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Accuracy of Educator Nominations in Identifying Students with Elevated Levels of Anxiety and Depression

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Accuracy of Educator Nominations in Identifying Students with Elevated Levels of
Anxiety and Depression

by

Jennifer M. Cunningham

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Psychological and Social Foundations
College of Education
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Abstract

Internalizing disorders, specifically depression and anxiety, affect up to 18% and 33% of youth, respectively (Costello, Egger, & Angold, 2005b). Schools have become a major provider of mental health services to children, primarily in attempts to overcome barriers to receiving community services (Farmer, Burns, Philip, Angold, & Costello, 2003). As such, it is important that schools have effective mechanisms in place to accurately identify students who may be in need of such services. The current study examined the accuracy of one such method, educator nominations (including from both teachers and school-based mental health professionals) in identifying students who self-report elevated levels of anxiety and/or depression. Participants were 238 fourth and fifth grade students within a large, urban school district in a southeastern state; 26 classroom teachers of these youth; and 7 mental health professionals who served the two schools that the student participants attended. Regarding sensitivity, teachers identified 40.74% and 50% of students who repeatedly reported clinically elevated levels of anxiety and depression, respectively. Teachers falsely identified as symptomatic 17.54% and 16.2% of students with typical levels of anxiety and depression, respectively. As a team, school-based mental health professionals identified 66.67% of students with elevated anxiety symptoms, and 45.45% of children who self-reported depressive symptoms. The team misidentified 31% and 35% of students as depressed and anxious, respectively. Individual school-based mental health professionals were less accurate (as compared to

the team as a whole) in identifying students who self-reported symptoms of depression. Taken together, findings suggest educators can accurately identify approximately half to two-thirds of youth who experience clinical levels of anxiety and children, but substantial misidentification rates underscore the need for further follow-up assessment of students identified during educational nomination procedures. Implications for practice, contributions to the literature, and future directions for research are discussed.

Chapter One: Introduction

Statement of the Problem

Approximately 20% of youth aged 9-17 meet criteria for a mental or addictive disorder that results in at least minimum impairment in home, at school, and with peers (US DHHS, 1999). Prevalence rates of internalizing disorders, namely anxiety and depression, range widely, from less than 1% to 18% for depression and 2% to 33% for anxiety (Costello, Egger, & Angold, 2005b). The negative psychosocial and academic outcomes associated with the presence of anxiety and affective disorders in childhood are significant. Specifically, poor self-esteem, impaired social relationships, engaging in substance use and other risky behavior and/or criminal offenses, development of future mental health problems, and decreased academic achievement and/or school failure have all been associated with the presence of anxiety and/ or depression during childhood (Bittner, Egger, Erkanli, Costello, Foley, & Angold, 2007; Cooper, 2008; Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007; Copeland, Shanahan, Costello, & Angold, 2009; Van Ameringen, Mancini, & Farvolden, 2003). These negative outcomes are exacerbated by the fact that only about 30% of youth in need of mental health services actually receive them (US DHHS, 1999; Farmer et al., 2003). Within the past decade, schools have been recognized as a primary provider of mental health services, providing approximately 70% to 80% of psychosocial services to youth in need (Committee on School Health, 2004; Farmer et al., 2003).

Specific mental health services available to youth through schools include individual and group counseling, crisis intervention, assessment and diagnosis, and consultation (Brenner, Weist, Adelman, Taylor, & Vernon-Smiley, 2007; Friedrich & Suldo, 2010; Repie, 2005; Suldo, Friedrich, & Michalowski, 2010). The extant literature supports the effectiveness of school-based mental health services, specifically in that they can be an effective means to improve students' functioning and reduce symptoms of psychopathology (Nabors & Prodent, 2002; Rones & Hoagwood, 2000). Referrals for mental health concerns are received within schools for a variety of problems (Foster et al., 2005; Friedrich & Suldo, 2010). Referrals for problems that are considered externalizing in nature (e.g., ADHD, anger/aggression, behavior problems, conduct problems) are received in higher frequencies than those for concerns that are classified as internalizing (e.g., anxiety, depression). This discrepancy could be accounted for by the fact that students with internalizing concerns tend to "fly under the radar" and as a result are typically not the students referred for treatment, possibly because they tend not to disturb the classroom environment or commit other violations of school rules. Given the outcomes associated with anxiety and depression in adolescence and into adulthood, identifying students who are at-risk or already exhibiting symptoms of these disorders while they are still young is crucial. Providing intervention services for these children early on to remediate their symptoms is a necessary step in ensuring their mental health.

As schools have become a major venue in which mental health services are provided to youth, it is imperative that there are accurate procedures in place to identify students in need of school-based interventions. Currently, the most widespread identification methods include: universal screening via (a) student self-report of

symptoms using behavior rating scales, or (b) completion of rating scales by informants (i.e., parents and/or teachers); review of archival data sources, namely office discipline referrals; teacher nominations (i.e., teachers selecting one of more of their students who they perceive meet a behavioral criteria); and reactive methods such as referrals for services made by (a) concerned educators (e.g., teachers and/or other school-based mental health professionals), (b) parents, or (c) student self-referral for assistance (Dywer, Nicholson, & Battistutta, 2006; Layne, Bernstein, & March, 2006; Levitt, Saka, Romanelli, & Hoagwood, 2007). The most commonly used method involves universal screening via student self-report on rating scales (Center for Mental Health in the Schools, 2005). However, issues associated with this method (i.e., stigmatization, cost, identification of too many students in need of mental health services that can be accommodated by available resources) call into question the feasibility and appropriateness of this process (Center for Mental Health in the Schools, 2005). As such, consideration of alternatives should be examined.

The extant literature supports using teacher nomination as an accurate method for identifying students with externalizing behaviors (e.g., Ollendick et al., 1989; Richardson et al., 2009). However, the accuracy of teacher nominations to identify students with internalizing concerns, specifically anxiety and depression, is less prominent within the literature. Results of the few studies that have examined teacher nominations to identify students with anxiety and/or depression are mixed in findings; two studies provide preliminary support for the use of teachers to identify students with symptoms of depression (Ollendick, Oswald, & Francis, 1989; Moor et al., 2007), while the remaining three studies found conflicting results largely suggesting that teachers were not able to

accurately identify students with elevated levels of anxiety and/or depression (Auger, 2004; Dadds, Spence, Holland, Barrett, & Laurens, 1997; Layne, Bernstein, & March, 2006). Given the paucity of research within this area, and the adverse outcomes associated with the presence of anxiety and depression during childhood, it is important that research examines the accuracy of teacher nominations in identifying elementary-age children. Furthermore, identifying children with elevated levels of anxiety and/or depression early on, and subsequently intervening, before symptoms become more severe is consistent with a proactive and preventative stance on mental health.

While the use of teacher nominations has been investigated within the existing literature, no literature could be located that examined the use of school-based mental health professionals to specifically nominate students from the larger student body who may benefit from mental health services. However, some psychologists (e.g., Brock, 2002; Weinberg, 1990) have advocated for school-based mental health professionals to identify students who may be at-risk for the development of mental health concerns in the aftermath of crises. Given the fact that these professionals often come into contact with students across all grades within a school, they are in a unique position to be able to identify students who may be exhibiting mental health concerns. As school-based mental health professionals have training and expertise within the field of mental health, it is reasonable to conclude that they can also nominate students with mental health concerns.

Purpose of the Current Study

The overarching purpose of the current study was to evaluate the accuracy of educators' nominations to identify elementary school students with internalizing psychopathology, namely anxiety and depression. Specifically, the first aim of the current

study was to determine the accuracy (i.e., specificity, miss rate, specificity, misidentified rate) of using teacher nominations to identify students with elevated levels of anxiety and/or depression. The second aim was to provide preliminary data regarding the accuracy of similar nominations made by school-based mental health professionals (i.e., school guidance counselors, school psychologists, social workers). The list of students who emerged from these educators' nominations was compared to the list of students who emerged as experiencing at least "at-risk" levels of anxiety and/or depression via student self-report during a universal screening using validated assessment of anxiety and depression symptoms. Support for the accuracy of teachers and school-based mental health professionals in identifying students who self-report elevated levels of anxiety and/or depression provides schools with have an efficient and cost-effective method of identifying elementary school students with elevated internalizing psychopathology.

Definition of Key Terms

Anxiety. The term anxiety is an umbrella term that includes many different anxiety disorders. According to the DSM-IV-TR (American Psychiatric Association [APA], 2000), children and adolescents can be diagnosed with any of ten anxiety disorders, however the current study focuses on symptoms of the three specific anxiety disorders that are most common during childhood: generalized anxiety disorder, separation anxiety disorder, and social phobia (Beesdo, Knappe, & Pine, 2009). Specific criteria for a diagnosis of the aforementioned anxiety disorders are presented in chapter two.

Depression. The term depression refers to a disturbance in mood, mainly characterized by sadness or irritable mood (APA, 2000). The current study focuses on

major depressive disorder as it is a commonly diagnosed childhood disorder (SAMSHA, 2009), although it is possible for children and adolescents to be diagnosed with dysthymic disorder and depressive disorder not otherwise specified. Specific criteria for a diagnosis of the major depressive disorder are presented in chapter two.

School-based mental health services. The term school-based mental health services is used to refer to a “broad array of services designed to prevent, and treat behavioral and emotional difficulties that may or may not be symptoms specific of mental disorders” (Christner, Mennuti, & Whitaker, 2009, p.5).

School-based mental health professionals. The term school-based mental health professionals refers to school psychologists, school social workers, and guidance counselors.

Sensitivity. Figure 1 contains a depiction of the key terms relevant to the accuracy proportions of interest to the current study. Sensitivity is a primary component of accuracy. Sensitivity is defined as the “percentage of individuals with the disorder, as measured by a criterion measure, who are correctly identified by the screening or assessment instrument” (Levitt, Saka, Romanelli, & Hoagwood, 2007, p. 168). Sensitivity is also referred to as a “hit-rate” or true positive.

Specificity. Specificity is another type of accuracy. Specificity is defined as the “proportion of individuals without the disorder, as measured by a criterion measure, who are correctly identified by the instrument as being disorder-free” (Levitt et al., 2007, p.168). Specificity is also referred to as true negative.

Miss rate. Miss rates, also referred to as the number of students “missed” by an identification method, reveal the proportion or percentage of students that teachers and

school-based mental health professionals fail to identify during nomination procedures (i.e., do not nominate a student as anxious or depressed, but the student’s self-reported score falls in the “at-risk” range or higher). Misses are also referred to as false negatives.

Misidentified rate. The percentage of students that are misidentified as anxious or depressed by educators are referred to as the “misidentified rate,” or the number of students that are misidentified as symptomatic. Specifically, this refers to the percentage of students that are incorrectly identified by educators (i.e., nominates a student, but the student’s self-reported score is in the “average” range of symptoms). Misidentified students are also referred to as false positives.

	Student Symptoms in the “At-Risk” or “Clinical” Range per Self-Report ($T \geq 60$)	Student “Not at Risk” per Self-Report of Symptoms ($T < 60$)
Student Nominated by Educator	Sensitivity <i>True Positive</i>	Misidentified <i>False Positive</i>
Student Not Nominated by Educator	Miss Rate <i>False Negative</i>	Specificity <i>True Negative</i>

Figure 1. Matrix of key terms relevant to determining accuracy (Adapted from Green & Zar, 1989)

Research Questions

To determine the sensitivity of nominations made by educators (i.e., teacher and school-based mental health professionals), as well as the percentage of students

misidentified in the nomination process, the following research questions drove the current study:

Research question one. What is the accuracy of teacher nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*
- d. Misidentified Rate?*

Research question two. What is the accuracy of teacher nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*
- d. Misidentified Rate?*

Research question three. What is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*

d. Misidentified Rate?

Research question four. What is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth, with respect to:

a. Sensitivity

b. Miss Rate

c. Specificity

d. Misidentified Rate?

Chapter Two: Literature Review

This chapter reviews literature relevant to the current study. This chapter begins with an overview of mental health problems in children and adolescents, including prevalence rates and associated outcomes, with a specific focus on internalizing disorders (i.e., anxiety and depression). A rationale for providing school-based services for youth with mental health problems is then provided. This chapter then reviews the different mechanisms for identifying students with mental health problems, particularly anxiety and depression, and presents the existing empirical support for each mechanism.

Mental Health Problems in Children and Adolescents

Many children have mental health problems that interfere with their normal development and functioning (US DHHS, 1999). The term psychopathology refers to both externalizing (e.g., attention deficit hyper-activity disorder [ADHD], conduct disorder), and internalizing disorders (e.g., anxiety, depression), as outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association [APA], 2000). While both externalizing and internalizing disorders are encompassed by the larger terms “psychopathology” and “mental health problems,” the current study focuses mainly on internalizing disorders, and discusses externalizing disorders only to provide a frame of reference.

Overview of Externalizing Disorders

Disorders that tend to be classified as externalizing in nature are characteristically those in which behaviors are “under-controlled,” or thought to be directed outwardly or at

others (Merrell, 2008a). Characteristics of disorders within the externalizing domain tend to be similar, regardless of the specific diagnosis or disorder (Merrell, 2008a). These behavioral characteristics include: aggressive, acting-out, disruptive, defiant, antisocial, oppositional and hyperactive behaviors. According to the DSM-IV-TR (APA, 2000) there are three major categories of externalizing disorders that are relevant to children and adolescents: ADHD, conduct disorder, and oppositional defiant disorder.

Overview of Internalizing Disorders

Disorders that are classified as internalizing are typically referred to “over-controlled” behaviors, and are thought to be behaviors that are directed and maintained inwards, towards the self (Merrell, 2008a). These disorders are thought to manifest when individuals attempt to “maintain inappropriate or maladaptive control or regulation of their internal emotional and cognitive states” (Merrell, 2008b, p. 2). Similar to the externalizing domain, there is an array of behaviors that characterize internalizing problems and disorders. Such symptoms include dysphoric or depressive mood states, social withdrawal, anxious and inhibited reactions, and somatic concerns (Merrell, 2008a). According to the DSM-IV-TR, the general diagnostic categories that fit within the internalizing domain include mood disorders, anxiety disorders, and somatoform disorders (APA, 2000). As anxiety and depression are the two types of internalizing disorders that are the focus of the current study, they are discussed in more detail next.

Anxiety disorders. According to the DSM-IV-TR (APA, 2000), children and adolescents can be diagnosed with any of ten anxiety disorders: separation anxiety disorder, panic disorder, agoraphobia, generalized anxiety disorder, social phobia, specific phobia, obsessive-compulsive disorder, posttraumatic stress disorder, acute stress disorder, and anxiety disorder not otherwise specified. The current study focuses on

generalized anxiety disorder, social phobia, and separation anxiety disorder, as they are among the most common anxiety disorders during childhood and adolescence (Beesdo, Knappe, & Pine, 2009; Costello, Egger, & Angold, 2005a; Klein, 2009).

Generalized anxiety disorder (GAD). In the DSM-IV-TR, GAD is defined as: Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance). The person finds it difficult to control the worry. The anxiety and worry are associated with three (or more) of the following six symptoms, with at least some symptoms present for more days than not for the past 6 months: (a) restlessness or feeling keyed up or on edge, (b) being easily fatigued, (c) difficulty concentrating or mind going blank, (d) irritability, (e) muscle tension, and (f) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep; p. 476).

Of note, for a diagnosis of GAD only one of the aforementioned six symptoms is required in children. Additionally, the “worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning” (p.476).

Social phobia. In the DSM-IV-TR, social phobia, also referred to as “social anxiety disorder,” is defined as:

Marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. Exposure to the feared situation almost

invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed panic attack. The person recognizes the fear is excessive and unreasonable. The feared social or performance situations are avoided or else are endured with intense anxiety or distress. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (or academic) functioning, or social activities or relationships, or there is marked distress about having the phobia (p. 456).

Additionally, in children: (a) there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults, (b) the anxiety may be expressed by crying, tantrums, freezing, or shrinking from social situations with unfamiliar people, and (c) they might not recognize that the fear is excessive and unreasonable. In youth under the age of 18, the duration of symptoms is at least six months.

Separation anxiety disorder (SAD). SAD is the only anxiety disorder that is classified as a disorder of infancy, childhood, or adolescence (APA, 2000). In the DSM-IV-TR, the diagnostic criteria for SAD is as follows:

Developmentally inappropriate and excessive anxiety concerning separation from home or from those to whom the individual is attached, as evidenced by three or more of the following: (1) recurrent excessive distress when separation from home or major attachment figure occurs or is anticipated, (2) persistent and excessive worry about losing, or about possible harm befalling, major attachment figures, (3) persistent and excessive worry that an untoward event will lead to

separation from a major attachment figure, (4) persistent reluctance or refusal to go to school or elsewhere because of fear of separation, (5) persistently and excessively fearful or reluctant to be alone or without major attachment figures at home or without significant adults in other settings, (6) persistent reluctance or refusal to go to sleep without being near a major attachment figure or to sleep away from home, (7) repeated nightmares involving the theme of separation, (8) repeated complaints of physical symptoms when separation from major attachment figures occurs or is anticipated. The duration of the symptoms is at least four weeks. The onset is before age 18 years. The disturbance causes clinically significant distress or impairment in social, academic (occupational), or other important areas of functioning (p. 125).

Depressive disorders. According to the DSM-IV-TR, children and adolescents can be diagnosed with three depressive disorders: major depressive disorder, dysthymic disorder, and depressive disorder NOS. In addition to the three aforementioned depressive disorders, children and adolescents can also be diagnosed as having a major depressive episode. The current study focuses on major depressive disorder, as it is one of the most commonly diagnosed depressive disorders in childhood (Costello, Egger, & Angold, 2005b; SAMSHA, 2009). Because major depressive disorder includes major depressive episodes, criteria for these are reviewed next.

Major depressive episode (MDE). In the DSM-IV-TR, the diagnostic criteria for a MDE is as follows:

Five or more of the following symptoms must be present during the same two week period, and represent a change from previous functioning, with at least one

symptom being depressed mood, or loss of interest or pleasure: (1) depressed mood for most of the day, (2) markedly diminished interest or pleasure in all, or almost all activities most of the day, nearly every day, (3) significant weight loss or decrease in appetite nearly every day, (4) insomnia or hypersomnia nearly every day, (5) psychomotor agitation or retardation nearly every day, (6) fatigue or loss of energy nearly every day, (7) feelings of worthlessness or excessive or inappropriate guilt nearly every day, (8) diminished ability to think or concentrate, or indecisiveness, nearly every day, or (9) recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. Note, in children and adolescents, depressed mood can present as irritable mood, and significant weight loss can present as failure to make expected weight gains. Symptoms do not meet criteria for a mixed episode. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The symptoms are not due to the direct physiological effects of a substance or general medical condition. The symptoms are not better accounted for by bereavement, persist for longer than two months or are characterized by a marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation (p. 356).

Major depressive disorder (MDD). In the DSM-IV-TR, the criteria for MDD is as follows:

Presence of a single major depressive episode. The major depressive episode is not better accounted for by schizoaffective disorder and is not superimposed on

schizophrenia, schizophreniform disorder, delusional disorder, or psychotic disorder not otherwise specified. There has never been a manic episode, a mixed episode, or a hypomanic episode (p.375)

While the DSM-IV-TR does not differentiate MDD in children and adolescents from MDD in adults, the presence of “depressed mood” might appear more as irritability in children and adolescents (APA, 2000). Similarly, the criteria of “significant weight loss” might manifest more as failure to make expected weight gains.

Prevalence of Mental Health Problems in Children and Adolescents

The Surgeon General’s Report on Mental Health (US DHHS, 1999) provided an extensive summary of studies on the prevalence of mental health problems and mental illnesses in Americans. This report found that almost 21% of youth aged 9-17 have a diagnosable mental or addictive disorder that resulted in at least minimum impairment in home, at school, and with peers. When using a more stringent criterion, the report concluded that approximately 4 million of youth (11%) have a diagnosable mental or addictive disorder that resulted in *significant* functional impairment, and 5% of youth have a diagnosable mental or addictive disorder that resulted in *extreme* functional impairment. Furthermore, in large, urban school districts it has been estimated that as many as 50% of students have significant emotional, behavioral, and learning difficulties (Center for Mental Health in the Schools, 2003).

Externalizing disorders. In general, approximately 10% of children and adolescents are diagnosed with a disruptive behavior disorder (e.g., ADHD, ODD; US DHHS, 1999). When examining the prevalence of specific externalizing disorders, rates of ADHD in school-age children are estimated to be between 3%-7% (Pastor & Reuben,

2008). Regarding conduct disorder, the prevalence rate for school-aged children and adolescents ranges from less than 1% to greater than 4%, depending upon exactly how the disorder is defined (US DHHS, 1999). Less is known regarding the prevalence rates of ODD in children and adolescents, due to the transient nature of the symptoms during childhood and into adolescence. However, according to the Surgeon General's Report (US DHHS, 1999), estimates of this disorder range from 1% to 6%.

Internalizing disorders. Anxiety and depression are two of the most common mental health problems that children and adolescents experience. It is estimated that as many as 15-20% of children and adolescents have depressive or anxiety problems that require intervention (Huberty, 2008).

Prevalence rates of depression and depressive symptomatology among children and adolescents range widely, from less than 1% to 18%, with a median estimate of 4.75% (Costello, et al., 2005b). Results from the most recent National Survey on Drug Use and Health indicate that there were two million children and adolescents (8.3% of the population aged 12 to 17) who had a MDE in 2008 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2009). More specifically, the 1-year prevalence of MDE ranged from 3.9% among 12 year-old children, to 10.6% to 11.6% of 16 and 17 year-old adolescents. An estimated 1.5 million children and adolescents ages 12-17 (6 %) had a MDE with severe impairment in one or more role domains (i.e., chores at home, school or work, close relationships with family, social life). The prevalence rates of MDE, and MDE with severe impairment, among females were higher than those of their male peers. Specifically, female children and adolescents aged 12-17 had an MDE

prevalence rate of 12.4% in 2008, which is almost three times the rate for males of the same age (SAMHSA, 2009).

When examining rates of any depressive disorder within elementary school-age children (i.e., 8-11 years old), point prevalence rates are similar, ranging from 1.3% to 2.2% (Avenevoli, Knight, Kessler, Merikangas, 2008). In regards to young children, Lavigne, LeBailly, Hopkins, Gouze, and Binns (2009) reviewed five studies that examined the prevalence rates of emotional disorders in preschool children (ages 2-5). Results of the review indicated that prevalence rates for depression in preschool children ranged from 0.1-2.1%, supporting the conclusion that depression and/or depressive symptoms are present even in some children as young as preschool age. Lifetime prevalence rates of depression among elementary school-age children have been found to range from <1% to 3% when looking specifically at MDE and MDD (Avenevoli et al., 2008).

