

**Barriers to Referral of Youth with Anxiety Disorders in Pediatrics Questionnaire**

How strongly do you agree or disagree that the following are barriers to your referring of child/adolescent anxiety disorders to mental health specialists? Circle one response for each item

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient or parent reluctant to accept diagnosis</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Patient’s insurance limits treatment options</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Medical problems of patient were more pressing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Patient or parent reluctance to see mental health care specialist</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Mental health care professionals are not affordable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Lack of competent/qualified providers to refer children/adolescents with anxiety disorders</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Lack of time to refer child/adolescents with anxiety disorders</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Difficult paper work or authorization procedures</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Financial disincentive to refer</td>
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<td>10. Too few community resources to accommodate referrals</td>
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<tr>
<td>11. Long waiting periods for appointments with mental health specialists</td>
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<td>12. Poor relationships with child/adolescent anxiety disorder providers</td>
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<td>13. Lack of feedback on referrals</td>
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<td>14. Fear of losing patients if anxiety disorders are addressed</td>
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<tr>
<td>15. Use counseling as a first line treatment for children/adolescents with anxiety disorders</td>
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<td>16. Lack of training in the treatment of children/adolescents with anxiety disorders</td>
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<td>17. Lack of confidence in my ability to refer a child/adolescent with an anxiety disorder</td>
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<td>18. Use medication as a first line treatment for children/adolescents with anxiety disorders</td>
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<tr>
<td>19. Lack of training in referring child/adolescent with anxiety disorders</td>
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