Obtaining accurate prevalence rates of anxiety in children and adolescents is difficult, as many of the symptoms that characterize anxiety disorders are common (Merrell, 2008b). Nonetheless, overall prevalence rates of anxiety (any anxiety disorder) among youth have been found to be significant, ranging from 2% to 33%, with a median estimate of 8% (Costello, Egger, & Angold, 2005b). According to the Surgeon General's Report on Mental Health (US DHHS, 1999), the combined prevalence of all types of anxiety disorders is higher than virtually all other mental disorders of childhood and adolescence. The 1-year prevalence of anxiety disorders in children aged 9 to 17 years is estimated to be 13% (US DHHS, 1999). The lifetime prevalence rate of anxiety disorders within children and adolescents is estimated to be between 15%-20% (Beesdo, Knappe,

& Pine, 2009). In regards to the specific anxiety disorders that are most pertinent to the current study, prevalence rates of GAD have been estimated at 5.7% (Weisberg, 2009), social phobia has an estimated prevalence of 10%, and the prevalence rate of SAD is estimated to range between 2.8% and 8% (Beesdo et al., 2009; Costello, Egger, & Angold, 2004).

Studies examining prevalence rates of anxiety (e.g., any anxiety disorder) among elementary school-age children (i.e., ages 8-11) have yielded a fairly wide range, with estimates ranging from 5.8% to 14.6% (Beesdo et al., 2009). When examining a population of young children, Lavigne and colleagues' (2009) review found that prevalence rates for preschool children, aged 2-5, for any anxiety disorder (i.e., SAD, GAD, social phobia, specific phobia) ranged from 0.3%-6.5%.

Outcomes Associated with Significant Levels of Anxiety and Depression

Given the high frequency of mental health problems within youth, it is important to understand the impact that such problems can have on functioning.

Psychosocial outcomes. Children and adolescents with anxiety and/or depression have been found to have diminished or poor self-concept and self-esteem, and poor social relationships (Merrell, 2008b). For instance, children who are anxious are also more likely to have trouble forming and maintaining friendships and participating in social situations (Van Ameringen, Mancini, & Farvolden, 2003). As such, these children tend to be intimidated by social situations, therefore avoiding forming social relationships and engaging in social situations due to fear or rejection, leading to social withdrawal.

Youth with anxiety and/or depression are also at an elevated risk for engaging in substance use, developing additional severe or chronic mental health problems, and

attempting or completing suicide later in life (Merrell, 2008b). For instance, the presence of depression and anxiety in childhood has been found to be predictive of future occurrences of depression and/or anxiety in both adolescence and adulthood (Copeland, Shanahan, Costello, & Angold, 2009). Specifically, anxiety and depression have been found to predict (e.g., anxiety predicting anxiety), and cross-predict (e.g., anxiety predicting depression), each other from childhood into adolescence and adulthood (Bittner, Egger, Erkanli, Costello, Foley, & Angold, 2007; Copeland et al., 2009; Moffitt et al., 2007). Diagnoses of anxiety and/or depressive disorders in childhood are also associated with current and future co-morbid psychiatric disorders, such as ADHD, substance use disorder, CD, and ODD (Bittner et al., 2007; Copeland et al., 2009).

When anxiety and/or depression persist from childhood into adolescence, or emerge during adolescence, associations have been made to drug and/or alcohol abuse or dependence, suicidal behavior, unemployment, and early parenthood (Fergusson & Woodward, 2002; Woodward & Fergusson, 2001). Furthermore, the presence of anxiety and/or depression in childhood has been found to be associated with later criminal offences and involvement with the criminal justice system. For example, Copeland, Miller-Johnson, Keeler, Angold, and Costello (2007) examined the relationship between childhood psychiatric diagnosis (in a total sample of 1,420 children aged 9, 11, and 13) and criminal offences by the age of 16. Out of the total number of youth ($n=241$) who had committed a minor criminal offence (e.g., trespass, shoplifting) by age 16, 12.7% had a childhood diagnosis of anxiety (any anxiety disorder), and 7.7% had a childhood diagnosis of depression (any depressive disorder). In regards to moderate offenses ($n=145$; e.g., simple assault, felony larceny), 11.5% had a childhood diagnosis of anxiety,

and 9.9% had a childhood diagnosis of depression. Finally, of youth who had committed a severe/violent offence ($n=87$; sexual assault, armed robbery), 11.7% had a childhood diagnosis of anxiety, and 14.8% had a childhood diagnosis of depression. In comparison, among youth who committed no criminal offences ($n=941$), the prevalence rates for any anxiety disorder and any depressive disorder were 7.8% and 6.9%, respectively. Such results underscore the importance of identifying and treating internalizing disorders as early as possible, for instance during the elementary school years.

Academic outcomes. In general, youth who demonstrate emotional or behavioral problems in school often experience less success at school than their peers (Cooper, 2008). In addition to lower academic achievement, these children and adolescents typically have a higher frequency of truancies, suspensions, and expulsions (Epstein, Cullinan, Quinn, & Cumblad, 1994). As such, it is logical to conclude that if these students are not in school or class, they are not presented with opportunities to learn, and therefore fall behind their peers. Specifically in regards to internalizing disorders, children and adolescents who are depressed tend to experience a decline in their academic performance and/or school failure (Merrell, 2008b). As the severity of depressive symptoms increase, students' concentration and motivation decrease, making it more difficult to attempt and/or complete assignments and perform well on exams. Similarly, students who become increasingly depressed may find simply attending school a challenge, never mind attending to schoolwork and other daily tasks.

Academic outcomes for children and adolescents with anxiety are also diminished. While it is true that low levels of anxiety are beneficial for increasing performance, when anxiety becomes more severe it actually impedes academic

performance (Van Ameringen et al., 2003). When students become unable to control their anxiety, it inhibits their ability to concentrate and perform effectively on academic assignments and tasks, leading to decreased achievement. As these academic difficulties increase, these youth might experience increased anxiety or pressure to perform well, leading to interference in their concentration and perpetuating this cycle (Huberty, 2008). As such, children with an anxiety disorder often report not enjoying school (Van Ameringen et al., 2003). Furthermore, some students with a diagnosis of an anxiety disorder find the idea of simply attending school to be overwhelming, leading to decreased attendance, school refusal, and sometimes drop out (Van Ameringen et al., 2003). The presence of anxiety and/or depression in children and adolescents is not only associated with current school failure, but also with reduced likelihood of enrolling in university or another form of tertiary level education in the future (Fergusson & Woodward, 2002; McCarthy, Downes, & Sherman, 2008; Woodward & Fergusson, 2001).

Provision of Mental Health Services in the Schools

Rationale for providing school-based mental health services. Given the high prevalence of mental health problems within children and adolescents, it is surprising that only about 30% of youth in need of mental health services actually receive them (US DHHS, 1999; Farmer et al., 2003). Moreover, in the past decade it has been estimated that schools have provided an estimated 70% to 80% of psychosocial services to youth in need (Committee on School Health, 2004; Farmer et al., 2003; Rones & Hoagwood, 2000). In an attempt to overcome barriers commonly experienced when accessing community mental health care services, schools have become the de facto provider of

mental health services to children and adolescents (Committee on School Health, 2004; Farmer et al. 2003). Barriers such as lack of available specialists, insurance restrictions, appointment delays, and mental health stigma often impede children and adolescents from receive mental health services from community providers (The President's New Freedom Commission on Mental Health, 2003; US, DHHS, 1999). In part because mental health services that are based within the school are often easier and more convenient for students and families to access, schools have become the logical place to provide mental health services to youth.

There are many factors that support schools as an optimal site for the provision of mental health services. First, well-trained mental health professionals (i.e., school psychologists, school social workers, school counselors) are employed by schools (Council for Accreditation of Counseling and Related Educational Programs, 2009; National Association of School Psychologists [NASP], 2010; National Association of Social Workers, 2002). Second, school attendance is mandatory, with current estimates of over 53 million students attending approximately 100,000 schools within the United States (Duchnowski & Kutash, 2009). Also, schools are organized in such a way that is conducive to implementing interventions, such as by providing access to large groups of students at one time. Further, providing these services in schools is in line with mandates that indicate schools are required to not only educate and socialize youth, but protect them as well (Committee on School Health, 2004; Kalafat & Lazarus, 2002). Moreover, federal legislation (e.g. Individuals with Disabilities Education Act, Section 504 of the Rehabilitation Act of 1973) specifies that children and adolescents who are impaired by mental health problems must be appropriately accommodated within schools to ensure

they receive the benefits of the educational system. Comprehensive provision of school-based mental health prevention and intervention services satisfies those requirements.

The final report of the President's New Freedom Commission on Mental Health (2003) further compels schools to help to address the mental health problems in children and adolescents:

The mission of public schools is to educate all students. However, children with serious emotional disturbances have the highest rates of school failure. Fifty percent of these student drop out of high school, compared to 30% of all students with disabilities. While schools are primarily concerned with education, mental health is essential to learning as well as to social and emotional development.

Because of this important interplay between emotional health and school success, schools must be partners in the mental health care of our children (p. 58).

Furthermore, the report stipulates that primary care settings do not effectively address mental health problems, and referrals to community-based mental health services are not often completed or followed through with regular attendance. While it is also reported that primary care physicians often identify about 19% of children and adolescent patients with an emotional or behavioral problem, these youth often do not ever see a mental health professional for treatment (The President's New Freedom Commission on Mental Health, 2003). It is imperative that these youth, who need and are being identified as in need of treatment, receive the services that can help. Schools provide an avenue to accomplish just that via easy access to school children and caregivers (e.g., parents and teachers), and the availability of well-trained mental health professionals.

In sum, given the significant prevalence of mental health problems in children and adolescents, the negative current and future outcomes associated with such problems, the barriers that prohibit these youth from obtaining community-based mental health services, and the wealth of services available within schools, schools become the obvious avenue to provide necessary mental health services.

Typical mental health problems referred for treatment in schools. To further understand the scope of mental health problems in school-age children and adolescents, and put this need into context, it is important to understand which types of mental health problems are most commonly referred for treatment within schools. The Mental Health Services in the United States study (Foster et al., 2005) surveyed a random sample of 1,147 schools across the country regarding the psychosocial and mental health problems most frequently presented by students in their schools. Respondents were asked to rank the three most frequently seen psychosocial or mental health problems in students. Results indicated that the most frequently endorsed category for both male and female students was social, interpersonal, or family problems (73% for male, 80% for female). The second and third most frequently reported concerns differed for males and females. For females, anxiety (41%) and adjustment issues (36%) were indicated, whereas for males, aggression or disruptive behavior (63%) and behavior problems associated with neurological disorders (42%) were cited as the second and third most frequent concerns.

More recently, Friedrich and Suldo (2010) surveyed a national sample of 226 school-based school psychologists regarding their involvement in the provision of mental health services. One portion of the questionnaire asked respondents to rank their most commonly received reasons for referrals for mental health services. Results indicated that

overall, the top referral concerns received were for ADHD (70%), academic problems (69%), autism/asperger's (46%), general externalizing concerns (46%), interpersonal problems (46%), and anger/aggression (42%). The least commonly received referrals were for truancy (3%), divorce in the family (2%), caregiver's mental health problems (2%) and specific phobia (<1%). Regarding referrals that are best classified as internalizing in nature, only about one in five school psychologists identified depression (17%) or general anxiety (16%) as one of their top five most often received referral concerns.

In sum, studies have found that while school-based referrals for mental health concerns are received for all types of problems, it seems as though referrals for problems that are best classified as externalizing in nature (e.g., ADHD, anger/aggression, behavior problems, conduct problems) are received in higher frequencies than those for concerns that are best classified as internalizing (e.g., anxiety, depression) in their presentation of symptoms. The discrepancy in referrals for externalizing and internalizing concerns could be accounted for by the fact that students with internalizing concerns (i.e., anxiety, depression) tend to "fly under the radar" and as a result are typically not the students referred for treatment, possibly because they tend not to disturb the referral agents (e.g., teachers, administrators) at the same levels as students who disrupt class and others. Such findings call into questions the validity of relying on referral agents to identify youth with all sorts of mental health problems, because apparently youth with internalizing concerns are under-referred for services.

Types of mental health services provided in schools. Just as specific mental health problems referred for treatment in the schools vary greatly, the types of services

provided through school-based mental health services are broad, and vary greatly among schools (Christner, Mennuti, & Whitaker, 2009). To ensure that appropriate services and interventions are in place to address the concerns being brought to the attention of school personnel, it is important to understand the continuum of services that are frequently, and infrequently, provided in schools.

In the School Mental Health Services study (Foster et al., 2005), respondents reported the types of services provided to students in their schools, either directly by the school or district or through community-based organizations with which the school or district had formal arrangements. The three types of services most frequently provided were assessment for mental health problems (endorsed by 87% of schools), behavior management consultation (87%), and crisis intervention (87%). Other commonly provided services involved referral to specialized programs or services (reported by 84% of respondents), followed by individual counseling or therapy (76%), case management (71%), and group counseling or therapy (68%). Mental health services that were reported the least frequently were substance abuse counseling (43%) and medication/medication management (34%). These results are consistent with recent studies of school psychologists, school counselors, and teachers, who reported that mental health services provided most commonly in the schools include individual and group counseling, crisis intervention, assessment and diagnosis, and consultation with school staff, whereas efforts geared towards prevention of mental health problems or substance use were infrequent (Brenner, Weist, Adelman, Taylor, & Vernon-Smiley, 2007; Friedrich & Suldo, 2010; Repie, 2005; Suldo, Friedrich, & Michalowski, 2010).

School personnel providing mental health services. Having a clear understanding of which school personnel are historically involved in the provision of the aforementioned services can facilitate the ease of service provision, by ensuring that the appropriate individuals are involved in the planning and delivery of school-based mental health services. According to Foster and colleagues' (2005) national study, the most common types of school personnel providing mental health services in schools are school counselors (77%), nurses (69%), school psychologists (68%), and social workers (44%). Findings also indicated that clinical/PhD counselors (9%) and psychiatrists (2%) were the least common school personnel to be involved in the provision of school-based mental health services.

Respondents of the nationwide School Health Policies and Programs Study (SHPPS; Brener et al., 2007) reported that nationally, 76.8% of schools had at least one person who oversees or coordinates standard mental health and social services at the school. Specifically, 77.9% of schools had at least one part-time or full-time counselor, 61.4% of schools had at least one part-time or full-time school psychologist, and 41.7% of schools reported having a part-time or full-time social worker. Information was not available regarding which personnel, if any, provided school-based mental health services at the remaining 23.1% of schools.

Effectiveness of school-based mental health services. A strong rationale for providing mental health services in schools must include empirical support for these efforts. In a comprehensive examination of school-based mental health research, Roness and Hoagwood (2000) reviewed studies evaluating the effectiveness of school-based mental health programs. The authors conducted a computerized search using ERIC,

PSYCH LIT, and MEDLINE for relevant studies published between 1985 and 1999, yielding a sample of 5,128 studies. A final sample of 47 studies that were program evaluations, had a control group, and utilized standardized outcome measures were included in the review. Problems that were targeted in the studies included emotional and behavioral problems ($n=5$), depression ($n=6$), conduct problems ($n=22$), stress management ($n=2$), and substance use ($n=12$). The types of mental health programs included preventative (both universal and selective) programs, as well as targeted and indicated interventions. Specific types of interventions included programs such as psychoeducation programs, individual and group cognitive behavioral therapy, behavioral skills training, social problem-solving skills training, parent training, peer mediation, behavioral consultation and classroom management skills training. After evaluating the outcomes of each study, results indicated that 19 school-based mental health programs were effective, 19 programs yielded mixed results, and nine programs were not effective. Features of effective programs include: “(1) consistent program implementation, (2) inclusion of parents, teachers, or peers, (3) use of multiple treatment modalities, (4) integration of program into the classroom curriculum, and (5) developmentally appropriate program components” (p. 237). In regards specifically to disorders that are the focus of the current study, the six studies that evaluated outcomes for programs targeting depression yielded three school-based interventions that were found to be effective, two were not effective, and one study had mixed findings. The two studies that yielded successful outcomes involved a cognitive-behavioral group intervention, and a cognitive and social problem-solving group intervention. This important review supports the conclusion that school-based mental health programs can be effective in improving

children and adolescent's functioning and reducing symptoms/distress, with the caveat that optimal services are comprehensive and implemented with fidelity.

Other relevant research supports that mental health services provided in schools can be just as beneficial as services received in outpatient settings. Case in point, Armbruster and Lichtman (1999) compared outcomes of 220 students receiving mental health services from a community clinic to outcomes from 256 students from 36 inner city schools who received school-based mental health services. Data was collected for each student pre-, during, and post-treatment, in the form of Children's Global Assessment Scale (C-GAS) scores and Global Assessment of Functioning (GAF) scores. There was significant improvement in the GAF and C-GAS scores for both the community clinic and school samples of students. A comparison of changes in both scores between the two groups indicated that the two groups showed similar improvement over the treatment period, with students who received treatment at school evidencing gains quicker (i.e., with fewer mean numbers of sessions). Implications of this study include that quality does not appear to diminish by providing mental health treatments in schools as compared to in traditional community settings.

Well-designed studies published since the Rones and Hoagwood's (2000) review continue to provide empirical support for the effectiveness of school-based mental health services (e.g., Nabors & Prodent, 2002). Such studies demonstrate improved psychological functioning of students treated in schools for issues ranging from anger (Flanagan, Allen, & Henry, 2010), anxiety (Bernstein, Layne, Egan, & Tennison, 2005), depression (Mufson, Pollack Dorta, Olfson, Weissman, & Hoagwood, 2004), or various forms of serious emotional disorder (Robinson & Rapport, 2002).

In sum, the available literature supports that school-based mental health services can be an effective mechanism to improve students' functioning and reduce symptoms of psychopathology. While more research is needed using larger samples from across the country, school-based mental health services also appear as effective as those services offered by community providers. Research supporting the effectiveness of these school-based mental health services is important, as the prevalence of mental health problems in youth and the negative outcomes associated with those problems underscore the need for services that are accessible to students and their families, and likely to help the student.

Given the prevalence of mental health problems in children, namely anxiety and depression, and the associated outcomes of such disorders, it is imperative that these children receive the treatment they require. As schools have become a major avenue through which mental health services are provided to youth, accurate methods of identifying these students are necessary in order to ensure appropriate school-based mental health services are delivered to the correct group of students. To that end, the subsequent section reviews the literature relevant to current methods of identifying students in need of mental health services.

Mechanisms for Identifying Youth with Mental Health Problems in Schools

There are several options currently available to identify students in need of mental health services within the schools. The most typical methods of identification include: universal screening via student self-report of symptoms using behavior rating scales or completion of rating scales by informants (i.e., parents and/or teachers); review of archival data sources, namely office discipline referrals; teacher nominations; and reactive methods such as referrals for services made by concerned educators (e.g.,

teachers and/or other school-based mental health professionals), parents, or student self-referral for assistance (Dywer, Nicholson, & Battistutta, 2006; Layne, Bernstein, & March, 2006; Levitt, et al., 2007). This section contains a discussion of the aforementioned mechanisms for identifying youth with mental health problems with a focus on the pros and cons of each mechanism, as well as a review of the empirical support in the extant literature for each method.

Universal screening. The most commonly used mechanism for identifying youth with mental health concerns within schools is student self-report as part of universal screenings (Weist, Rubin, Moore, Adelsheim, & Wrobel, 2007). Typically, school-based universal screening assessments are conducted with all students in a specific population to identify those at risk of academic failure and/or emotional and behavioral difficulties who could potentially benefit from intervention (Glover & Albers, 2007). These large scale screenings can utilize several assessment methods, however the most commonly used assessment tools are behavior rating scales. Broadband ratings scales assess multiple types of problem behavior in a single survey (e.g., multiple forms of internalizing and externalizing concerns), whereas narrowband rating scales elicit information regarding a specific concern (e.g., depression, anxiety, or ADHD). The intent of these screenings is to identify, and subsequently treat, as many students in need of mental health services as possible (Christner, Mennuti, & Whitaker, 2009).

In addition to self-report administration, many rating scales are designed to be completed by informants such as students' parents or teachers. As part of a comprehensive assessment, obtaining information from multiple informants is important, as children's behavior may differ across settings and situations (Renk, 2005). As such,

parents are likely the best informants regarding their child's behavior in the home setting and outside of the school setting. Determining correspondence between parent and child reports on behavior rating scales is one way to evaluate the accuracy of using parents as informants of their child's behavior. In regards to broadband rating scales, The Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004) is a commonly used measure that assesses a wide array of behavior and self-perceptions in children and adolescents age two to 25. Correlations between scales on the Parent Rating Scale - Child version (PRS-C) and the Self-Report of Personality – Child version (SRP-C) ranged from .19 for the Atypicality subscale to .44 (Attention Problems subscale), indicating low to moderate levels of agreement between parents and their children. Correspondence between composite scores for internalizing problems is .29 (Reynolds & Kamphaus, 2004). Specifically in regards to anxiety and depression, correlations between PRS-C and SRP-C scales were .21 and .11, respectively, indicating low levels of agreement between raters. Another frequently used broadband rating scale is the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001). The ASEBA is a measure designed to assess diverse aspects of adaptive and maladaptive behavior in school-age children age 6-18. Correspondence between the measure used by parents, the Child Behavior Checklist (CBCL) and student self-report on the Youth Self-Report (YSR) ranged from .37 (Thought Problems subscale) to .56 (Externalizing composite). Correspondence between parents and children on the Anxious/Depressed and Withdrawn/Depressed scales were .45 and .40, respectively (Achenbach & Rescorla, 2001).

Correspondence between parent and child ratings on narrow-band rating scales should also be examined, as the behavior being assessed is more narrowly defined. Directly relevant to the current study, The Multidimensional Anxiety Scale for Children (MASC; March, 1997) is a rating scale that assesses a wide range of anxiety symptoms in children and adolescents. According to the MASC manual, agreement between mother and child ratings on the different subscales range from .12 (Performance Fears subscale) to .60 (Tense subscale), and correlations between father and child ratings ranged from .09 (Perfectionism subscale) to .61 (Somatic subscale). The variation in correspondence indicates low to moderate agreement for both parents. Total anxiety scores were weak to moderately correlated between children and their mothers and fathers, .39 (mothers) and .18 (fathers).

Taken together, research regarding the correspondence between parent and child ratings of behavior indicates, when compared to their child's self-report, the validity of parents as informants of their child's symptoms and/or behavior, is low to moderate at best. When specifically examining ratings of anxiety and depression, correlations between parent and child are even lower, indicating that parents might not be able to accurately detect internalizing symptoms in their children. However, as there is at least some level of agreement, parents seem to be cognizant of the existence of a problem, perhaps just not aware of the extent or severity of the distress for their child.

Teachers are perhaps in the best position to provide input on a student's behavior while at school. Aside from a student's parents, teachers often spend more time with these youth than any other adults (Auger, 2004; Ollendick, Oswald, & Francis, 1989). Further, teachers have daily opportunities to observe their students' behavior, and

compare it to students' peers, thus providing multiple opportunities to identify students exhibiting discrepant levels of problem behaviors (Auger, 2004). Teacher ratings, also referred to as teacher reports, require teachers to fill out an assessment tool (e.g., behavior rating scale, questionnaire) on one or more of their students to gather specific information. Many behavior rating scales have both teacher and child versions, which allows for correspondence between different informants. Determining correspondence between teacher and child ratings on behavior rating scales is one way to evaluate the accuracy of using teachers as informants of their student's behavior. In regards to broadband rating scales, correspondence between teachers (Teacher Rating Scale – Child version; TRS-C) and the child for which they provided ratings on the BASC-2 ranged from .08 (Depression) to .42 (Attention Problems), indicating quite low to moderate agreement (Reynolds & Kamphaus, 2004). Correspondence on the anxiety subscale was .09. Agreement on the internalizing problems composite was .18 (Reynolds & Kamphaus, 2004). Correspondence between teacher ratings (TRF) and youth self-report on the ASEBA (Achenbach & Rescorla, 2001) ranged from .12 (Somatic Problems) to .42 (ADH Problems), indicating low to moderate agreement on behaviors. Agreement between teachers and child ratings on the anxious/depressed and withdrawn/depressed scales was .19 and .24, respectively. The most commonly used narrow-band rating scales of anxiety and depression have not compared ratings between teacher and student self-report.

Schools are a frequently mentioned venue for large-scale screening programs (Center for Mental Health in the Schools, 2005). However, issues arise related to the appropriateness of such large-scale screening for mental health problems, such as

whether the costs of such screenings outweigh the benefits, and whether schools are an appropriate venue for these programs. The Center for Mental Health in Schools (2005) succinctly summarizes the salient points for each side of this debate. Those who argue that mental health screening within the schools is an appropriate mechanism for identifying students in need of services cite the following major points to support their stance: (1) universal screenings find many more students with mental health problems at one time than other mechanisms, (2) universal screenings identify students with mental health problems early on to prevent problems from becoming worse, (3) use of universal screenings can reduce costs because of the decreased need for intensive treatments in the future, (4) using schools provides ready access to youth and reduced costs, and (5) schools directly benefit from this process because screening and effective treatment enhances student success at school. However, those who argue against using universal screening in schools also make strong points: (1) universal screening measures may become mandated, thereby interfering with what should remain a personal family matter and would violate rights to privacy, consent, and parental control, (2) insufficient treatment resources exist to handle the increased referrals for students who have been identified as in need of further assessment and/or treatment, (3) available screening methods for use in schools produce too many errors (e.g., false positive identifications, inappropriate over-identification of subgroups of students), (4) lack of sufficient follow-up assessment resources to correct errors made by previous screenings, (5) the money that will have to be spent on screening will reduce the funds that are allocated for treatment, and (6) large-scale screening is too costly. Other concerns regarding universal screening for mental health problems in school relate to which types of mental health

problems are appropriate to target and unnecessarily labeling and/or stigmatizing children (Levitt, Saka, Romanelli, & Hoagwood, 2007).

The concerns associated with the use of universal screening for mental health problems in schools are significant enough that careful examination of the costs and benefits of this method is warranted (Center for Mental Health in the School, 2005). One of the most salient problems involves not having sufficient resources (e.g., time, money, personnel, evidence-based interventions) to provide services to all youth that are identified as in need of services. In light of the current economic crisis and virtually sole emphasis in education on students' academic skills (vs. social-emotional wellness), this body of concerns is unlikely to be remedied in the foreseeable future. Another significant problem is the potential costs (and wastes) associated with this method of screening (i.e., screening large groups of students who may not need services), and reduction in funds allocated for providing interventions/treatment to those in need. In light of these concerns, other alternatives to universal screenings (i.e., gathering of quantitative data on the functioning of all students via archival records or informant-report) for identification have been proposed and implemented.

Office discipline referrals. Another method of examining the functioning of all students in a given school without administering costly rating scales involves reviewing archival sources of school-wide data, such as indicators of student achievement or in-school behavior. In particular, review of students' office discipline referrals (ODRs) is a mechanism commonly used to identify students with emotional and/or behavioral problems, as ODRs often contain detailed information on the problem behavior (Nelson, Benner, Reid, Epstein, & Currin, 2002).

Nelson et al. (2002) examined the validity of using ODRs as a mechanism to identify students with mental health problems using a sample of 103 elementary school students. Specifically, the researchers investigated the association between students' scores on the TRF of the ASEBA (Achenbach, 1991) and their number of ODRs, to determine the frequency of false negatives (i.e., failure to detect a problem that exists) that would occur if ODRs were the only criterion used to identify students with internalizing and externalizing problems. More specifically, the researchers were interested in determining whether or not students who met the criteria for borderline or clinical cut-offs on the TRF received one or more ODRs, as that is the most liberal criteria possible. Results indicated that the percentage of false negatives (i.e., misses) for children who met clinical criteria on the TRF ranged from 42.8% (thought problems subscale) to 90.1% (withdrawn subscale). This study also found an extremely high percentage of false negatives for participants who obtained clinically significant scores of internalizing problems, but who did not receive one or more ODRs. More specifically, in regards to the internalizing primary scale score, 84.6% of participants who obtained clinically significant scores failed to be identified (i.e., false negative) and the sensitivity rate was only 15% (i.e., only two participants with elevated internalizing scores received one or more ODR). In regards to the anxious and withdrawn subscales, the percentages of false negatives were 80% and 90.1%, respectively, with only one participant receiving one or more ODR in both instances, indicating very low sensitivity. These results provide evidence that using only ODRs as a mechanism to identify students with mental health problems, specifically internalizing concerns, may result in a high percentage of false

negatives (i.e., students in need of services who would be “missed” during the identification procedure), as well as poor sensitivity with regard to yielding true positives.

Walker, Cheney, Stage, and Blum (2005) examined the social and behavioral functioning of students identified as “at-risk” on the Systematic Screening for Behavior Disorders (SSBD; Walker & Severson, 1992) for developing emotional or behavior problems using multi-modal assessment methods, specifically ODRs, behavior rating scales, and school-wide screenings. During stage one of the SSBD, teachers ranked the top three externalizing students and top three internalizing students in their class. A total of 378 students in grades one through six from three schools were nominated by their teachers. Specifically, a total of 189 participants were nominated for internalizing problems, and 189 were nominated for externalizing problems. Results indicated that out of the 72 students that were determined to be “at-risk” (i.e., passed through stage 2 of SSBD gating process), 55 (76%) had zero to one ODR, 11 (15%) had two to five ODRs, and 6 (8.3%) had six or greater ODRs. After analyzing the distribution of ODRs for the entire sample of students, two interesting findings emerged. First, the majority of ODRs were for externalizing problems. Second, all of the “at-risk” participants on the SSBD who received two or more ODRs were identified as externalizing. This particular finding suggests that by relying solely on ODRs to identify students with emotional or behavioral problems, students with internalizing behaviors may be overlooked. This finding is particularly salient; if the schools within that study relied only on ODRs to identify students who might be “at-risk” for emotional or behavioral problems, only 17 students, all with externalizing behaviors, would have been identified.

Richardson, Caldarella, Young, Young, and Young (2009) examined the validity of the SSBD in a middle/junior high school population. The average number of ODRs was calculated for students nominated as internalizing ($n=109$) and externalizing ($n=117$). The mean number of ODRs, specifically for disorderly conduct (e.g., disruptive behavior, noncompliance) received by students nominated as internalizing ($M=0.58$) was significantly less than their peers who were nominated as externalizing ($M=2.29$). These findings are consistent with previous research, that students with internalizing concerns do not receive as many ODRs as their peers with externalizing concerns, and therefore might fail to be identified if ODRs are the only method used in a universal screening of mental health.

The aforementioned research supports the notion that students with internalizing concerns (i.e., anxiety, depression), tend to “fly under the radar” and as a result are typically not the students who receive ODRs, perhaps because they tend not to disturb the school environment via rule infractions. Therefore, use of ODRs as a school-wide approach to identification does not appear to be a sufficient means to identify students in need of services for treatment of anxiety and depression.

Teacher nominations. Teacher nominations differ from teacher completion of rating scales for all students in their class (i.e., referred to as teacher *ratings or reports*) in that nominations entail teachers selecting one or more of their students who they feel meet a behavioral criteria (e.g., sad or depressed) specified by the mental health provider. In other words, teachers are noticing the presence or absence of the behavior in question (Lane & Menzies, 2005).

Support for the use of teacher nominations to identify students with externalizing concerns can be found within the literature. For example, Ollendick, Oswald, and Francis (1989) found that students who were nominated by their teacher as aggressive had more negative interactions (engaging in behaviors such as pushing, grabbing or making offensive comments as assessed by behavioral observations) than their peers who were nominated as popular or withdrawn. Lane and Menzies (2005) found that teachers were highly accurate in their ability to nominate students with behavioral problems. Specifically, students who were nominated for behavior concerns scored in the “high-risk” range on the Student Risk Screening Scale (SRSS; Drummond, 1994), and their scores were significantly higher than their peers who were nominated as typically performing or nominated for academic concerns. Results from research by Richardson and colleagues (2009) also lend support to the use of teacher nominations to identify students with externalizing concerns. Their findings indicate students who were nominated by their teachers as externalizing received more ODRs for disruptive and non-compliant behaviors than their peers who were nominated as internalizing, and their self-reported externalizing symptoms on the YSR (Achenbach & Rescorla, 2001) were moderately correlated with critical events externalizing scale on the SSBD. While the sample of aforementioned studies provide support for the use of teacher nominations in identifying students with externalizing concerns, it should be noted that a much larger research base exists to supplement these findings than was reviewed here, due to the focus of the current study on internalizing problems.

With regard to internalizing symptoms, the majority of the research currently available examines the accuracy of teacher *ratings or reports* when compared to students’

anxiety or depression, and not the accuracy of teacher *nominations*. The existing research on the accuracy of teacher nominations to identify students with internalizing disorders is very limited (i.e., consists of three studies that are solely focused on the topic), and somewhat mixed in findings. The three studies are reviewed next in detail given the relevance of this small body of literature to the current study.

First to study this topic, Ollendick and colleagues (1989) utilized a total sample of 152 fourth-grade students, in which teachers were asked to nominate up to three participating students as either popular ($n=49$), aggressive ($n=60$), or withdrawn ($n=43$). To assist them in making nominations, teachers were provided with behavioral descriptors. Specifically, withdrawn children were described by characteristics such as “not standing up for oneself,” “spent most of their time alone,” and “appears sad” (p. 223). Three different sources of outcome data were utilized, specifically self-report measures, sociometric measures, and behavioral interactions. Self-report measures in the form of rating scales were used to ascertain information regarding locus of control (Nowicki-Strickland Locus of Control Scale; Nowicki & Strickland, 1973) and assertiveness (Children’s Assertiveness Inventory; Ollendick, 1984). Self-efficacy and outcome expectancy were also measured by two experimental self-report rating scales, The Self-Efficacy Scale and The Outcome Expectancy Scale (Ollendick & Schmidt, 1987). Sociometric measures, or measures of social standing, included peer nominations and roster-and-ratings (i.e., children were presented with a list of their classmates and were asked to rate them on five-point scale in response to several questions). Behavioral interaction was measured by observations of participants in free-play activities (i.e., recess), and behavior was classified as positive or negative social interaction, solitary

interaction, or other. Results provided some support for the ability of teachers to identify students who were withdrawn, as the 49 students nominated as withdrawn generally scored lower on the self-reported measures of locus of control ($M=11.4$), assertiveness ($M=9.7$), and self-efficacy ($M=35.7$) than the children who were nominated as popular (locus of control $M = 13.0$, assertiveness $M=11.4$, self-efficacy $M=38.9$) or aggressive (locus of control $M= 11.8$, assertiveness $M=11.6$, self-efficacy $M=37.9$). Moreover, the mean scores of students identified by teachers as “withdrawn” scored significantly lower on the measures of interactions, both positive interactions ($M=26.7$), and negative interactions ($M=0.6$), than their peers identified as popular (positive interactions $M = 36.0$, negative interactions $M = 0.8$) and aggressive (positive interactions $M= 33.1$, negative interactions $M= 2.6$). Also notable was the significantly higher score for solitary play ($M=20.8$) for withdrawn children, as compared to their popular ($M=14.8$) and aggressive ($M=13.3$) peers. Finally, discriminate function analyses indicated that 65% of the total sample was correctly classified, including 80% of the popular children, 48% of the aggressive children, and 66% of the withdrawn children. Notably, this early study examined the general symptom of social withdrawal, as opposed to examining if students met criteria for a specific diagnosable psychiatric disorder such as depression or anxiety, as measured by a valid or reliable assessment tool. Furthermore, as students did not provide self-report ratings of their withdrawal or a related disorder (e.g., depression), the accuracy of teacher nominations in identifying all socially withdrawn students could not fully be determined.

Auger (2004) investigated teachers’ ability to identify depressive characteristics in a sample of 356 middle school students. The Reynolds Adolescent Depression Scale

(RADS; Reynolds, 1987) was administered to all participating students as part of a multiple gating process. The 62 students whose initial *T*-score was ≥ 70 completed a second RADS approximately one week later. The 42 students that received two *T*-scores on the RADS that were ≥ 70 were administered an individual clinical interview, the Diagnostic Interview Scale for Children, Edition V (DISC-V) to determine a DSM-IV diagnosis. After the clinical interview, five students emerged as meeting criteria for a depressive disorder. Teachers of participating students completed a teacher questionnaire during the same time period as the initial RADS administration, which asked teachers to rate each of their students using a five-point Likert scale (e.g., 1=not at all depressed to 5=extremely depressed). As students in this study had more than one teacher, each participating student was rated on the teacher questionnaire by all participating teachers who had the student in their class at the time the data was collected. This form also allowed teacher the opportunity to nominate students in their class who they believed were depressed “to a degree that some type of intervention would be helpful” (p. 382). Information was not provided regarding the range or mean number of students each teacher nominated. In regard to the accuracy of teacher ratings and student self-report, the correlation between teacher ratings and student’s initial RADS scores was 0.22. Results also suggested that teachers were not accurate in their identification of students with clinically significant levels of depression, when compared to student self-report or clinical interview. Specifically, for the five students identified as clinically depressed by the DISC-V, only seven teachers (out of the 26 that could have nominated them) nominated those students, indicating a high “miss rate” of 73%. Multiple teachers rated the five students who were identified as depressed, and while none of the five students

was nominated by all of their teachers, four of the five students were nominated by at least one teacher. One clinically depressed student was not nominated by any of his/her teachers. Furthermore, approximately 95% of students who were nominated by teachers were not identified as being depressed through the clinical interview, indicating a high misidentification rate. While this study provided preliminary data evaluating the accuracy of teacher nominations in identifying students with depression, a couple limitations should be noted. By using a *T*-score of 70 as a cut-point, only students who were identified as clinically significant passed through gate 2 and were administered the clinical interview. Thus, using such a high cut-score does not allow students with elevated or “at-risk” *T*-scores (e.g., $T \geq 60$) to be considered for intervention. This is unfortunate as most school-based mental health interventions are geared towards students with elevated levels of symptoms, rather than full psychiatric diagnosis. Thus, the accuracy of using teachers to identify the subgroup of youth who school-based mental health professionals typically want to identify and serve was untested in this study. Additionally, this study utilized a middle school sample of students, thus teacher accuracy in the identification of depressive symptoms in elementary-age children is unknown.

Layne, Bernstein, and March (2006) examined the accuracy of teacher nominated students when compared to student’s own self-reported anxiety symptoms. Four hundred and fifty three students in second through fifth grade completed the Multidimensional Anxiety Scale for Children (MASC; March, 1997). Teachers used a list of participating students within their classroom to nominate the three that they felt were the “most anxious.” Teachers were not provided further descriptions of the term “anxious.” Results

of univariate analyses indicated that teacher nominated children had significantly higher scores than non-nominated children on three out of four MASC subscales (i.e., physical symptoms, social anxiety, separation/panic) as well as the total anxiety score.

Specifically, the mean MASC scores for nominated students were: 54.1 (physical symptoms), 55.6 (harm avoidance), 55.1 (social anxiety), 60.1 (separation/panic), and 57.9 (total anxiety). For non-nominated students, the MASC scores were: 51.5 (physical symptoms), 55.2 (harm avoidance), 52.5 (social anxiety), 55.2 (separation/panic), 54.5 (total anxiety). While these results provide preliminary support for the ability of teachers to discriminate students with somewhat elevated levels of anxiety from their peers with lower levels of anxiety, this study did not report teacher accuracy rates in terms of proportion of clinically anxious youth who were nominated as such by their teachers. Additionally, this study did not examine specificity or the number of students “missed” by teacher nominations. Further, the accuracy of identifying students with significantly elevated anxiety also appears questionable as the mean scores of normative students were in the average range (i.e., $T < 60$) in all areas except separation/panic.

While the empirical literature base for use of teacher nominations to identify students with anxiety or depression is scarce, two additional studies have utilized teacher identification or nomination of students who demonstrate anxious or depressive symptoms as part of a larger research project. For example, while not the primary purpose of their study, Dadds, Spence, Holland, Barrett, and Laurens (1997) utilized teacher nomination as part of a screening procedure to identify students who would be invited for participation in a test of the efficacy of their school-based anxiety intervention. Participants were 1,786 students seven to fourteen years of age (grade levels

three through seven), and were screened for inclusion in the anxiety intervention through a multiple-gating procedure. All participants were first administered the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1979). Teachers were also asked to nominate up to three children from their class that they felt demonstrated the "most anxiety (i.e., were shy, nervous, afraid, inhibited)" (p. 628). As an exclusion criteria, teachers were then asked to nominate up to three children who demonstrated the "most disruptive behavior (i.e., were impulsive, aggressive, hyperactive, noncompliant)" (p. 628). Upon examination of the initial convergence between teacher nomination and student self-report, the researchers determined the agreement was unexpectedly low. The research group hypothesized that many of the children incorrectly filled out the RCMAS (i.e., answered yes to all items). Therefore, teachers were submitted the lists of children who had been selected for inclusion in the school-based intervention based upon either nomination status or RCMAS score (i.e., raw score ≥ 20). Note, according to the RCMAS manual, conversions of a raw score of 20 to *T*-scores are as follows: age 7 (male *T*=61, female *T*=59), age 8 (male *T*=62, female *T*=59), age 9 (male *T*=63, female *T*=61), age 10 (male *T*=64, female *T*=60), age 11 (male *T*=64, female *T*=60), age 12 (male *T*=64, female *T*=60), age 13 (male *T*=69, female *T*=63), and age 14 (male *T*=67, female *T*=66). Thus, raw scores of 20 corresponded to *T*-scores of 59 to 69 in the sample, reflecting considerable variability in symptom severity. Teachers were asked to review the list, and identify any students on the list who "clearly had no anxiety problems (i.e., teachers were confident the child was well adjusted)" (p. 628). Children were then selected for participation in the final portion of screening, administration of a diagnostic clinical interview (i.e., Anxiety Disorders Interview Scale for Children – Parent version), if they

met the following criteria: (1) raw score ≥ 20 on the RCMAS, (2) were nominated by their teacher as anxious, (3) not nominated by their teacher as disruptive, and (4) were not excluded by teachers based upon additional exclusionary criteria (i.e., did not speak English in the home, have a substantial learning problems, disability, a developmental delay). During the screening process, 160 children were nominated by their teachers as demonstrating disruptive behaviors, and were subsequently excluded. From the remaining children ($n=1,626$), 157 were nominated by their teachers as having anxiety problems. A group of 171 children had a raw score ≥ 20 on the RCMAS, indicating “at-risk” or higher levels of anxiety. Regarding convergence between teacher nomination and child self-report, only 33 children who were nominated by their teacher as anxious also scored at the specified criteria on the RCMAS, indicating a 19% “true positive” (or sensitivity) rate for the teacher nominations. On the positive side, the specificity rate was quite high (92%), indicating that most students without clinical levels of anxiety were not falsely identified as such by their teachers. Unfortunately, 81% of students with clinical levels of anxiety were “missed” by teachers, and 79% of students who were identified by teachers as anxious were actually misidentified in that they actually self-reported low levels of anxiety on the RCMAS. Upon closer examination of these findings, the researchers hypothesized that the low levels of convergence between teachers and children might be due to inaccurate reporting of symptoms by children, possibly due to social desirability. Analysis of the RCMAS Lie scale indicated that children nominated by teachers only (i.e., had low RCMAS scores) had relatively higher Lie scores, $F(2, 125) = 6.12, p < .003$. The implication of this finding is that relying solely on student self-report for identification may exclude those youth from identification who respond in

a socially desirable manner. This study's interesting findings are limited by the fact that the researchers did not use a consistent *T*-score to define elevated levels of anxiety, and rather employed a raw score of 20 as a cut-point which translated differently to *T*-scores based on a participant's age and gender.

Moor and colleagues (2007) evaluated the effectiveness of a training designed to assist teachers in recognizing symptoms of depression in their students. Of note, the teacher participants consisted of classroom teachers, as well as guidance teachers, class registration teachers, specialized subject teachers, and learning support teachers. Directly relevant to the current study, this study provides data regarding the extent to which teachers reported depressive symptoms in their students prior to intervention. Prior to receiving any training, teachers ($N=151$) were provided with a list with names of students (ages 12-15 years old) who had consent to participate ($N=1,911$), and were asked to indicate which students they believed to be "possibly/probably depressed" (p. 84). This task is referred to as the "report on pupil depression task" (p. 84). Participating students filled out the Mood and Feelings Questionnaire (MFQ; Costello & Angold, 1988) to assess depressive symptomology. The 209 students who scored ≥ 30 on the MFQ were administered a clinical interview, the Schedule for Affective Disorders and Schizophrenia for school age children, present and lifetime version (K-SADS-PL, Kaufman et al., 1997). Fifty-six students were identified via a clinical interview as having a diagnosis of clinical depression. Teachers were then randomized to either a control (no training, $n=75$) or experimental condition (received training, $n=76$). Results indicate that on the initial report of pupil depression task (prior to training), teachers in the experimental condition on average reported an average of 4.8% of their students to be possibly or probably

depressed. Teachers in the control condition reported an average of 4.1% of their students as depressed. Prior to the training, the percentage of students that teachers in the experimental and control conditions were able to recognize was 52% and 41% cases, respectively, otherwise referred to as sensitivity. Moreover, the “miss rate,” or percentage of students that failed to be identified by teachers, was 48% (experimental group) and 59% (control group). That particular finding provides support for teachers’ ability to identify students who exhibit depressive symptoms, although in a unique group of educators (e.g., not traditional classroom teachers), which may contribute to the high “hit rate” or sensitivity. Of note, the percentage of students with “at-risk” levels versus clinical diagnoses of depression within this study is unknown. Therefore, the accuracy of using teachers to identify youth towards whom school-based mental health interventions are typically geared is unknown. Additionally, similar to Auger (2004), this study utilized a middle school sample of students, thus teacher accuracy in the identification of depressive symptoms in elementary-age children remains unknown.

There is much that is currently unknown regarding the accuracy of using teacher nomination to identify students with anxiety and/or depression. As there is a paucity of research on the accuracy of teacher nominations for identifying students with elevated levels of internalizing concerns, closer examination of this mechanism is warranted to determine its appropriateness. First, while there are only five studies within the published literature that have even examined this topic, only three of these studies provided results in terms of accuracy ratings, specifically sensitivity and specificity (or provided data for which accuracy rates could be calculated). Second, no research was located that explicitly reported the numbers of students “missed” by using teacher nominations (i.e., by

comparing that method to student self-report on valid and reliable assessment measures). In the one exception (Dadds et al., 1997), the miss value had to be computed by the author of the current document. Third, the limited research that has been conducted within this area has used cut-score of $T \geq 70$ on self-report rating scales (Auger, 2004). Additional research is needed that includes students with T -scores in the "at-risk" range (versus only clinical) to be considered for intervention. Within schools, ideally students who are identified as "at-risk" and/or "clinical" would get targeted for intervention due to the focus on prevention as well as intervention. Finally, some of the studies did not provide teachers with standardized behavioral descriptors to assist them in making nominations. As such, it is possible that teachers might have differed in their understanding and/or conceptualization of the terms "anxiety" and "depression," therefore impacting which students they nominated.

The majority of research within this area has focused on anxiety. Therefore, empirical support for the use of teacher nomination to identify students with depression is particularly lacking. Moor and colleagues (2007) found that educators were fairly accurate in determining students with depressive symptoms; however those findings are limited by the unique sample of teacher participants that included educators serving in guidance roles. Furthermore, no research could be located that has examined the use of teacher nomination for identifying depressed students within an elementary school population. While depression is less common in elementary-age students than adolescents, research has indicated that depression is present in students as young as preschool age (Lavigne, et al., 2009). Therefore, evaluation of appropriate identification mechanisms within this population is appropriate and necessary, from both a prevention

and intervention stance. While similar, Ollendick and colleagues (1989) examined a population of “withdrawn” children, but did not use a comparison “gold standard” measure to assess depression within the children, such as student self-report on a reliable and valid rating scale or diagnostic interview.

Referrals made by educators. The aforementioned methods of identification involve systematic ways of including all students in a given population when considering which youth may have mental health problems and therefore be in need of services. Additional common methods of identifying youth for participation in school-based mental health services are more reactive in nature, and involve waiting for specific students to be brought to the attention of the school mental health team by concerned individuals. For instance, teachers can refer students to the appropriate school-based mental health professional for further assessment and services in the event the teacher is concerned with a given student’s well-being.

Additionally, given school-based mental health professionals’ expertise in mental health, and their frequent contact with teachers and students, it is reasonable to conclude that they could personally nominate students they feel would benefit from specific mental health services offered by either themselves or a colleague. School-based mental health professionals (e.g., school psychologists, school social workers, guidance counselors) can thus inform their school colleagues who intend to provide a particular intervention (e.g., anger management training, social skills) that they are aware of additional students they feel may exhibit the specific emotional or behavioral symptom(s) of concern, and thus serve as nominators themselves. Asking school-based mental health professionals to nominate students with a particular mental health concern is within the realm of their

current job roles. No empirical research could be located thus far that examines this particular identification method, and as such research is needed regarding the accuracy and appropriateness of using school-based mental health professionals to nominate students they feel might benefit from mental health services targeting different forms of psychopathology.

While no empirical literature could be found to support the use of school-based mental health professionals to nominate students broadly with mental health concerns, exiting research has been located that has examined the use of school-based mental health professionals (through their participation on crisis teams) to identify students who may be at-risk of developing psychopathology in the aftermath of a crisis or trauma (Weinberg, 1990). In fact, it is common practice that following the occurrence of a crisis or trauma for school personnel (namely crisis intervention team or school-based mental health professionals) to actively seek out or identify students who may be at-risk for the emergence of psychological problems, or the exacerbation of existing psychopathology (Brock, 2002). However, it should be noted that as crisis situations present unique circumstances, it is unclear whether the identification of these students is restricted to crisis situations, in which it is common for students to behave in a noticeable manner (e.g., crying, or the complete absence of emotional reactions). Furthermore, within this area of research, no empirical studies have been located that evaluate the accuracy of these professionals in their identification of students in need of further assistance.

Referrals made by students or parents. It is possible for students to self-refer themselves for mental health services, because the children or adolescents themselves tend to have the most accurate awareness of their emotions and thoughts. As adolescents

are typically more aware of their symptoms, they tend to be better reporters. As younger children are not as cognitively developed, and might have trouble thinking and verbalizing their feelings or behaviors, they make self-referrals less frequently (Renk, 2005). Therefore, student self-referral might be more commonly seen or expected in the middle school or high school settings, and should not be considered a reliable identification method of children with mental health problems in elementary schools.

It is also possible for parents to directly request intervention services for their child from school-based mental health professionals. However, there are several issues that are inherent to using reactive methods such as this. First, parents and/or families who have a stigma against mental health services would not request services for their child, therefore excluding those children from intervention services. Similarly, students may also fear the stigma attached to mental health, and therefore not seek out help when they are distressed. Another problem relates to the “wait to fail” model of mental health, in which no action is taken until a problem is severe enough to warrant attention. Actively seeking out students who may be exhibiting elevated levels of psychopathology aims to find students before a problem becomes severe, and can remediate symptoms and distress early on.

Conclusions

The prevalence of mental health problems in children, namely anxiety and depression, are concerning, with rates ranging from 5.8% to 14.6% for anxiety and 1.3% to 2.2% for depression (Avenevoli et al., 2008; Beesdo et al., 2009; Costello et al., 2004; Costello et al., 2005b). Just as concerning are the negative concurrent and future psychosocial and academic outcomes associated with the presence of these disorders in

childhood, such as poor self-esteem, impaired social relationships, engaging in substance use and other risky behavior and/or criminal offenses, development of future mental health problems, and decreased academic achievement and/or school failure (Bittner et al., 2007; Cooper et al., 2008; Copeland et al., 2007; Copeland et al., 2009; Van Ameringen et al., 2003).

Within the past decade it has been estimated that schools have provided an estimated 70% to 80% of psychosocial services to youth in need, largely in an attempt to overcome barriers to accessing community mental health care (Committee on School Health, 2004; Farmer et al., 2003; Rones & Hoagwood, 2000). While referrals are received for all types of problems, it seems as though referrals for problems that are best classified as externalizing in nature (e.g., ADHD, anger/aggression, behavior problems, conduct problems) are received in higher frequencies than those for concerns that are best classified as internalizing (e.g. anxiety, depression) in their presentation of symptoms (Foster et al., 2005; Friedrich & Suldo, 2010). This can likely be attributed the tendency of students with internalizing concerns to “fly under the radar,” possibly because they tend not to disturb the referral agents to the same extent as their peers with externalizing behaviors. Thus, these students are less likely to be identified for inclusion in school-based mental health services. This is unfortunate, as school-based mental health services can be an effective mechanism to improve students’ functioning and reduce symptoms (Nabors & Prodent, 2002; Rones & Hoagwood, 2000).

As schools have become a major avenue through which mental health services are provided to youth, accurate methods of identifying these students are necessary. The most typical methods of identification include: universal screening via student self-report of

symptoms using behavior rating scales or completion of rating scales by informants (i.e., parents and/or teachers); review of archival data sources, namely office discipline referrals; teacher nominations; and reactive methods such as referrals for services made by concerned educators (e.g., teachers and/or other school-based mental health professionals), parents, or student self-referral for assistance (Dywer, Nicholson, & Battistutta, 2006; Layne, Bernstein, & March, 2006; Levitt, Saka, Romanelli, & Hoagwood, 2007). The most commonly used method is universal screening using measures of student self-report, however there are several drawbacks associated with this method, such that consideration of alternatives should be examined (Center for Mental Health in the Schools, 2005). The use of teacher nominations has garnered support for teachers' abilities to accurately identify students with externalizing behaviors (e.g., Ollendick et al., 1989; Richardson et al., 2009). However, the use of teacher nominations to identify students with internalizing concerns, specifically anxiety and depression, is less evident within the literature. Results of studies that have examined teacher nominations to identify students with anxiety and/or depression are mixed in findings, and the small literature base has several limitations that warrant concern.

Due to the current limitations in the literature, the current study aimed to address those gaps by providing concrete data regarding the accuracy of teacher nominations to identify elementary school students with "at-risk" levels of anxiety and/or depression. In addition, this study intended to provide the first examination of the accuracy of school-based mental health professional nominations to identify elementary school students with "at-risk" levels of anxiety and/or depression.

Chapter Three: Methods

The current study aimed to determine the accuracy of educator nominations in identifying elementary school children who self-report elevated levels of anxiety and/or depression. This chapter contains a description of the research design, and a detailed discussion of the data collection procedures, including the participants and the procedures to be used to recruit participants for the current study. Then, an overview of the data analysis procedures that were employed to answer each research question is provided.

Research Design

A non-experimental descriptive research design was used to evaluate the accuracy of teachers in nominating students with elevated levels of anxiety and/or depression. In non-experimental research, the researcher studies the association between two or more naturally occurring variables. A naturally occurring variable is one that is not manipulated or controlled by the researcher, it is simply observed and measured (O'Rourke, Hatcher, & Stepanski, 2005). The primary purpose of descriptive research is to provide an accurate description of the status or characteristics of a situation or phenomenon. Similarly, the focus is not on cause and effect relationships, but rather on describing how variables exist in a given situation (Johnson & Christenson, 2006). As the primary aim of the current study was to determine if teacher and school-based mental health professionals' nominations are accurate methods of identifying students with pre-existing elevated levels of anxiety and depression, a non-experimental research design is the most appropriate.

Participants

Setting. Participants were drawn from two different elementary schools within a large, urban school district in a southeast state. The specific schools were selected because they each intend to provide school-based mental health interventions for children with anxiety and depression in the spring, and welcomed assistance identifying students appropriate for participation in the group counseling interventions. This school district contains a total of 243 schools consisting of grades K-12. Of those schools, 139 are elementary schools, 43 are middle schools, 2 serve grades K-8, 25 are high schools, 8 are career centers/career and technical schools, and 60 represent additional educational centers (e.g., charter schools, early child, ESE). In the 2010-2011 school year, the overall student population of the district consisted of the following ethnic breakdown: 41.1% White, 21.5% Black, 28.9% Hispanic, 0.3% American Indian or Alaskan Native, 3.3% Asian or Pacific Islander, and 5.0% Multi Racial. The total number of students enrolled in this school district during this school year is 197, 231. The demographic breakdown of the student sample of participants can be seen in Table 1 (School A), Table 2 (School B) and Table 3 (total student sample across both schools).

Both School A and School B are located within the same large city. School A is located in a more suburban part of the city, while the setting of School B can be described as more urban. Both schools are similar in size, with total school populations of 872 (School A) and 860 (School B). For the school year 2010-2011, School A received a school grade of “ B” and School B received a school grade of “A.”

Table 1

Demographic Characteristics of Student Participants at School A (n=114)

Variable	Student Sample		Total School (N=872)	
	n	%	n	%
Grade				
4	63	55.26	100	11.47
5	51	44.74	108	12.39
Gender				
Male	50	43.86	449	51.50
Female	64	56.14	423	48.50
Race				
Hispanic or Latino	52	45.61	*	*
Not Hispanic or Latino	62	54.39	*	*
Ethnicity				
American Indian or Alaskan Native	2	1.75	2	0.20
Asian, Native Hawaiian, Pacific Islander	1	0.88	10	1.10
Black or African American	26	22.81	268	30.70
White, Non-Hispanic	34	29.82	182	20.90
Multi-racial	20	17.54	36	4.10
Other, Hispanic White	28	24.56	*	*
Other, all ethnic groups but Hispanic	1	0.88	*	*
Other, Hispanic and another ethnic group	2	1.75	*	*
Hispanic	*	*	374	42.90
Lunch Status				
Free or Reduced-Price School Lunch	101	88.60	62	7.10
Not Free or Reduced-Price School Lunch	13	11.40	810	92.90

Note. * = Due to differences in the Race and Ethnicity categories between the current study and available school district information, corresponding school data is unavailable for these categories

Table 2

Demographic Characteristics of Student Participants at School B (n=124)

Variable	Student Sample		Total School (N=860)	
	n	%	n	%
Grade				
4	71	57.26	146	16.98
5	53	42.74	132	15.35
Gender				
Male	63	50.81	456	53.00
Female	61	49.19	404	47.00
Race				
Hispanic or Latino	40	32.36	*	*
Not Hispanic or Latino	84	67.41	*	*
Ethnicity				
American Indian or Alaskan Native	2	1.61	1	0.10
Asian, Native Hawaiian, Pacific Islander	3	2.42	38	4.40
Black or African American	26	20.97	218	25.30
White, Non-Hispanic	42	33.87	246	28.60
Multi-racial	17	13.70	87	10.10
Other, Hispanic White	33	26.61	*	*
Other, all ethnic groups but Hispanic	0	0	*	*
Other, Hispanic and another ethnic group	1	0.80	*	*
Hispanic	*	*	270	31.40
Lunch Status				
Free or Reduced-Price School Lunch	93	39.08	513	59.60
Not Free or Reduced-Price School Lunch	31	13.03	347	40.40

Note. * = Due to differences in the Race and Ethnicity categories between the current study and available school district information, corresponding school data is unavailable for these categories.

Table 3

Demographic Characteristics of Student Participants Across Both Schools

Variable	School A (n=114)		School B (n=124)		Total (N=238)	
	n	%	n	%	n	%
Grade						
4	63	26.47	71	29.83	134	56.30
5	51	21.43	53	22.27	104	43.70
Gender						
Male	50	21.01	63	26.47	113	47.48
Female	64	26.89	61	25.63	125	52.52
Race						
Hispanic or Latino	52	21.85	40	16.81	92	38.66
Not Hispanic or Latino	62	26.05	84	35.89	126	52.94
Ethnicity						
American Indian, Alaskan Native	2	0.84	2	0.84	4	1.68
Asian	0	0	3	1.86	3	1.26
Black or African American	26	10.92	26	10.92	52	21.85
Native Hawaiian, Pacific Islander	1	0.42	0	0	1	0.42
White, Non-Hispanic	34	14.49	42	17.65	76	31.93
Multi-racial	20	8.40	17	7.14	37	15.55
Other, Hispanic White	28	11.76	33	13.87	61	25.63
Other, all groups but Hispanic	1	0.42	0	0	1	0.42
Other, Hispanic and another group	2	0.84	1	0.42	3	1.26
Lunch Status						
Free or Reduced-Price	101	42.44	93	39.08	194	81.51
Not Free or Reduced-Price	13	5.46	31	13.03	44	18.49

The demographic breakdown of the educator samples (i.e., teacher and school-based mental health professionals) can be seen in Table 4.

Table 4

Demographic Characteristics of Educator Participants (N = 33)

Variable	Teachers (n=26)		SBMH (n=7)	
	n	%	n	%
School				
A	11	42.31	4	57.14
B	15	57.69	3	42.86
Gender				
Male	4	15.38	1	14.29
Female	22	84.62	6	85.71
Race				
Hispanic or Latino	4	15.38	0	0
Not Hispanic or Latino	22	84.62	7	100.00
Ethnicity				
American Indian or Alaskan Native	0	0	0	0
Asian	0	0	0	0
Black or African American	7	26.92	2	28.57
Native Hawaiian or Pacific Islander	0	0	0	0
White	18	69.23	5	71.43
Multi-racial	1	3.85	0	0
Other, Hispanic, White	0	0	0	0
Other, all but Hispanic	0	0	0	0
Other, Hispanic, Non-White	0	0	0	0
Highest Education Level				
Bachelors/College Degree	13	50.00	0	0
Master's degree	12	46.15	3	42.86
M.A. + 30 (or equivalent)	0	0	1	14.29
Ed.S/Specialist level degree	1	3.83	3	42.86
Ph.D. or Psy.D.	0	0	0	0
Professional Development in Mental Health				
Yes	4	16.00	5	71.43
No	21	84.00	2	28.57
Graduate Training in Mental Health				
Yes	N/A	N/A	7	100.00
No	N/A	N/A	0	0

The mean age of teacher participants was 38.8 years old ($SD=11.24$, range: 23-65). Twelve teachers reported teaching fourth grade (five from school A, seven from school B), and 14 teachers reported teaching fifth grade (six from school A, eight from school B).

The mean age of school-based mental health professional participants was 41 years old ($SD=14.4$, range: 26-57). The average number of days spent working at their particular school was 3.6 ($SD=1.33$, range: 2.5-5.0). School-based mental health professionals also reported information regarding different activities in which they engaged as a function of their position. This information can be seen in Table 3.

Table 5

Mean, Standard Deviation, and Range for Hours Engaged Per Week in Professional Activities

Activity	<i>N</i>	<i>M</i>	<i>SD</i>	Range
Consultation with teachers	7	7.93	4.90	3.5 - 15.0
Classroom programming	6	2.17	3.54	0 - 9.0
Counseling	6	2.58	3.20	0 - 8.0

Procedures

To obtain participation buy-in from relevant school personnel (i.e., principal, mental health professionals) and the two schools of interest, a handout detailing the prevalence of mental health problems in children, namely anxiety and depression, along with outcomes associated with such problems was shared with the school psychologist and principal at each school. An overview of the current study was provided, primarily describing teacher nominations as a potential mechanism to identify students for participation in the school-based interventions intended to be delivered by school mental health staff later in the year. After reviewing the handout, both School A and School B verbally expressed interest in participating in the study, mainly to yield a list of students

to be invited for subsequent mental health services to be provided by school mental health professionals in the spring.

Recruitment of Participants

Teacher participants. All teachers within grades four and five at each elementary school were offered the opportunity to participate. Teachers who were interested, and met the following criteria, were recruited to participate in the current study: (1) teach students in grades four and five, (2) have at least five hours per week of face-to-face contact with the students they nominate, and (3) consent to participate in the study. Of note, teacher consent was obtained prior to obtaining student consent because if the teacher did not consent to participate, then the students in that teacher's class were ineligible for participation. As incentive for participation, all consenting teachers within each school received a \$25 gift card. In total, 26 teachers met the aforementioned inclusion criteria and were included as participants within the current study.

School-based mental health professional participants. All school-based mental health professionals at each elementary school were offered the opportunity to participate in the current study. School-based mental professionals who were interested, and met the following criteria, were recruited to participate in the current study: (1) have a degree in a mental health field (e.g., school psychology, school counseling, social work), and (2) work at least two days per week at a participating school, and (3) consent to participate in the study. In total, seven school-based mental health professionals met with inclusion criteria and were included within the current study.

Student participants. All students in grades four and five at each school within consenting teachers' classrooms were offered the opportunity to participate in a screening

of social-emotional wellness. All students in eligible classrooms in grades four and five were given consent forms to bring home to their parents, except for students served in self-contained classes for students with Intellectual Disabilities due to challenges with comprehension of written material at grade level. Active parental consent was required for participation. Students who met the following criteria were included as participants within the current study: (1) currently within fourth or fifth grade, (2) proficient in English (in order to facilitate valid completion of the self-report measures which are only available in English), (3) enrolled in a classroom for which teacher consent for participation has been obtained, (4) obtain written parental consent for participation, and (5) provide verbal or written student assent to participate. It was expected that out of the entire population of students who are given consent forms for their parents to fill out and return, approximately 50%-60% of forms would be returned with positive consent for the universal screening (Layne et al., 2006; Stark, Streusand, Krumholz, & Patel, 2010). Thus, to increase the rate of consent form return, small incentives (e.g., donut party) were offered to classes in which 75% of consent forms were returned (with either positive or negative consent). Out of the 26 classes that participated within the current study, eight returned at least 75% of their consent forms and therefore earned a donut party. In addition to class-level incentives, small individual incentives (i.e., sillybands) were provided to each student who returned a consent form, regardless of whether consent was given or not. In total, 275 student parental consent forms (130 from school A, 145 from school B) were returned out of a possible 493, resulting in a 56% response rate (66% for school A; 49% for school B). Of these 275 consent forms that were completed by parents and returned to the school, 244 indicated positive consent, resulting in an 88% useable

return rate. The remaining 32 students returned parental consent forms that clearly indicated that the child was *not* permitted to participate in the study, but were still eligible to receive the incentives since they complied with the Primary Investigator (PI)'s request to return the form regardless of consent status.

Data Collection

Data collection occurred toward the end of the second nine-week grading period of the 2010-2011 school year. Waiting until this point in the school year allowed teachers to become familiar with their students over the course of several months, therefore allowing them to provide informed judgments regarding their students' behavior. Additionally, effectively evaluating the presence of symptoms of anxiety and depression is dependent upon observing students on a daily basis and teachers' knowledge of typical versus atypical behavior in their students.

Teachers were recruited at grade-level meetings in December 2010, during which the purposes of the current study were detailed (e.g., purpose and overview of the study, rationale for the study including prevalence rates of anxiety and depression, summary of empirical links between psychological wellness and academic and psychosocial success), specifically that teacher assistance was needed to help school personnel identify students who might benefit from participation in school-based interventions scheduled to begin in January 2011. School-based mental health professionals were recruited during similar meetings. After teacher consent was obtained, parents of students within participating teachers' classrooms were given a letter which detailed the purpose and provided an overview of the current study, and asked for consent for their child to participate in a universal screening of their mental health/ social-emotional wellness. Appendices A and

B contain a copy of the consent forms that were provided to teachers and school-based mental health professionals, respectively. Appendix C contains a copy of the consent form that was provided to parents, which was made available in both English and Spanish. To ensure confidentiality of the teachers' and school-based mental health professionals' nominations, code numbers were assigned to all educators who participated. Of note, due to factors out of the control of the PI (i.e., obtaining IRB and school district approval), the actual data collection process (i.e., educator nominations and student screenings) did not begin until January 2011.

Teacher data collection. In January 2011, teachers were provided with a roster of students in their class with permission to participate in the study. Teachers were then asked to identify via nominations which of these students in their class demonstrated symptoms of anxiety and depression. Specifically, teachers were asked to identify up to three students they perceived exhibit problematic levels of anxiety and three students they perceived exhibit problematic levels of depression. Of note, teachers could nominate the same child for both problems, if appropriate. To assist teachers in this process, a handout with behavioral descriptors of childhood anxiety and depression was provided (see Appendix E). Teachers were limited to nominating no more than three students per category as to ensure that the number of students potentially identified as in need of mental health services (a) approximated the likely proportion of youth with internalizing disorders in the general population (per Costello et al., 2005) and (b) was within the resources available through the school to provide subsequent appropriate interventions. Further, three students per category is consistent with the procedures used in prior

research involving teacher nominations (e.g., Dadds et al., 1997; Lane & Menzies, 2005; Walker & Severson, 1992).

School-based mental health professionals data collection. The school-based mental health professionals were given a grade-level wide roster of the students within that grade level who had parent consent to participate. School-based mental health professionals were then asked to nominate up to 21 students per grade, who they perceived displayed elevated levels of anxiety and/or depression such that intervention might be beneficial. The maximum number of students, 21 per category per grade, for which school-based mental health professionals were allowed to nominate is derived from the typical amount of classes per grade (approximately seven) times the number of students who could be nominated per category (i.e., three). To differentiate between students who the school-based mental health professionals intentionally did not nominate from students with whom the school-based mental health professional was unfamiliar, a column titled “I do not know this student” was included on the roster. To assist in this process, school-based mental health professionals received the same handout with behavioral descriptors of childhood anxiety and depression; however instructions for nomination procedures differed (see Appendix F).

Student data collection. Prior to any student data collection, student assent was obtained (see Appendix D). During the same week that teachers and school-based mental health professionals provided nominations, those students with parent permission to participate completed paper-and-pencil measures of anxiety and depression. Specifically, students filled out two brief (10-15 minutes) rating scales, one for anxiety and one for depression. All data from students remained confidential, in that only the PI had access to

the specific responses. To ensure confidentiality of responses, all student participants were assigned a code number. Students were asked to fill out the self-report measures in groups, monitored by the author of the current document and members of her university research team. Students were allowed privacy while completing forms, and were seated in such a way as to prevent fellow participants from viewing their responses. Researchers monitored student completion of the measures such that participants were able to ask questions and receive standardized answers regarding the measures. Furthermore, the PI and members of her research team were available to ensure the safety and well-being of participants, as well as respond if student participants asked about withdrawing from the study and/or if students looked as if they were distressed (e.g., tearful, angry). After completion of the measures, the PI and/or research team members checked if any “critical items” on either measure were endorsed (i.e., item # 9 on the CDI which asks about suicidal thoughts and behaviors). The students who endorsed that item were immediately referred to a school-based mental health professional for further assessment to ensure their safety.

Raw rating scale responses were totaled for each measure, and then converted into *T*-scores appropriate for participant age and gender to yield a total anxiety or depression score for each participant, or both if appropriate. Students’ whose scores fell at or above the “at-risk” cutoff range (i.e., *T*-score of 60 or higher) for either rating scale were asked to fill out a second rating scale one week later, to ensure that the first score was not a false-positive or that elevated symptoms were not due to transient events (e.g., sickness, stress). Students who obtained *T*-scores of 60 or higher on the second administration of the measures were considered as having problematic levels of anxiety or depression, such

that intervention would be beneficial. This *T*-score was intentionally selected as it denotes an elevated or “at-risk” level of symptoms. For students who self-reported high levels of anxiety or depressive symptoms at any point during the screening process, their parents immediately received a letter (see Appendix G) that contained contact information for community mental health agencies, so that concerned parents could seek services immediately rather than wait to possibly be invited to receive services from the school-based mental health staff later in the school year. The school psychologist at the two participating schools organized the provision of group counseling services (evidence-based cognitive-behavioral interventions for anxiety and depression) in the spring to the students identified in the current study.

Measures

Demographic information form. A demographic form, adapted by the PI from demographic forms that have been successfully used in previous research, was provided to all participants (students, teachers, and school-based mental health professionals). This form elicited information such as gender, ethnicity, SES, and grade level enrolled in or taught. These forms are included in Appendices H, I, and J.

The Multidimensional Anxiety Scale for Children (MASC; March, 1997). The MASC is a 39-item measure of anxiety for children and adolescents age 8-19, the aim of which is to “assess a wide spectrum of common anxiety symptoms in children across the elementary, junior, and senior high school age range” (March, Parker, Sullivan, Stallings & Conners, 1997, p. 555) The MASC consists of four scales (i.e., physical symptoms, social anxiety, harm avoidance, and separation/panic) and three indexes (i.e., anxiety disorders, total anxiety, and inconsistency). Responses on the MASC are measured on a

4-point Likert scale: 0 (*Never True About Me*), 1 (*Rarely True About Me*), 2 (*Sometime True About Me*), and 3 (*Often True About Me*). For the purposes of this study, the Total MASC Anxiety Scale was used as an indicator of problematic levels of anxiety, as this scale covers a broad spectrum of anxious symptoms. According to the MASC manual (March, 1997), the Total MASC Anxiety Scale has demonstrated excellent internal consistency ($\alpha = 0.88$ to 0.89), and excellent test-retest reliability ($r = 0.93$). Further examinations of psychometric properties in more recent research studies confirm excellent internal consistency for the MASC total score ($\alpha = 0.93$; Grills-Taquechel, Ollendick, & Fisak, 2008). Discriminate validity between a sample of clinically anxious children and adolescents and a non-anxious group evidenced 90% sensitivity (March, 1997). As described in its manual, the MASC has normative data for children as young as eight years old, and provides extensive support for reliability of scores among youth ages 8 to 11 years old; of note, discussions of the validity of the MASC are not broken down by age range in the manual (March, 1997). This rating scale is not included as an appendix due to copyright restrictions.

The Children's Depression Inventory (CDI; Kovacs, 2003). The CDI is a 27-item measure of depression in youth 7-17 years old. The CDI contains five scales: negative mood, interpersonal difficulties, negative self-esteem, ineffectiveness, and anhedonia. For the purposes of this study, the Total Score scale was used, as this scale covers a broad spectrum of depressive symptoms. According to the CDI manual, the CDI Total Score has demonstrated good to excellent internal consistency ($\alpha = 0.71$ to 0.89). The CDI has also demonstrated acceptable test-retest reliability ranging from $r = 0.74$ to 0.87 . However, because the CDI measures a state, rather than a trait, it is not expected

that one's depressive symptoms would remain stable over a prolonged period of time. The CDI has also demonstrated high percentages of sensitivity (80%) and specificity (84%), meaning that the CDI has been found to have high percentages of correctly classifying youth to be depressed and correctly classifying youth who are not depressed as such (Kovacs, 2003). As described in its manual, the CDI has normative data for children as young as seven years old; studies of reliability and validity are not broken down by age group (Kovacs, 2003). This rating scale is not included as an appendix due to copyright restrictions.

Overview of Data Analyses

Descriptive statistics. Descriptive statistics are utilized to analyze, organize, summarize, and identify major characteristics of a sample or population (O'Rourke, Hatcher, & Stepanski, 2005). In addition to summarizing the samples' demographic characteristics (as reported earlier in this chapter), descriptive statistics (e.g., means, standard deviations, ranges) for student participants' *T*-scores on the MASC and CDI were used to determine the distribution of scores at both administrations of the self-report measures.

Accuracy rates. To determine the accuracy of nominations made by educators (i.e., teacher and school-based mental health professionals), as well as the percentage of students "missed" and "misidentified" by nominations, the following research questions drove the current study:

Research question one. What is the accuracy of teacher nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*
- d. Misidentified Rate?*

Research question two. What is the accuracy of teacher nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*
- d. Misidentified Rate?*

Research question three. What is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth, with respect to:

- a. Sensitivity*
- b. Miss Rate*
- c. Specificity*
- d. Misidentified Rate?*

Research question four. What is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth, with respect to:

- a. Sensitivity*

b. Miss Rate

c. Specificity

d. Misidentified Rate?

The preceding research questions were answered by comparing nomination status to student self-report *T*-scores on measures of anxiety and depression. Analyses were conducted using the same strategies, but in different series. In the first series, research questions one and two were addressed by examining the percentage of teachers that were able to accurately identify students whose self-reported ratings of either anxiety and/or depression yielded an elevated rating score. Proportions were calculated for: (1) the percentage of students correctly identified by teachers (i.e., sensitivity; teacher nominated students who had *T*-scores of ≥ 60), (2) the proportion of internalizing students “missed” by teacher nominations (i.e., miss rate; teachers did not nominate student, but the students’ self-report score indicated at least “at-risk” levels of anxiety and or depression), (3) the percentage of students misidentified by teachers (i.e., teacher nominated students whose self-report score did not indicate at least “at-risk” levels of anxiety and/or depression), and (4) the proportion of students’ that teachers did not nominate, and whose self-report scores did not indicate “at-risk” levels of anxiety or depression (i.e., specificity). Accuracy rates were calculated using the proportions for sensitivity and specificity, as this is consistent with assessing accuracy in screening methods (Levitt et al., 2007). The other two proportions provided additional information regarding the percentage of students “missed” by teachers as well as the percentage of students misidentified by educators. Please see Figure 2 for a depiction of the proportions of interest and formulas for calculating each proportion (formulas adapted from Green &

Zar, 1989). Research questions three and four were answered by calculating the same aforementioned proportions for school-based mental health professionals, using a team approach. In the second series of analyses, accuracy rates were calculated for each individual participant. Specifically, individual proportions were calculated and reported for each individual participant (i.e., each teacher, each school psychologist, each social worker, each school counselor), followed by calculation of an overall proportion for the larger group (i.e., teachers, team of school-based mental health professionals).

	Student Symptoms in the “At-Risk” or “Clinical” Range per Self-Report $(T \geq 60)$	Student “Not at Risk” per Self-Report of Symptoms $(T < 60)$
Student Nominated by Educator	Sensitivity <i>True Positive</i> Proportion = # true positives / (# true positives + # false negatives)	Misidentified <i>False Positive</i> Proportion = # false positives / (# false positives + # true negatives)
Student Not Nominated by Educator	Miss Rate <i>False Negative</i> Proportion = # false negatives / (# false negatives + # true positives)	Specificity <i>True Negative</i> Proportion = # true negatives / (# true negatives + # false positives)

Figure 2. Formulas used to calculate accuracy proportions

Confidence intervals. Confidence intervals were used to support or refute the notion that the obtained sample accurately represents the larger population (Johnson & Christenson, 2006). Using the proportions previously calculated for teacher and school-based mental health professional nominations, 95% confidence intervals were constructed using the score method, as described by Newcombe (1998). This particular method was selected because the sample size, for teachers and school-based mental health professionals, was relatively small. Additionally, use of the score method for constructing

confidence intervals does not stipulate that the obtained proportion must be in the center of the interval. In using a 95% confidence interval, the researcher is able to say that they are 95% confident the constructed interval contains the population proportion.

Confidence intervals were calculated several ways, for each proportion of interest. To determine the overall accuracy of teachers and school-based mental health professionals in identifying students with elevated levels of anxiety and depression, 95% confidence intervals were constructed around each of the four aforementioned proportions for the overall sample of teachers, once for anxiety and once for depression. Confidence intervals were also calculated around each of the individual teacher proportions. The process was repeated for teams of school-based mental health professionals, as well as each of the individual school-based mental health professionals.

Ethical Considerations

Several precautions were taken to protect the participants in the study. First, the PI of the study obtained approval from the Institutional Review Board (IRB) at the University of South Florida (USF) to conduct the research prior to data collection. The PI also obtained approval to conduct research from the participating school district. The information gathered from participants, specifically educator nominations and student self-report measures, is kept in a confidential database and no identifying information is included in the database. Only the PI of the study and approved members of the research team have access to the database. The completed measures are stored in a locked file cabinet. Only the PI and approved members of the research team have access to the locked file cabinet that is used to store the documents linking code numbers to participant names and any other identifiable information. Other ethical considerations that arose

during data collection relate to students who endorsed the item on the CDI that pertained to suicidality. Students who endorsed this item were immediately referred to the school psychologist who assessed the student's risk to self-harm. Parents of these students were immediately notified as well.

Chapter Four: Results

This chapter presents the results of the statistical analyses conducted to answer the research questions within the current study. To answer the four research questions, proportions were calculated for the sensitivity, miss rate, specificity, and misidentified rates of both teacher and school-based mental health professional nominations' of students with elevated levels of anxiety and depression. Confidence intervals were calculated around each of the proportions of interest.

Participation Rates

In total, 275 student parental consent forms (130 from school A, 145 from school B) were returned out of a possible 493, yielding a 56% response rate (66% for school A; 49% for school B). Of these 275 consent forms that were completed by parents and returned to the school, 244 indicated positive consent, resulting in an 88% useable return rate; the remaining 31 returned consent forms clearly indicated that a given child was *not* permitted to participate in the study, but should remain eligible to receive recruitment incentives since the child complied with the PI's request to bring the form to the family. Due to factors out of the control of the PI (e.g., students transferring schools, chronic absenteeism, non-English speaker), six students with parent permission to participate were unable to take part in the self-report portion of the study. Although these six students were eligible to be nominated by their teachers, no teacher nominated any of these six for either anxiety or depression. Due to the lack of self-report data, these six students were dropped from the sample. Thus, a final sample of 238 students,

representing a 48% participation rate (114 from school A, 124 from school B; representing 58 and 42% of the targeted population at each school, respectively) took part in the study and are considered to be the final sample of student participants. As shown in Table 5, participation rates in individual classes ranged from 17% (Teacher 21) to 95% (Teacher 20).

In regards to the educator sample, 26 teachers and 7 school-based mental health professionals were recruited for participation. All teachers and school-based mental health professionals who were recruited provided positive consent for participation, translating to a 100% return rate with positive consent across both schools. The final educator sample included 26 teachers (11 from school A, 15 from school B) and seven school-based mental health professionals (four from school A, three from school B). In sum, across both schools, the final dataset contained a total sample of 238 students, 26 teachers, and seven school-based mental health professionals.

Data Entry and Screening

After completion of self-report measures, the PI hand-scored the MASC and CDI forms by converting summed raw scores to T-scores using the published norms appropriate for each participant's gender and age. In order to ensure accuracy, a second researcher re-scored all participants' measures.

A single database was created to contain information from teacher and school-based mental health professional nominations, as well as student self-report scores on measures of anxiety and depression. Code numbers for student participants were created to link their data from their specific teacher and school mental health provider(s). As it

became available, data was entered into a Microsoft Excel. Skipped items were coded as missing data and excluded from analyses.

After all data was entered, values for the two outcome measures (i.e., MASC and CDI) were checked to ensure that all values fell within the expected (i.e., possible) range of response options (i.e., responses did not exceed possible numerical values). An additional check of the accuracy of data entry involved manually checking 10% of randomly selected student surveys and 10% of educator nominations. In the event a data entry error was detected, the error was corrected in the database and then additional data were checked for accuracy by reviewing the surveys entered immediately before and after the survey that contained the error. The error rate for entry of student self-report data was 0.09%, which corresponds to an accuracy rate of 99.9%. With respect to the educator data, the error rate for data entry was 0.33%, for an accuracy rate of 99.7%.

Data Analyses

After the data entry checks were complete and all errors were corrected, the final database was imported into SAS © Version 9.2. All statistical analyses were conducted using this software. Descriptive statistics for the instruments of interest are provided first, and the remaining results are organized by research question.

Descriptive statistics. To determine the distribution of student self-report *T*-scores for the MASC and CDI, descriptive statistics (i.e., mean, standard deviation, range) were calculated for both the first and second administration of each of the measures. Results are presented in Table 6. A total of 238 students took part in the initial administration (Time 1) of the MASC and CDI. Only those students whose initial score on either measure fell in at least the “at-risk” range (i.e. $T\text{-score} \geq 60$) were asked to re-

take (Time 2) the measure(s) that initially yielded an elevated score. All students with elevated scores at Time 1 were re-administered the appropriate measure at Time 2, indicating a 0% attrition rate across the 7 to 10 day interval. At Time 2, a total of 42 students (18%) were re-administered the MASC, and 34 students (15%) were re-administered the CDI. Of note, 18 of these students who participated in Time 2 were re-administered both measures. The proportion of the student sample who at Time 2 had twice reported elevated levels of symptoms on the CDI or MASC was 9% ($n = 22$) for depression, and 11% ($n = 27$) for anxiety. In sum, a total of 38 students, for a total of 15.9% of the sample, yielded elevated scores on either the CDI or the MASC or both (11 students, for a total of 4.62% of the sample, were elevated on both of these measures).

Table 6

Means, Standard Deviations, and Ranges for MASC and CDI T-Scores

Measure	<i>N</i>	<i>M</i>	<i>SD</i>	Range	Participants with <i>T</i> -Scores ≥ 60
MASC T1	238	48.64	11.38	25-78	42
MASC T2	42	61.98	7.94	40-78	27
CDI T1	238	49.07	9.74	35-82	34
CDI T2	34	63.52	10.01	47-91	22

Note. MASC = Multidimensional Anxiety Scale for Children; CDI = Children's Depression Inventory; T1 = Time 1; T2 = Time 2

Rates of student self-reported elevated symptoms of anxiety and depression.

Information by classroom regarding the number of students with elevated scores on either the MASC or CDI at Time 1 is displayed in Table 7. Also shown in the table is the number of students in a given classroom who at Time 2 had twice reported elevated levels of depression or anxiety. The proportion of students in a given class that twice

reported clinical levels of symptoms ranged from 0% (Teachers 3, 6, 7, 10, 11, 13, 16, 17, 22, 25, 26) to 100% (Teacher 24) for CDI scores, and 0% (Teachers 3, 6, 10, 11, 12, 15, 16, 19, 22, 26) to 100% (Teacher 24) for MASC scores. The median number for each symptom type was 8% for CDI scores and 7% for MASC scores.

Table 7. *Participation Rates, Stability of Elevated Self-Report Scores, and Depression and Anxiety Rates by Teacher/Classroom*

Teacher	# Students in Class	# Participants	Participation Rate	# Participants with CDI T-Score ≥ 60 at Time 1	# Participants with CDI T-Score ≥ 60 at Time 2	% Participants with Elevated CDI T-Scores at Time 2	# Participants with MASC T-Score ≥ 60 at Time 2	# Participants with MASC T-Score ≥ 60 at Time 2	% Participants with Elevated MASC T-Scores at Time 2
1	15	8	53%	4	4	50%	3	3	37.5%
2	19	5	26%	1	1	20%	1	1	20%
3	17	8	47%	1	0	0%	0	0	0%
4	16	13	81%	1	1	7.7%	1	1	7.7%
5	18	10	56%	1	1	10%	3	1	10%
6	20	8	40%	0	0	0%	1	0	0%
7	19	11	58%	2	0	0%	1	1	9%
8	19	16	84%	4	2	12.5%	1	1	6.3%
9	19	16	84%	1	1	6.3%	1	1	6.3%
10	20	7	35%	0	0	0%	0	0	0%
11	19	12	63%	1	0	0%	2	0	0%
12	21	7	33%	1	1	14.3%	2	0	0%
13	20	12	60%	0	0	0%	3	2	16.7%
14	19	7	37%	1	1	14.3%	2	1	14.3%
15	18	4	22%	1	1	25%	0	0	0%
16	31	7	23%	0	0	0%	0	0	0%
17	19	8	42%	0	0	0%	1	1	12.5%
18	18	12	67%	1	1	8.3%	4	2	16.7%
19	20	7	35%	2	2	28.6%	1	0	0%
20	19	18	95%	6	3	16.7%	7	5	27.8%
21	24	4	17%	2	1	25%	2	2	50%
22	17	5	29%	0	0	0%	0	0	0%
23	20	12	60%	2	1	8.3%	3	2	16.7%
24	4	1	25%	1	1	100%	1	1	100%
25	21	11	52%	1	0	0%	2	2	18.2%
26	21	9	43%	0	0	0%	0	0	0%
Total (pooled)	493	238	48%	34	22	9.2%	42	27	11.3%

Note. MASC = Multidimensional Anxiety Scale for Children; CDI = Children's Depression Inventory; T1 = Time 1; T2 = Time 2

Tables 8 and 9 provide information regarding the number of students who yielded elevated self-report depression and anxiety scores, respectively, by teacher. Specifically, each individual teacher's frequency (and percentage) of true positive, false negative, true negative, and false positive is provided. As seen in Table 6, teachers nominated a total of 46 students as possibly depressed. A total of 22 students yielded elevated CDI *T*-scores. Table 7 contains information regarding individual teacher proportions for student self-reported anxiety scores. Teachers nominated a total of 48 students as possibly anxious. A total of 27 students self-reported "at-risk" scores on the MASC.

Table 8. *Elevated Depression Self-Report Scores, True Positives, False Negatives, True Negatives, and False Positives by Teacher*

Teacher	Participants	# Participants with CDI T-Score \geq 60 at Time 2	# Participants Teachers Nominated for Depression	# True Positives (i.e., Sensitivity)	# False Negatives (i.e., Missed)	# True Negatives (i.e., Specificity)	# False Positives (i.e., Misidentified)
1	8	4	3	3 (75%)	1 (25%)	4 (100%)	0 (0%)
2	6	1	0	0 (0%)	1 (100%)	5 (100%)	0 (0%)
3	7	0	1	0 (0%)	0 (0%)	6 (85.71%)	1 (14.29%)
4	13	1	3	0 (0%)	1 (100%)	9 (75%)	3 (25%)
5	10	1	1	0 (0%)	1 (100%)	8 (88.89%)	1 (11.11%)
6	8	0	2	0 (0%)	0 (0%)	6 (75%)	2 (25%)
7	11	0	3	0 (0%)	0 (0%)	8 (72.73%)	3 (27.27%)
8	16	2	3	1 (50%)	1 (50%)	12 (85.71%)	2 (14.29%)
9	16	1	3	0 (0%)	1 (100%)	12 (80%)	3 (20%)
10	7	0	1	0 (0%)	0 (0%)	6 (85.71%)	1 (14.29%)
11	12	0	2	0 (0%)	0 (0%)	10 (83.33%)	2 (16.67%)
12	7	1	1	0 (0%)	1 (100%)	5 (83.33%)	1 (16.67%)
13	12	0	2	0 (0%)	0 (0%)	10 (83.33%)	2 (16.67%)
14	7	1	2	1 (100%)	0 (0%)	5 (83.33%)	1 (16.67%)
15	4	1	2	1 (100%)	0 (0%)	2 (66.67%)	1 (33.33%)
16	7	0	0	0 (0%)	0 (0%)	7 (100%)	0 (0%)
17	8	0	2	0 (0%)	0 (0%)	6 (75%)	2 (25%)
18	12	1	2	1 (100%)	0 (0%)	10 (90.91%)	1 (9.09%)
19	7	2	2	2 (100%)	0 (0%)	5 (100%)	0 (0%)
20	18	3	3	1 (33.33%)	2 (66.67%)	13 (86.67%)	2 (13.33%)
21	4	1	0	0 (0%)	1 (100%)	3 (100%)	0 (0%)
22	5	0	1	0 (0%)	0 (0%)	4 (80%)	1 (20%)
23	12	1	3	0 (0%)	1 (100%)	8 (72.73%)	3 (27.27%)
24	1	1	1	1 (100%)	0 (0%)	0 (0%)	0 (0%)
25	11	0	3	0 (0%)	0 (0%)	8 (72.73%)	3 (27.27%)
26	9	0	0	0 (0%)	0 (0%)	9 (100%)	0 (0%)
Total	238	22	46	11 (50%)	11 (50%)	181 (83.80%)	35 (16.17%)

Table 9. *Elevated Anxiety Self-Report Scores, True Positives, False Negatives, True Negatives, and False Positives by Teacher*

Teacher	Participants	# Participants with MASC T-Score \geq 60 at Time 2	# Participants Teachers Nominated for Anxiety	# True Positives (i.e., Sensitivity)	# False Negatives (i.e., Missed)	# True Negatives (i.e., Specificity)	# False Positives (i.e., Misidentified)
1	8	3	3	2 (66.67%)	1 (33.33%)	4 (80%)	1 (20%)
2	6	1	1	1 (100%)	0 (0%)	5 (100%)	0 (0%)
3	7	0	1	0 (0%)	0 (0%)	6 (85.71)	1 (14.29)
4	13	1	3	0 (0%)	1 (100%)	9 (75%)	3 (25%)
5	10	1	2	1 (100%)	0 (0%)	8 (88.89%)	1 (11.11%)
6	8	0	1	0 (0%)	0 (0%)	7 (87.50%)	1 (12.50%)
7	11	1	3	0 (0%)	1 (100%)	7 (70%)	3 (30%)
8	16	1	2	0 (0%)	1 (100%)	13 (86.67%)	2 (13.33%)
9	16	1	3	0 (0%)	1 (100%)	12 (80%)	3 (20%)
10	7	0	0	0 (0%)	0 (0%)	7 (100%)	0 (0%)
11	12	0	3	0 (0%)	0 (0%)	9 (75%)	3 (25%)
12	7	0	0	0 (0%)	0 (0%)	7 (100%)	0 (0%)
13	12	2	3	1 (50%)	1 (50%)	8 (80%)	2 (20%)
14	7	1	1	0 (0%)	1 (100%)	5 (83.33%)	1 (16.67%)
15	4	0	3	0 (0%)	0 (0%)	1 (25%)	3 (75%)
16	7	0	0	0 (0%)	0 (0%)	7 (100%)	0 (0%)
17	8	1	1	0 (0%)	1 (100%)	6 (85.71%)	1 (14.29%)
18	12	2	3	0 (0%)	2 (100%)	7 (70%)	3 (30%)
19	7	0	1	0 (0%)	0 (0%)	6 (85.71)	1 (14.29%)
20	18	5	3	2 (40%)	3 (60%)	12 (92.31%)	1 (7.69%)
21	4	2	2	2 (100%)	0 (0%)	2 (100%)	0 (0%)
22	5	0	0	0 (0%)	0 (0%)	5 (100%)	0 (0%)
23	12	2	3	0 (0%)	2 (100%)	7 (70%)	3 (30%)
24	1	1	0	0 (0%)	1 (100%)	0 (0%)	0 (0%)
25	11	2	3	2 (100%)	0 (0%)	8 (88.89%)	1 (11.11%)
26	9	0	3	0 (0%)	0 (0%)	6 (66.67%)	3 (33.33%)
Total	238	27	48	11 (40.74%)	16 (59.26%)	174 (82.46%)	37 (17.54%)

Teacher accuracy rates. The primary research questions were answered by comparing educator nomination status to student self-report *T*-scores on measures of anxiety and depression. In regards to teacher accuracy, research questions one and two were addressed by examining the percentage of teachers that were able to accurately identify students whose self-reported ratings of either anxiety and/or depression symptoms yielded an elevated score. Proportions were calculated for: (1) the percentage of students correctly identified by teachers (i.e., sensitivity; teacher nominated students who had *T*-scores of ≥ 60), (2) the proportion of internalizing students “missed” by teacher nominations (i.e., miss rate; teachers did not nominate student, but the students’ self-report score indicated at least “at-risk” levels of anxiety and or depression), (3) the proportion of students’ that teachers correctly did not nominate, as these students’ self-report scores did not indicate “at-risk” levels of anxiety or depression (i.e., specificity), and (4) the percentage of students misidentified by teachers (i.e., teacher nominated students whose self-report score did not indicate at least “at-risk” levels of anxiety and/or depression).

Figure 3 defines terms that are important in understanding how the proportions were calculated in the present study, and contains the corresponding values that were used in calculating the overall proportions for both anxiety and depression in the current sample of teachers.

	Student Symptoms in the “At-Risk” or “Clinical” Range per Self-Report ($T \geq 60$)	Student “Not at Risk” per Self-Report of Symptoms ($T < 60$)
Student Nominated by Teacher	Sensitivity <i>True Positive</i> Depression ($n = 11$) Anxiety ($n = 11$)	Misidentified <i>False Positive</i> Depression ($n = 35$) Anxiety ($n = 37$)
Student Not Nominated by Teacher	Miss Rate <i>False Negative</i> Depression ($n = 11$) Anxiety ($n = 16$)	Specificity <i>True Negative</i> Depression ($n = 181$) Anxiety ($n = 174$)

Figure 3. Number of students in sample identified as anxious or depressed by themselves and their teachers.

In the calculation of the overall proportions, the terms displayed in Figure 3 (i.e., true positive, false negative, false positive, true negative) all correspond with values derived from the previously mentioned subsamples. To calculate the overall proportions, the numerical values displayed in Figure 3 were inserted into the appropriate parts of the formula presented by Green and Zar (1899) for both depression and anxiety. The term “true positives” refers to the number of students in relation to the total sample size who were nominated *and* at-risk per self-report, while “false negatives” refers to the proportion of the sample that were not nominated *but* at-risk per self-report. The values

for “true positives” percentages and “false negatives” percentages sum to 100%. These two proportions were also calculated from the same subsample. The term “false positives” refers to the number of students in relation to the total sample size who were nominated *but* were not at-risk per self-report, while “true negatives” refers to the number of students who were not nominated *and* were not at-risk per self-report. These two proportions sum to 100%, and were calculated from the same subsample.

To calculate the proportions of interest, subsamples were first created within the larger dataset. Specifically, based on scores on the self-report rating scales, participants were dichotomized into two groups: (1) at or above a *T*-score of 60 at both survey administrations (i.e., elevated), and (2) *T*-scores below 60 at either time point (i.e., not elevated). Two subsamples were created for depression (i.e., student participants whose self-reported CDI scores were at or above *T*-scores of 60, student participants whose self-reported CDI scores were below 60) and two subsamples for anxiety (i.e., student participants whose self-reported MASC scores were at or above *T*-scores of 60, student participants whose self-reported MASC scores were below 60). Using those subsamples, teacher nomination status (i.e., yes or no) was compared to the dichotomized rating scale variables (i.e., elevated or not elevated) for each measure (i.e., CDI and MASC).

A formula adapted from Green and Zar (1989) was then utilized to derive the proportions of interest (i.e., sensitivity, miss rate, specificity, misidentified) for both depression and anxiety. These proportions were calculated two different ways. First, overall (i.e., participants summed across teachers) proportions were calculated. These eight proportions were calculated by using the values from the subsamples illustrated in Figure 3 and inserting those values into the appropriate parts of the formula. Then, an

average (i.e., mean of individual teachers) proportion was also calculated for each of the proportions of interest. Of note, the average score of the individual teacher proportions differ from the overall proportions in part due to the exclusion of teachers who did not have a student in his or her class with elevated scores on that measure, as those teachers' proportions were not able to be included in calculation of the mean.

Confidence intervals were constructed around the specific proportions to further examine the accuracy of educators in identifying students with elevated levels of anxiety and depression. The following formula for the score method (Newcombe, 1998) was utilized:

$$\frac{2np + z_{\frac{\alpha}{2}}^2 \pm z_{\frac{\alpha}{2}} \sqrt{z_{\frac{\alpha}{2}}^2 + 4npq}}{2(n + z_{\frac{\alpha}{2}}^2)},$$

in which n = the sample size used to calculate the proportion of interest, p = proportion, q = 1- p , and $z = 1.96$.

Research question one: what is the accuracy of teacher nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth, with respect to: (A) sensitivity, (B) miss rate, (C) specificity and (D) misidentified rate?

Sensitivity. To obtain the first depression proportion, sensitivity, a subsample was created that consisted of the 22 students who self-reported CDI T -scores at or above 60 at Time 2. Eleven of the students in that subsample were also nominated by their teachers as possibly depressed. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall sensitivity proportion:

of true positives

(# of true positives + # of false negatives)

The overall teacher depression sensitivity value for the current study was thus calculated as follows:

$$11 / (11 + 11) = 50\%$$

Results of this analysis indicated that the overall sensitivity rate using teacher nominations to identify youth with elevated levels of depression is 50%, meaning that teachers accurately nominated approximately one-half of participants who did in fact reliably self-report “at-risk” levels of depression.

A 95% confidence interval was constructed around the proportion, yielding a lower limit of 30.72% and an upper limit of 69.27%. In other words, there is a 95% chance that the true sensitivity of teacher nominations to identify children with elevated depression scores falls within the range of 30.72% to 69.27%.

Each individual teacher’s sensitivity rate, and the confidence interval associated with this proportion, is presented in Table 10. As shown in the table, the individual teacher sensitivity proportions ranged from 0 to 100%. The same formula that was used to calculate the overall sensitivity proportion was used to calculate sensitivity proportions for the each individual teacher within the sample, using values reported previously in Table 8. For example, the sensitivity proportion for Teacher 1 was calculated as follows:

$$3 / (3 + 1) = 75\%,$$

in which 3 corresponds to the number of true positives (i.e., the number of students nominated by their teacher as depressed and *did* self-report CDI scores ≥ 60) and 1 corresponds to the number of false negatives (i.e., the number of students who were not

nominated, *but did* self-report CDI scores ≥ 60). Therefore, 75% represents the proportion of students that Teacher 1 was able to correctly identify as having elevated depressive symptoms.

The average sensitivity rate was calculated by summing each of the individual teacher’s sensitivity proportions, and then dividing that figure by the total number of teachers who had a sensitivity proportion (i.e., had at least one student in their class who self-reported elevated levels of depression). Specifically, the average sensitivity proportion was calculated as follows:

$$75\% + 0\% + 0\% + 0\% + 50\% + 0\% + 0\% + 100\% + 100\% + 100\% + 100\% + 33.33\% + 0\% + 0\% + 100\% = 658.33$$

$$658.33 / 15 = 43.88\%$$

In sum, the average depression sensitivity proportion across eligible teachers is 43.88%. Notably, only 15 teachers’ sensitivity proportions were included in this calculation, as 11 teachers did not have any students within their class who reported “at-risk” depression scores (and therefore could not be included in the average).

Miss rate. The overall depression miss rate proportion was calculated using the same sample from which the overall sensitivity proportion was calculated (i.e., 22 students who self-reported CDI *T*-scores at or above 60 at Time 2). The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall miss rate proportion:

$$\frac{\text{\# of false negatives}}{(\text{\# of false negatives} + \text{\# of true positives})}$$

Thus, the overall miss rate proportion for the current study was calculated as follows:

$$11 / (11+11) = 50\%$$

The overall depression miss rate for teachers is 50%, meaning that teachers “missed” one-half of students by not nominating as possibly depressed those students whose self-reported depression scores actually fell in the “at-risk” range. Of note, the miss rate proportion is also the converse of the sensitivity proportion.

A 95% confidence interval constructed around this proportion yielded a lower limit of 30.72% and an upper limit of 69.27%. In other words, there is a 95% chance that the true miss rate of teacher nominations falls within the range of 30.72% to 69.27%.

Each individual teacher’s miss rate, and the confidence interval associated with this proportion, is presented in Table 10. As shown in the table, the individual teacher miss rate proportions ranged from 0 to 100%. The same formula that was used to calculate the overall miss rate proportion was used to calculate the miss rate proportions for the each individual teacher within the sample, using values reported previously in Table 6. For example, the individual miss rate proportion for Teacher 1 was calculated as follows:

$$1 / (1+3) = 25\%,$$

where 1 corresponds to the number of false negatives (i.e., the number of students who were *not* nominated by their teacher, but *did* self-report CDI scores ≥ 60) and 3 corresponds to the number of true positives (i.e., the number of students nominated by their teacher as depressed and *did* self-report CDI scores ≥ 60).

The average miss rate proportion was calculated by summing each of the individual teacher’s miss rate proportion, and then dividing that figure by the total

number of teachers who had a miss rate proportion (i.e., had at least one student in their class who self-reported elevated levels of depression). Specifically, the average sensitivity proportion was calculated as follows:

$$25\% + 100\% + 100\% + 100\% + 50\% + 100\% + 100\% + 0\% \\ + 0\% + 0\% + 0\% + 66.67\% + 100\% + 100\% + 0\% = 841.67 \\ 841.67 / 15 = 56.11\%$$

In sum, the average miss rate proportion across eligible teachers is 56.11%. Of note, only 15 teachers' miss rate proportions were included in this calculation, as 11 teachers did not have any students within their class who reported "at-risk" depression scores (and therefore could not be included in the average).

Specificity. The overall depression specificity proportion was calculated using a different subsample than the one from which the overall sensitivity and miss rate proportions were calculated. This separate subsample consisted of the 216 students who self-reported CDI *T*-scores less than 60 (i.e., not "at-risk"). Thirty-five of the students within this subsample were nominated by their teachers as possibly depressed. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall sensitivity proportion:

$$\frac{\text{\# of true negatives}}{(\text{\# of false positives} + \text{\# of true negatives})}$$

Thus, this particular specificity proportion was calculated as follows:

$$181 / (35 + 181) = 83.80\%$$

In sum, results of this analysis indicated that the overall specificity rate for teacher nominations to identify youth with typical levels of depressive symptoms (i.e., *T*-score <

60) is 83.80%. Teachers were able to correctly identify 83.80% of students who did not self-report elevated levels of depression, by intentionally not nominating them.

A 95% confidence interval constructed around the proportion yielded a lower limit of 78.33% and an upper limit of 88.14%. In other words, there is a 95% chance that the true specificity of teacher nominations falls between 78.33% and 88.14%.

Each individual teacher's specificity rate, and the confidence interval associated with this proportion, can be seen in Table 10. Also as shown in the table, the individual teacher specificity rate proportions ranged from 72.73% to 100%. The same formula that was used to calculate the overall specificity proportion was used to calculate specificity rate proportions for the each individual teacher within the sample, using values reported previously in Table 8. For example, the individual specificity rate proportion for Teacher 1 was calculated as follows:

$$4 / (0 + 4) = 100\%,$$

where 4 corresponds to the number of true negatives (i.e., teacher did not nominate student and student did not self-report CDI T-scores ≥ 60), and 0 corresponds to the number of false positives (i.e., teacher nominated student, as possibly depressed, but student self-reported CDI T-scores < 60).

The average depression specificity proportion was calculated by summing each of the individual teacher's specificity proportions, and then dividing that figure by the total number of teachers who had a specificity proportion (i.e., had at least one student in their class who did not self-report elevated levels of depression). Specifically, the average sensitivity proportion was calculated as follows:

$$100\% + 100\% + 85.71\% + 75\% + 88.89\% + 75\% + 72.73\% +$$

$$\begin{aligned}
& 85.71\% + 80\% + 85.71\% + 83.33\% + 83.33\% + 83.33\% + 83.33\% + \\
& 66.67\% + 100\% + 75\% + 90.91\% + 100\% + 86.67\% + 100\% + 80\% + \\
& 72.73\% + 72.73\% + 100\% = 2126.78 \\
& 2126.78 / 25 = 85.07\%
\end{aligned}$$

Thus, the average specificity proportion is 85.07%, with 25 teachers' proportions being included in that mean. Of note, one teacher's specificity proportion was not included in the overall average due to the fact that this teacher did not have at least one student in the class who self-reported CDI *T*-scores < 60.

Misidentified rate. The overall depression misidentified rate proportion was calculated using the same sample from which the overall specificity proportion was calculated (i.e., 216 students who self-reported CDI *T*-scores < 60 at Time 2). The following formula proposed by Green and Zar (1989) was used to calculate the overall misidentified rate:

$$\frac{\text{\# of false positives}}{\text{\# of false positives} + \text{\# of true negatives}}$$

The aforementioned misidentified proportion was thus calculated as follows:

$$35 / (35 + 181) = 16.20\%.$$

In sum, the overall teacher misidentified rate was 16.20%, meaning that these teachers misidentified (i.e., suggested as possibly depressed despite the students' typical levels of self-reported symptoms) 16.20% of students who *did not* self-report elevated depression scores. Of note, the misidentified rate is also the converse of the specificity rate.

A 95% confidence interval constructed around the proportion yielded a lower limit of 11.86% and an upper limit of 21.66%. In other words, there is a 95% chance that the true misidentified rate of teachers falls between 11.86% and 21.66%.

Each individual teacher's misidentified rate, and the confidence interval associated with this proportion, can be seen in Table 10. Also as shown in the table, the individual teacher misidentified rate proportions ranged from 0% to 33.33%. The same formula that was used to calculate the overall misidentified proportion was used to calculate misidentified rate proportions for the each individual teacher within the sample, using values reported previously in Table 8. For example, the misidentified rate proportion for Teacher 1 was calculated as follows:

$$0 / (0 + 4) = 0\%,$$

where 0 corresponds to the number of false positives (i.e., teacher nominated student but student did not self-report CDI *T*-scores ≥ 60), and 4 corresponds to the number of true negatives (i.e., teacher did not nominate student, and student did not self-report CDI *T*-scores ≥ 60).

The average depression misidentified rate proportion was calculated by summing each of the individual teacher's misidentified rate proportions, and then dividing that figure by the total number of teachers who had a misidentified rate proportion (i.e., had at least one student in their class who did not self-report elevated levels of depression).

Specifically, the average misidentified rate proportion was calculated as follows:

$$\begin{aligned} &0\% + 0\% + 14.29\% + 25\% + 11.11\% + 25\% + 27.27\% + \\ &14.29\% + 20\% + 14.29\% + 16.67\% + 16.67\% + 16.67\% + 16.67\% + \\ &33.33\% + 0\% + 25\% + 9.09\% + 0\% + 13.33\% + 0\% + 20\% \end{aligned}$$

$$+ 27.27\% + 27.27\% + 0\% = 373.22$$

$$373.22 / 25 = 14.92\%.$$

Thus, the average misidentified rate was 14.92%, with 25 teachers' proportions being included in that mean. Of note, one teacher's misidentified rate proportion was not included in the overall average due to the fact that this teacher did not have at least one student in the class who self-reported CDI *T*-scores < 60.

The sensitivity, miss rates, specificity, and misidentified rates, as well as confidence intervals for each proportion by each individual teacher, are presented in Table 10. Also included in the table are the overall proportions, as well as the average of the individual teacher proportions.

Table 10. Accuracy of Teacher Nominations to Identify Youth with Elevated Levels of Depression

Teacher	Sensitivity	95% CI	Miss Rate	95% CI	Specificity	95% CI	Misidentified Rate	95% CI
1	75.00%	30.06%-95.44%	25.00%	4.55%-69.96%	100%	51.01-100%	0%	0.00%-48.98%
2	0%	0.00%-79.34%	100%	20.65%-100%	100%	56.55%-100%	0%	0.00%-43.44%
3	*	N/A	*	N/A	85.71%	58.97%-96.16%	14.29%	3.83%-41.02%
4	0%	0.00%-79.34%	100%	20.65%-100%	75.00%	46.77%-91.10%	25.00%	8.08%-53.23%
5	0%	0.00%-79.34%	100%	20.65%-100%	88.89%	56.50%-98.01%	11.11%	1.98%-43.49%
6	*	N/A	*	N/A	75.00%	40.92%-92.85%	25.00%	7.14%-59.07%
7	*	N/A	*	N/A	72.73%	43.43%-90.25%	27.27%	9.74%-56.56%
8	50.00%	9.44%-90.55%	50.00%	9.44%-90.55%	85.71%	60.05%-90.99%	14.29%	4.16%-38.96%
9	0%	0.00%-79.34%	100%	20.65%-100%	80.00%	54.81%-92.95%	20.00%	7.04%-45.18%
10	*	N/A	*	N/A	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
11	*	N/A	*	N/A	83.33%	55.19%-95.30%	16.67%	4.69%-44.80%
12	0%	0.00%-79.34%	100%	20.65%-100%	83.33%	43.64%-96.99%	16.67%	3.02%-56.35%
13	*	N/A	*	N/A	83.33%	55.19%-95.30%	16.67%	4.69%-44.80%
14	100%	20.65%-100%	0%	0.00%-79.34%	83.33%	43.64%-93.99%	16.67%	3.02%-56.35%
15	100%	20.65%-100%	0%	0.00%-79.34%	66.67%	20.76%-93.85%	33.33%	6.14%-79.23%
16	*	N/A	*	N/A	100%	64.57%-100%	0%	0.00%-35.42%
17	*	N/A	*	N/A	75.00%	40.92%-92.85%	25.00%	7.14%-59.07%
18	100%	20.65%-100%	0%	0.00%-79.34%	90.91%	62.26%-98.38%	9.09%	1.62%-37.73%
19	100%	20.65%-100%	0%	0.00%-79.34%	100%	56.55%-100%	0%	0.00%-43.44%
20	33.33%	6.03%-79.05%	66.67%	N/A	86.67%	62.12%-96.26%	13.33%	3.73%-37.87%
21	0%	0.00%-79.34%	100%	20.65%-100%	100%	43.85%-100%	0%	0.00%-56.14%
22	*	N/A	*	N/A	80.00%	37.55%-96.38%	20.00%	3.61-62.44%
23	0%	0.00%-79.34%	100%	20.65%-100%	72.73%	43.43%-90.25%	27.27%	9.74%-56.56%
24	100%	20.65%-100%	0%	0.00%-79.34%	#	N/A	#	N/A
25	*	N/A	*	N/A	72.73%	74.12%-100%	27.27%	9.74%-56.56%
26	*	N/A	*	N/A	100%	70.09%-100%	0%	0.00%-29.91%
Overall	50.00%	30.72%-69.27%	50.00%	30.72%-69.27%	83.80%	78.33%-88.14%	16.20%	11.85%-21.66%
Average	43.88%	25.22%-75.72%	56.11%	29.51%-74.62%	85.07%	62.68%-92.17%	14.92%	6.15%-34.17%

Note: * indicates that the specific teacher had no students with CDI scores within the “at-risk” range, and therefore the corresponding proportion was unable to be calculated; # indicates that the specific teacher had no students with CDI scores within the “normal” range, and therefore the corresponding proportion was unable to be calculated

Research question two: what is the accuracy of teacher nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth, with respect to: (A) sensitivity, (B) miss rate, (C) specificity and (D) misidentified rate?

Sensitivity. To obtain the first overall anxiety proportion, sensitivity, a subsample was created that consisted of the 27 students who self-reported MASC *T*-scores at or above 60 at Time 2. Eleven of the students in that subsample were nominated by their teachers as possibly anxious. The formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall sensitivity proportion.

$$\frac{\text{\# of true positives}}{\text{\# of true positives} + \text{\# of false negatives}}$$

The sensitivity value for the current study was thus calculated as follows:

$$11 / (11 + 16) = 40.74\%.$$

Results of this analysis indicated that the overall anxiety sensitivity rate using teacher nominations to identify youth with elevated levels of anxiety is 40.74%, meaning that teachers accurately nominated approximately forty percent of participants who did in fact reliably self-report “at-risk” levels of anxiety.

A 95% confidence interval constructed around the proportion yielded a lower limit of 25.52% and an upper limit of 59.27%. In other words, there is a 95% chance that the true accuracy rate for teacher nomination to identify children with anxiety falls between 25.52% and 59.27%.

Each individual teacher’s sensitivity rate, and the confidence interval associated with this proportion, is presented in Table 11. As shown in the table, the individual

teacher sensitivity proportions ranged from 0 to 100%. The same formula that was used to calculate the overall sensitivity proportion was used to calculate sensitivity proportions for each individual teacher within the sample, using values reported previously in Table 9. For example, the sensitivity proportion for Teacher 1 was calculated as follows:

$$2 / (2+1) = 66.67\%,$$

where 2 corresponds to the number of true positives (i.e., the number of students nominated by their teacher as depressed and *did* self-report MASC scores ≥ 60) and 1 corresponds to the number of false negatives (i.e., the number of students who were not nominated, but *did* self-report MASC scores ≥ 60). Therefore, 66.67% represents the proportion of students that Teacher 1 was able to correctly identify as having elevated anxiety symptoms.

The average anxiety sensitivity rate was calculated by summing each of the individual teacher's sensitivity proportions, and then dividing that figure by the total number of teachers who had a sensitivity proportion (i.e., had at least one student in their class who self-reported elevated levels of anxiety). Specifically, the average sensitivity proportion was calculated as follows:

$$\begin{aligned} &66.67\% + 100\% + 0\% + 100\% + 0\% + 0\% + 0\% + 50\% + \\ &0\% + 0\% + 0\% + 40\% + 100\% + 0\% + 0\% + 100\% = 556.67 \\ &556.67 / 16 = 34.79\%. \end{aligned}$$

In sum, the mean sensitivity proportion for teachers' ability to identify students with anxiety is 34.79%, with 16 teacher's sensitivity proportions being included in that average. Of note, 10 teachers' sensitivity proportions were excluded from calculation of

the mean, as those 10 teachers did not have at least one student within their class who reported “at-risk” anxiety scores.

Miss rate. The overall anxiety miss rate proportion was calculated using the same sample from which the overall sensitivity proportion was calculated (i.e., 27 students who self-reported MASC *T*-scores at or above 60 at Time 2). The formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall miss rate proportion.

$$\frac{\text{\# of false negatives}}{(\text{\# of false negatives} + \text{\# of true positives})}$$

The overall miss rate proportion for the current study was thus calculated as follows:

$$16 / (16 + 11) = 59.26\%.$$

The overall miss rate for teachers is 59.26%, meaning that teachers “missed” almost sixty percent of students by not nominating those students whose self-reported anxiety scores fell in the “at-risk” range.

A 95% confidence interval constructed around the proportion yielded a lower limit of 40.72% and an upper limit of 75.48%. In other words, there is a 95% chance that the true miss rate falls within the range of 40.72% and 75.48%.

Each individual teacher’s miss rate, and the confidence interval associated with this proportion, is presented in Table 11. As shown in the table, the individual teacher miss rate proportions ranged from 0 to 100%. The same formula that was used to calculate the overall miss rate proportion was used to calculate miss rate proportions for the each individual teacher within the sample, using values reported previously in Table 9. For example, the overall miss rate proportion for Teacher 1 was calculated as follows:

$$1 / (1+2) = 33.33\%,$$

where 1 corresponds to the number of false negatives (i.e., the number of students who were *not* nominated by their teacher, but *did* self-report MASC scores ≥ 60) and 2 corresponds to the number of true positives (i.e., the number of students nominated by their teacher as depressed and *did* self-report MASC scores ≥ 60).

The average anxiety miss rate proportion was calculated by summing each of the individual teacher's miss rate proportions, and then dividing that figure by the total number of teachers who had a miss rate proportion (i.e., had at least one student in their class who self-reported elevated levels of anxiety). Specifically, the average sensitivity proportion was calculated as follows:

$$33.33\% + 0\% + 100\% + 0\% + 100\% + 100\% + 100\% + 50\% + \\ 100\% + 100\% + 100\% + 60\% + 0\% + 100\% + 100\% + 0\% = 1043.33 \\ 1043.33 / 16 = 65.21\%.$$

In sum, the average miss rate for teachers was 65.21%, calculated from 16 teachers' individual proportions, as 11 teachers did not have at least one student within their class that reported "at-risk" anxiety scores.

Specificity. The overall anxiety specificity proportion was calculated using a different subsample than the one from which the overall sensitivity and miss rate proportions were calculated. This separate subsample consisted of the 211 students who self-reported MASC *T*-scores less than 60 (i.e., not "at-risk"). Thirty-seven of the students within this subsample were nominated by their teachers as possibly anxious. The formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall specificity proportion.

of true negatives

(# of false positives + # of true negatives)

Thus, this particular specificity proportion was calculated as follows:

$$174 / (37 + 174) = 82.46\%.$$

In sum, the overall specificity rate is 82.46%, meaning that teachers were correctly able to identify approximately 82.46% of students who reported typical levels of anxiety (i.e., T -score < 60). In other words, teachers were able to correctly identify 82.46% of students who did *not* self-report elevated levels of anxiety, by *intentionally not* nominating them.

A 95% confidence interval constructed around the proportion yielded a lower limit of 76.76% and an upper limit of 86.99%. In other words, there is a 95% chance that the true specificity rate falls between 76.76% and 86.99%.

Each individual teacher's specificity rate, and the confidence interval associated with this proportion, can be seen in Table 11. Also as shown in the table, the individual teacher specificity rate proportions ranged from 25% to 100%. The same formula that was used to calculate the overall specificity proportion was used to calculate specificity rate proportions for the each individual teacher within the sample, using values reported previously in Table 9. For example, the overall specificity rate proportion for Teacher 1 was calculated as follows:

$$4 / (1 + 4) = 80\%,$$

where 4 corresponds to the number of true negatives (i.e., teacher did not nominate student *and* student did not self-report MASC T -scores ≥ 60), and 1 corresponds to the number of false positives (i.e., teacher nominated student, as possibly anxious, but student self-reported MASC T -scores < 60).

The average anxiety specificity proportion was calculated by summing each of the individual teacher's specificity proportions, and then dividing that figure by the total number of teachers who had a specificity proportion (i.e., had at least one student in their class who did *not* self-report elevated levels of anxiety). Specifically, the average sensitivity proportion was calculated as follows:

$$\begin{aligned}
 &80\% + 100\% + 85.71\% + 75\% + 88.89\% + 87.50\% + 70\% + \\
 &86.67\% + 80\% + 100\% + 75\% + 100\% + 80\% + 83.33\% + \\
 &25\% + 100\% + 85.71\% + 70\% + 85.71\% + 92.31\% + 100\% + \\
 &100\% + 70\% + 88.89\% + 66.67\% = 2076.39 \\
 &2076.39 / 25 = 83.06\%.
 \end{aligned}$$

In sum, the average specificity proportion is 83.06%, with 25 teachers' proportions being included in that mean. Of note, one teacher's specificity proportion was not included in the overall average due to the fact that this individual did not have at least one student in the class who self-reported MASC *T*-scores < 60.

Misidentified rate. The overall anxiety misidentified rate proportion was calculated using the same sample from which the overall specificity proportion was calculated (i.e., 211 students who self-reported MASC *T*-scores < 60 at Time 2). The formula proposed by Green and Zar (1989) was used to calculate the overall misidentified rate.

$$\frac{\text{\# of false positives}}{\text{\# of false positives} + \text{\# of true negatives}}$$

Therefore, the aforementioned misidentified proportion was calculated as follows:

$$37 / (37 + 174) = 17.54\%.$$

The overall misidentified rate for all teachers is 17.54%, meaning that teachers nominated 17.54% of their students as anxious when those students *did not* self-report “at-risk” anxiety scores.

A 95% confidence interval constructed around the proportion yielded a lower limit of 13.00% and an upper limit of 23.23%. In other words, there is a 95% chance that the true misidentified rate falls between 13.00% and 23.23%.

Each individual teacher’s misidentified rate, and the confidence interval associated with this proportion, can be seen in Table 11. As shown in the table, the individual teacher misidentified rate proportions ranged from 0% to 75%. The same formula that was used to calculate the overall misidentified proportion was used to calculate misidentified rate proportions for the each individual teacher within the sample, using values reported previously in Table 9. For example, the misidentified rate proportion for Teacher 1 was calculated as follows:

$$1 / (1 + 4) = 20\%,$$

where 1 corresponds to the number of false positives (i.e., teacher nominated student *but* student did not self-report MASC *T*-scores ≥ 60), and 4 corresponds to the number of true negatives (i.e., teacher did not nominate student, *and* student did not self-report MASC *T*-scores ≥ 60).

The average anxiety misidentified rate proportion was calculated by summing each of the individual teacher’s misidentified rate proportions, and then dividing that figure by the total number of teachers who had a misidentified rate proportion (i.e., had at least one student in their class who did *not* self-report elevated levels of anxiety). Specifically, the average misidentified rate proportion was calculated as follows:

$$\begin{aligned}
& 20\% + 0\% + 14.29\% + 25\% + 11.11\% + 12.50\% + 30\% + 13.33\% + \\
& 20\% + 0\% + 25\% + 0\% + 20\% + 16.67\% + 75\% + 0\% + 14.29\% + 30\% + \\
& 14.29\% + 7.69\% + 0\% + 0\% + 30\% + 11.11\% + 33.33\% = 423.61\% \\
& 423.61 / 25 = 16.94\%.
\end{aligned}$$

Thus, the average misidentified rate is 16.94%, with 25 teachers' proportions being included in that mean. Of note, one teacher's misidentified rate proportion was not included in the overall average due to the fact that this individual did not have at least one student in the class who self-reported MASC *T*-scores < 60.

The sensitivity, miss rates, specificity, and misidentified rates, as well as confidence intervals for each proportion by each individual teacher are presented in Table 11. Also included in the table are the overall proportions, as well as the average of the individual teacher proportions.

Table 11. Accuracy of Teacher Nominations to Identify Youth with Elevated Levels of Anxiety

Teacher	Sensitivity	95% CI	Miss Rate	95% CI	Specificity	95% CI	Misidentified Rate	95% CI
1	66.67%	24.53%-92.51%	33.33%	7.49%-75.46%	80%	35.74%-96.38%	20.00%	3.61%-62.44%
2	100%	20.65%-100%	0%	0.00%-79.34%	100%	56.66%-100%	0%	0.00%-43.44%
3	*	N/A	*	N/A	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
4	0%	0.00%-79.34%	100%	20.65%-100%	75%	46.77%-91.10%	25.00%	8.89%-53.23%
5	100%	20.65%-100%	0%	0.00%-79.34%	88.89%	56.50%-98.01%	11.11%	1.98%-43.49%
6	*	N/A	*	N/A	87.50%	52.91%-97.76%	12.50%	2.23%-47.08%
7	0%	0.00%-79.34%	100%	20.65%-100%	70.00%	39.67%-89.22%	30.00%	10.77%-60.32%
8	0%	0.00%-79.34%	100%	20.65%-100%	86.67%	61.13%-96.41%	13.33%	3.73%-37.87%
9	0%	0.00%-79.34%	100%	20.65%-100%	80.00%	54.81%-92.95%	20.00%	7.04%-45.18%
10	*	N/A	*	N/A	100%	64.57%-100%	0%	0.00%-35.42%
11	*	N/A	*	N/A	75.00%	46.77%-91.10%	25.00%	8.89%-53.23%
12	*	N/A	*	N/A	100%	64.57%-100%	0%	0.00%-35.42%
13	50.00%	9.44%-90.55%	50.00%	9.44%-90.55%	80.00%	49.01%-94.33%	20.00%	5.66%-50.98%
14	0%	0.00%-79.34%	100%	20.65%-100%	83.33%	43.64%-96.99%	16.67%	3.00%-56.35%
15	*	N/A	*	N/A	25.00%	4.55%-69.93%	75.00%	30.06%-95.44%
16	*	N/A	*	N/A	100%	64.57%-100%	0%	0.00%-35.42%
17	0%	0.00%-79.34%	100%	20.65%-100%	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
18	0%	0.00%-65.76%	100%	34.24%-100%	70.00%	39.67%-89.22%	30.00%	10.77%-60.32%
19	*	N/A	*	N/A	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
20	40.00%	11.75%-76.93%	60.00%	23.07%-88.24%	92.31%	66.69%-98.63%	7.69%	49.72%-91.81%
21	100%	34.24%-100%	0%	0.00%-65.76%	100%	34.24%-100%	0%	0.00%-65.76%
22	*	N/A	*	N/A	100%	56.55%-100%	0%	0.00%-43.44%
23	0%	0.00%-65.76%	100%	34.24%-100%	70%	39.67%-89.22%	30.00%	10.76%-60.32%
24	0%	0.00%-79.34%	100%	20.65%-100%	#	N/A	#	N/A
25	100%	34.24%-100%	0%	0.00%-65.76%	88.89%	56.55%-98.01%	11.11%	1.98%-42.49%
26	*	N/A	*	N/A	66.67%	35.42%-87.94%	33.33%	12.05%-64.57%
Overall	40.74%	25.52%-59.27%	59.26%	40.72%-75.48%	82.46%	76.76%-86.99%	17.54%	13.00%-23.23%
Average	34.79%	16.56%-58.89%	65.21%	41.10%-83.43%	83.06%	64.27%-93.03%	16.94%	6.96%-35.72%

Note: * indicates that the specific teacher had no students with MASC scores within the “at-risk” range, and therefore the corresponding proportion was unable to be calculated; # indicates that the specific teacher had no students with MASC scores within the “normal” range, and therefore the corresponding proportion was unable to be calculated.

School-based mental health professional accuracy rates. Research questions three and four were answered by comparing school-based mental health professionals' nomination status to student self-report *T*-scores on measures of anxiety and depression. In regards to school-based mental health professional accuracy, these research questions were addressed by examining the percentage of school-based mental health professionals who were able to accurately identify students whose self-reported ratings of either anxiety and/or depression symptoms yielded an elevated score. Proportions were calculated for: (1) the percentage of symptomatic students correctly identified by school-based mental health professionals (i.e., sensitivity; school-based mental health professional nominated students who had *T*-scores of ≥ 60), (2) the proportion of internalizing students "missed" by school-based mental health professionals' nominations (i.e., miss rate; school-based mental health professional did not nominate student, but the students' self-report score indicated at least "at-risk" levels of anxiety and or depression), (3) the proportion of students' that school-based mental health professionals correctly did not nominate, as their self-report scores did not indicate "at-risk" levels of anxiety or depression (i.e., specificity), and (4) the percentage of students misidentified by school-based mental health professionals (i.e., school-based mental health professional nominated students whose self-report score did not indicate at least "at-risk" levels of anxiety and/or depression).

Unlike their teacher counterparts, school-based mental health professionals were given the opportunity to indicate that they did not know a student (i.e., check a box on nomination form titled "I do not know this student"), so that a distinction could be made between those students intentionally not nominated by a school-based mental health

professional (i.e., students who the mental health professional thoughtfully judged to not demonstrate anxious or depressed symptoms) from those students that they did not know by name (and thus could not be judged as symptomatic or not).

The proportions of interest for the school-based mental health professional sample were created by conceptualizing all of the school-based mental health professionals at a given school as a team, as opposed to examining the overall accuracy rate for the entire group. This approach was utilized as many mental health professionals collaborate as part of a larger team when working in schools, and therefore would be likely nominating students as part of a group decision (vs. an individual educator's decision). Therefore, a student was "identified" if at least one member of the team nominated that student as appearing either depressed or anxious (depending on the specific research question). For example, if a student was nominated by the school psychologist as possibly depressed (but not the school social worker or guidance counselor), and results of the CDI administration yielded an "at-risk" score (i.e., $T\text{-score} \geq 60$) the school-based mental health *team* would have correctly identified that student, indicating high sensitivity. To create each proportion of interest, a separate subsample was created in which only the students who were nominated by at least one mental health professional at the school were included. Then, for each specific proportion, students whose self-reported T -scores did not meet a certain criteria (i.e., $T\text{-score} \geq 60$ or $T\text{-score} < 60$) were removed. For example, for the depression sensitivity proportion, all students' whose T -scores on the CDI fell below 60 were removed, leaving only the students that were nominated by at least one school-based mental health professional *and* whose self-reported T -scores were greater or equal to 60. For this specific proportion, 10 students were correctly identified

by the school-based mental health professional team (i.e., true positive), and 12 students were not nominated by a team member but did self-report “at-risk” *T*-scores on the CDI. Those values were used to calculate the overall depression sensitivity proportion.

The formula adapted from Green and Zar (1989) was utilized to derive the proportions of interest (i.e., sensitivity, miss rate, specificity, misidentified) for both depression and anxiety. These proportions were calculated two different ways. First, overall (i.e., pooled across school-based mental health professionals in a given school) proportions were calculated. These eight proportions were calculated using the values from the subsamples illustrated in Figure 4 and inserting those values into the appropriate parts of the formula. Then, an average (i.e., mean of individual school-based mental health professionals) proportion was also calculated for each of the proportions of interest.

Finally, confidence intervals were constructed around the specific proportions to further examine the accuracy of school-based mental health professionals in identifying students with elevated levels of anxiety and depression. The following formula for the score method (Newcombe, 1998) was utilized:

$$\frac{2np + z_{\alpha}^2 \pm z_{\alpha} \sqrt{z_{\alpha}^2 + 4npq}}{2(n + z_{\alpha}^2)}$$

where n = the sample size used to calculate the proportion of interest, p = proportion, $q = 1-p$, and $z = 1.96$.

Figure 4 reviews the relevant terms that are important in understanding how the proportions were calculated in the present study, as well as contains the corresponding

values that were used in calculating the overall proportions for both anxiety and depression in the current sample of school-based mental health professionals.

	Student Symptoms in the “At-Risk” or “Clinical” Range per Self-Report ($T \geq 60$)	Student “Not at Risk” per Self-Report of Symptoms ($T < 60$)
Student Nominated by School-based Mental Health Professional Team	Sensitivity <i>True Positive</i> Depression ($n = 10$) Anxiety ($n = 9$)	Misidentified <i>False Positive</i> Depression ($n = 67$) Anxiety ($n = 74$)
Student Not Nominated by School-based Mental Health Professional Team	Miss Rate <i>False Negative</i> Depression ($n = 12$) Anxiety ($n = 18$)	Specificity <i>True Negative</i> Depression ($n = 149$) Anxiety ($n = 137$)

Figure 4. Number of students in sample identified as anxious or depressed by themselves and teams of mental health professionals at their schools.

Tables 12 and 13 provide information regarding the proportion of students who yielded elevated self-report depression and anxiety scores, respectively, as rated by each individual school-based mental health professional. Specifically, each individual school-based mental health professional’s frequency (and percentage) of true positive, false negative, true negative, and false positive is provided. These tables each contain the number of students that each individual school-based mental health professional knew, as

well as the number of students that each mental health professional nominated for depression (Table 12) and anxiety (Table 13).

Table 12

Elevated Depression Self-Report Scores, True Positives, False Negatives, True Negatives, and False Positives by School-Based Mental Health (SBMH) Professional

SBMH Professional	Participants	# Participants with CDI T-Score \geq 60 at Time 2	# Participants Known by SBMH Professional	# Participants SBMH Professional Nominated for Depression	# True Positives (i.e., Sensitivity)	# False Negatives (i.e., Missed)	# True Negatives (i.e., Specificity)	# False Positives (i.e., Misidentified)
1	114	10	12	6	0 (0%)	1 (100%)	5 (45.45%)	6 (54.54%)
2	114	10	7	1	0 (0%)	0 (0%)	6 (85.71%)	1 (14.29%)
3	114	10	95	18	1 (11.11%)	8 (88.88%)	69 (80.23)	17 (19.77%)
4	114	10	102	15	3 (37.5%)	5 (62.50%)	82 (87.23%)	12 (12.77%)
5	124	12	113	42	6 (50.00%)	6 (50.00%)	65 (64.36%)	36 (35.64%)
6	124	12	30	9	2 (40.00%)	3 (60.00%)	18 (72.00%)	7 (28.00%)
7	124	12	42	6	1 (25.00%)	3 (75.00%)	33 (86.84%)	5 (13.16%)
Total	238	22	N/A	97	10 (45.45%)	12 (54.54%)	149 (68.98%)	67 (31.02%)

Note. SBMH Professionals 1-4 work at School A, SBMH Professionals 5-7 work at School B.

Note. SBMH Professionals 1, 2, and 6 are school psychologists, SBMH Professionals 3 and 7 are school social workers, and SBMH Professionals 4 and 5 are school guidance counselors.

Note. The total number of participants that SBMH professionals nominated reflects the simple sum of the individual SBMH professional nominations (i.e., sum of students nominated by SBMH professionals 1-7), which differs from the corrected total (i.e., corrected for students nominated by one or more SBMH professional) used to calculate the overall proportions.

Table 13

Elevated Anxiety Self-Report Scores, True Positives, False Negatives, True Negatives, and False Positives by School-Based Mental Health (SBMH) Professional

SBMH Professional	Participants	# Participants with MASC T-Score \geq 60 at Time 2	# Participants Known by SBMH Professional	# Participants SBMH Professional Nominated for Anxiety	# True Positives (i.e., Sensitivity)	# False Negatives (i.e., Missed)	# True Negatives (i.e., Specificity)	# False Positives (i.e., Misidentified)
1	114	9	12	6	1 (100%)	0 (0%)	6 (54.54%)	5 (45.45%)
2	114	9	7	1	0 (0%)	0 (0%)	6 (85.71%)	1 (14.29%)
3	114	9	95	17	2 (22.22%)	7 (77.77%)	71 (82.56%)	15 (17.44%)
4	114	9	102	14	3 (37.50%)	5 (62.50%)	83 (88.30%)	11 (11.70%)
5	124	18	113	37	7 (41.18%)	10 (58.82%)	66 (68.75%)	30 (31.25%)
6	124	18	30	9	4 (100%)	0 (0%)	21 (80.77%)	5 (19.23%)
7	124	18	42	38	7 (100%)	0 (0%)	4 (11.43%)	31 (88.57%)
Total	238	27	N/A	122	18 (66.67%)	9 (33.33%)	137 (64.93)	74 (35.07%)

Note. SBMH Professionals 1-4 work at School A, SBMH Professionals 5-7 work at School B.

Note. SBMH Professional 1, 2, and 6 are school psychologists, SBMH Professionals 3 and 7 are school social workers, and SBMH Professionals 4 and 5 are school guidance counselors.

Note. The total number of participants that SBMH professionals nominated reflects the simple sum of the individual SBMH professional nominations (i.e., sum of students nominated by SBMH professionals 1-7), which differs from the corrected total (i.e., corrected for students nominated by more than one SBMH professional) which is used to calculate the overall proportion.

Research question three: what is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of depression, as defined by symptoms of depression self-reported by youth with respect to: (A) sensitivity, (B) miss rate, (C) specificity and (D) misidentified rate?

Sensitivity. As previously reviewed, to obtain the first overall depression proportion, sensitivity, all students whose *T*-scores on the CDI fell below 60 were removed, leaving only the 22 students whose self-reported *T*-scores were greater or equal to 60. For this specific proportion, 10 students were correctly identified by the school-based mental health professional team (i.e., true positive), and 12 students were not nominated by at least one team member but did in fact self-report “at-risk” *T*-scores on the CDI (i.e., false negative). Those values were used to calculate the overall depression sensitivity proportion. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall sensitivity proportion:

$$\frac{\text{\# of true positives}}{(\text{\# of true positives} + \text{\# of false negatives})}$$

The sensitivity value for the current study was thus calculated as follows:

$$10 / (10 + 12) = 45.45\%$$

In sum, the overall school-based mental health professional sensitivity proportion is 45.45%, meaning that the school-based mental health professional teams accurately nominated 45.45% of students who did in fact self-report “at-risk” levels of depression.

A 95% confidence interval constructed around the proportion yielded a lower limit of 17.37% and an upper limit of 79.23%. In other words, there is a 95% chance that

the true accuracy rate for school-based mental health team nomination to identify children with depression falls between 17.37% and 79.23%.

Each individual school-based mental health professional's sensitivity rate, and the confidence interval associated with this proportion, is presented in Table 14. As shown in the table, the individual school-based mental health professional's sensitivity proportions ranged from 0 to 50%. The same formula that was used to calculate the overall sensitivity proportion was used to calculate sensitivity proportions for the each individual school-based mental health professional within the sample, using values reported previously in Table 12 For example, the sensitivity proportion for School-Based Mental Health Professional 1 (a school psychologist at School A) was calculated as follows:

$$0 / (0+1) = 0\%,$$

where 0 corresponds to the number of true positives (i.e., the number of students nominated by a school-based mental health professional as depressed and who *did* self-report CDI scores ≥ 60) and 1 corresponds to the number of false negatives (i.e., the number of students who were not nominated, but *did* self-report CDI scores ≥ 60). Therefore, 0% represents the proportion of students that School-Based Mental Health Professional 1 was able to correctly identify as having elevated depressive symptoms. As presented in Table 10, School-Based Mental Health Professional 1 only indicated knowing 12 of the 114 students in the sample, and only one of those 12 students scored in the clinical range on the CDI. School-Based Mental Health Professional 1 nominated six of the 12 students as likely depressed, and none of those six was in the sample that scored in the clinical range on the CDI (i.e., yielded 0 true positives). The one student with

whom the participant was familiar who self-reported CDI scores ≥ 60 was not nominated by the participant as depressed, yielding 1 false negative.

The average depression sensitivity rate was calculated by summing each of the individual school-based mental health professional's sensitivity proportions, and then dividing that figure by the total number of school-based mental health professionals who had a sensitivity proportion. Specifically, the average sensitivity proportion was calculated as follows:

$$0.00\% + 11.11\% + 37.50\% + 50.00\% + 40.00\% + 25.00\% = 163.61$$

$$163.61 / 6 = 27.27\%.$$

In sum, the average sensitivity proportion across eligible school-based mental health professionals is 27.27%, with proportions from six individual school-based mental health professionals included in that mean.

Miss rate. The overall depression miss rate proportion was calculated using the same sample from which the overall sensitivity proportion was calculated (i.e., 22 students who self-reported CDI *T*-scores at or above 60 at Time 2). The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall miss rate proportion:

$$\frac{\text{\# of false negatives}}{(\text{\# of false negatives} + \text{\# of true positives})}$$

The overall miss rate proportion for the current study was thus calculated as follows:

$$12 / (12 + 10) = 54.54\%.$$

The overall miss rate for school-based mental health professionals is 54.54%, meaning that teams of mental health professionals at a given school “missed” approximately one-

half of students by *intentionally not* nominating those students whose self-reported depression scores actually fell in the “at-risk” range. Of note, the miss rate proportion is also the converse of the sensitivity proportion.

A 95% confidence interval constructed around the proportion yielded a lower limit of 23.25% and an upper limit of 82.62%. In other words, there is a 95% chance that the true miss rate falls between 23.25% and 82.62%.

Each individual school-based mental health professional’s miss rate proportion, and the confidence interval associated with this proportion, is presented in Table 14. As shown in the table, the individual school-based mental health professional’s miss rate proportions ranged from 50.00% to 100%. The same formula that was used to calculate the overall miss rate proportion was used to calculate miss rate proportions for each individual school-based mental health professional within the sample, using values reported previously in Table 12. For example, the overall miss rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$1 / (1 + 0) = 100\%,$$

where 1 corresponds to the number of false negatives (i.e., the number of students who were *not* nominated by the school-based mental health professional, but *did* self-report CDI *T*-scores ≥ 60) and 0 corresponds to the number of true positives (i.e., the number of students nominated by the school-based mental health professional as depressed and *did* self-report CDI *T*-scores ≥ 60).

The average depression miss rate proportion was calculated by summing each of the individual school-based mental health professional’s miss rate proportions, and then dividing that figure by the total number of school-based mental health professionals who

had a miss rate proportion. Specifically, the average miss rate proportion was calculated as follows:

$$100\% + 88.89\% + 62.50\% + 50.00\% + 60.00\% + 75.00\% = 436.39$$

$$436.39 / 6 = 72.73\%.$$

In sum, the average school-based mental health professional miss rate is 73.73%, with six individual school-based mental health professionals' proportions being included in that mean.

Specificity. The overall depression specificity proportion was calculated using a different subsample from which the overall sensitivity and miss rate proportions were calculated. This separate subsample consisted of the 216 students who self-reported CDI *T*-scores less than 60 (i.e., not “at-risk”). Sixty-seven of the students in that subsample were nominated by at least one school-based mental health professional as possibly depressed. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall specificity proportion:

$$\frac{\text{\# of true negatives}}{(\text{\# of false positives} + \text{\# of true negatives})}$$

Thus, this particular specificity proportion was calculated as follows:

$$149 / (67 + 149) = 68.98\%.$$

In sum, results of this analysis indicated that the overall specificity for school-based mental health professional nominations to identify youth with typical levels of depressive symptoms (i.e., *T*-score < 60) is 68.98%. In other words, school-based mental health professionals were able to correctly identify 68.98% of students who did not self-report elevated levels of depression, by intentionally not nominating them.

A 95% confidence interval constructed around the proportion yielded a lower limit of 18.86% and an upper limit of 100%. In other words, there is a 95% chance that the true specificity rate falls between 18.86% and 100%.

Each individual school-based mental health professional's specificity rate, and the confidence interval associated with this proportion, is presented in Table 14. As shown in the table, the individual school-based mental health professional specificity rate proportions ranged from 45.45% to 87.23%. The same formula that was used to calculate the overall specificity proportion was used to calculate specificity rate proportions for each individual school-based mental health professional within the sample, using values reported previously in Table 12. For example, the overall specificity rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$5 / (6 + 5) = 45.45\%,$$

where 5 corresponds to the number of true negatives (i.e., school-based mental health professional did not nominate student and student did not self-report CDI *T*-scores ≥ 60), and 6 corresponds to the number of false positives (i.e., school-based mental health professional nominated student, as possibly depressed, but student self-reported CDI *T*-scores < 60).

The average depression specificity proportion was calculated by summing each of the individual school-based mental health professional's specificity proportions, and then dividing that figure by the total number of school-based mental health professionals who had a specificity proportion. Specifically, the average sensitivity proportion was calculated as follows:

$$45.45\% + 85.71\% + 80.23\% + 87.23\% + 64.36\% + 72.00\% + 86.84\% = 521.85$$

$$521.85 / 7 = 74.55\%.$$

Thus, the average specificity proportion was 74.55%, with all seven individual school based mental health professional specificity proportions being included in that mean.

Misidentified rate. The overall depression misidentified rate proportion was calculated using the same sample of 216 students from which the overall specificity proportion was calculated. The following formula proposed by Green and Zar (1989) was used to calculate the overall misidentified rate:

$$\frac{\text{\# of false positives}}{(\text{\# of false positives} + \text{\# of true negatives})}$$

Therefore, the aforementioned misidentified proportion was calculated as follows:

$$67 / (67 + 149) = 31.02\%.$$

In sum, the overall school-based mental health professional misidentified rate is 31.02%, meaning that these school-based mental health professionals misidentified 31.02% of students who *did not* self-report elevated depression scores. Of note, the misidentified rate is also the converse of the specificity rate.

A 95% confidence interval constructed around the proportion yielded a lower limit of 0% and an upper limit of 81.06%. In other words, there is a 95% chance that the true misidentified rate between 0% and 81.06%.

Each individual school-based mental health professional's misidentified rate, and the confidence interval associated with this proportion, can be seen in Table 14. As shown in the table, the individual school-based mental health professionals' misidentified rate proportions ranged from 12.77% to 54.55%. The same formula that was used to calculate the overall misidentified proportion was used to calculate the misidentified rate

proportions for the each individual school-based mental health professional within the sample, using values reported previously in Table 12. For example, the misidentified rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$6 / (6 + 5) = 54.54\%,$$

where 6 corresponds to the number of false positives (i.e., school-based mental health professional nominated student *but* student did not self-report CDI *T*-scores ≥ 60), and 5 corresponds to the number of true negatives (i.e., school-based mental health professional did not nominate student, *and* student did not self-report CDI *T*-scores ≥ 60).

The average depression misidentified rate proportion was calculated by summing each of the individual school-based mental health professional's misidentified rate proportions, and then dividing that figure by the total number of school-based mental health professionals who had a misidentified rate proportion. Specifically, the average misidentified rate proportion was calculated as follows:

$$54.55\% + 14.29\% + 19.77\% + 12.77\% + 35.64\% + 28.00\% + 13.16\% = 178.18$$

$$178.18 / 7 = 25.45\%.$$

Thus, the average school-based mental health professional misidentified rate was 25.45%, with all seven individual school-based mental health professionals' proportions being included in that mean.

The sensitivity, specificity, miss rate, and misidentified rates, with corresponding confidence intervals, for individual school-based mental health professionals are located in Table 14. Also included in the table are the overall proportions, as well as the average proportion for each individual school-based mental health professional.

Table 14

Accuracy of School-Based Mental Health Professional Nominations to Identify Youth with Elevated Levels of Depression

SBMH	Sensitivity	CI	Miss Rate	CI	Specificity	CI	Misidentified Rate	CI
1	0.00%	0.00%-79.34%	100%	20.65%-100%	45.45%	21.26%-71.98%	54.55%	28.01%-78.73%
2	*	N/A	*	N/A	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
3	11.11%	1.98%-43.49%	88.89%	56.50%-98.01	80.23%	70.60%-87.27%	19.77%	11.92%-28.28%
4	37.50%	13.68%-69.42%	62.50%	30.57%-86.31%	87.23%	78.99%-92.54%	12.77%	7.45%-21.00%
5	50.00%	25.37%-74.62%	50.00%	25.37%-74.62%	64.36%	53.63%-72.10%	35.64%	27.89%-46.36%
6	40.00%	11.75%-76.93%	60.00%	23.07%-88.24%	72.00%	52.42%-85.71%	28.00%	14.28%-47.57%
7	25.00%	4.55%-69.93%	75.00%	30.06%-95.44%	86.84%	72.67%-94.24%	13.16%	5.75%-27.32%
Overall	45.45%	17.37-79.24%	54.54%	23.25%-82.62%	68.98%	18.86%-100%	31.02%	0.00%-81.06%
Average	27.27%	6.93%-65.34%	72.73%	34.65%-93.06%	74.55%	38.37%-93.13%	25.45%	6.86%-61.62%

Note: * indicates that the specific SBMH professional had no students with CDI scores within the “at-risk” range, or only indicated that they did not know the student and therefore the corresponding proportion was unable to be calculated.

Research question four: what is the accuracy of school-based mental health professional nominations to identify youth who have elevated levels of anxiety, as defined by symptoms of anxiety self-reported by youth with respect to: (A) sensitivity, (B) miss rate, (C) specificity and (D) misidentified rate?

Sensitivity. To obtain the first overall anxiety proportion, sensitivity, a subsample was created that consisted of the 27 students who self-reported MASC *T*-scores at or above 60 at Time 2. Eighteen of the students in that subsample were nominated by at least one school-based mental health professional team member as possibly anxious. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall sensitivity proportion:

$$\frac{\text{\# of true positives}}{\text{\# of true positives} + \text{\# of false negatives}}$$

The sensitivity value for the current study was thus calculated as follows:

$$18 / (18 + 9) = 66.67\%.$$

In sum, the overall school-based mental health professional anxiety sensitivity proportion is 66.67%, meaning that a team of school-based mental health professionals at a given school accurately nominated 66.67% of students who did in fact self-report “at-risk” levels of anxiety.

A 95% confidence interval constructed around the proportion yielded a lower limit of 46.14% and an upper limit of 75.39%. In other words, there is a 95% chance that the true sensitivity rate falls between 46.14% and 75.39%.

Each individual school-based mental health professional’s sensitivity rate, and the confidence interval associated with this proportion, is presented in Table 15. As shown

in the table, the individual school-based mental health professionals' sensitivity proportions ranged from 22.22 to 100%. The same formula that was used to calculate the overall sensitivity proportion was used to calculate sensitivity proportions for each individual school-based mental health professional within the sample, using values reported previously in Table 13. For example, the sensitivity proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$1 / (1 + 0) = 100\%,$$

where 1 corresponds to the number of true positives (i.e., the number of students nominated by a school-based mental health professional as anxious and *did* self-report MASC scores ≥ 60) and 0 corresponds to the number of false negatives (i.e., the number of students who were not nominated, but *did* self-report MASC scores ≥ 60). Therefore, 100% represents the proportion of students that School-Based Mental Health Professional 1 was able to correctly identify as having elevated anxiety symptoms. As shown in Table 11, School-Based Mental Health Professional 1 indicated knowing only 12 of the 114 students in the sample. One of those 12 students scored in the clinical range on the MASC. School-Based Mental Health Professional 1 nominated 6 of the 12 students as anxious. One of those six was in the sample that scored in the clinical range on the MASC (yielded 1 true positive). There were 0 false negatives, as none of the six students the participant purposefully did not identify as anxious-reported MASC scores ≥ 60 .

The average anxiety sensitivity rate was calculated by summing each of the individual school-based mental health professional's sensitivity proportions, and then dividing that figure by the total number of school-based mental health professionals who

had a sensitivity proportion. Specifically, the average sensitivity proportion was calculated as follows:

$$100\% + 22.22\% + 37.50\% + 41.18\% + 100\% + 100\% = 400.9$$

$$400.9 / 6 = 66.82\%.$$

In sum, the average school-based mental health professional sensitivity proportion was 66.82%, with six individual school-based mental health professional proportions being included in that mean.

Miss rate. The overall anxiety miss rate proportion was calculated using the same sample from which the overall sensitivity proportion was calculated (i.e., 27 students who self-reported MASC *T*-scores at or above 60 at Time 2). The following formula provided by Green and Zar (1989) was utilized to calculate the aforementioned overall miss rate proportion:

$$\frac{\text{\# of false negatives}}{(\text{\# of false negatives} + \text{\# of true positives})}$$

The overall anxiety miss rate proportion for the current study was calculated as follows:

$$9 / (9 + 18) = 33.33\%.$$

The overall miss rate for school-based mental health professionals is 33.33%, meaning that school-based mental health professionals “missed” approximately one-third of students by *intentionally not* nominating those students whose self-reported anxiety scores fell in the “at-risk” range. Of note, the miss rate proportion is also the converse of the sensitivity proportion.

A 95% confidence interval constructed around the proportion yielded a lower limit of 24.61% and an upper limit of 53.85%. In other words, there is a 95% chance that the true miss rate falls between 24.61% and 53.85%.

Each individual school-based mental health professional's miss rate proportion, and the confidence interval associated with this proportion, is presented in Table 15. As shown in the table, the individual school-based mental health professional's miss rate proportions ranged from 0 to 77.78%. The same formula that was used to calculate the overall miss rate proportion was used to calculate miss rate proportions for each individual school-based mental health professional's within the sample, using values reported previously in Table 13. For example, the individual miss rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$0 / (0 + 1) = 0\%,$$

where 0 corresponds to the number of false negatives (i.e., the number of students who were *not* nominated by a school-based mental health professional, but *did* self-report MASC *T*-scores ≥ 60) and 1 corresponds to the number of true positives (i.e., the number of students nominated by a school-based mental health professional as anxious and *did* self-report MASC *T*-scores ≥ 60). It should be noted that this participant was only considering 12 students when making determinations of anxious behavior, and only one of those 12 students self-reported clinical levels of anxious symptoms.

The average miss rate proportion was calculated by summing each of the individual school-based mental health professional's miss rate proportions, and then dividing that figure by the total number of school-based mental health professionals who

had a miss rate proportion. Specifically, the average anxiety miss rate proportion was calculated as follows:

$$0\% + 77.78\% + 62.50\% + 58.82\% + 0\% + 0\% = 199.10$$

$$199.10 / 6 = 33.18\%.$$

In sum, the average school-based mental health professional miss rate was 33.18%, with six individual school-based mental health professionals' proportions being included in that mean.

Specificity. The overall anxiety specificity proportion was calculated using a different subsample from which the overall sensitivity and miss rate proportions were calculated. This separate subsample consisted of the 211 students who self-reported MASC *T*-scores less than 60 (i.e., not “at-risk”). Seventy-four of the students in that subsample were nominated by at least one school-based mental health professional team member as possibly anxious. The following formula provided in Green and Zar (1989) was utilized to calculate the aforementioned overall specificity proportion:

$$\frac{\text{\# of true negatives}}{(\text{\# of false positives} + \text{\# of true negatives})}$$

Thus, this particular specificity proportion was calculated as follows:

$$137 / (74 + 137) = 64.93\%.$$

In sum, results of this analysis indicated that the overall specificity for school-based mental health professional nominations to identify youth with typical levels of anxiety symptoms (i.e., *T*-score < 60) is 64.93%. In other words, teams of school-based mental health professionals were able to correctly identify 64.93% of students who did not self-report elevated levels of anxiety, by intentionally not nominating them.

A 95% confidence interval constructed around the proportion yielded a lower limit of 30.76% and an upper limit of 88.51%. In other words, there is a 95% chance that the true specificity rate falls between 30.76% and 88.51%.

Each individual school-based mental health professional's specificity rate, and the confidence interval associated with this proportion, is presented in Table 15. As shown in the table, the individual school-based mental health professionals' specificity rate proportions ranged from 11.43% to 88.30%. The same formula that was used to calculate the overall specificity proportion was used to calculate specificity rate proportions for each individual school-based mental health professional within the sample, using values reported previously in Table 13. For example, the overall specificity rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$6 / (6 + 5) = 54.54\%,$$

where 6 corresponds to the number of true negatives (i.e., school-based mental health professional did not nominate student and student did not self-report MASC *T*-scores \geq 60), and 5 corresponds to the number of false positives (i.e., school-based mental health professional nominated student, as possibly anxious, but student self-reported MASC *T*-scores $<$ 60).

The average anxiety specificity proportion was calculated by summing each of the individual school-based mental health professional's specificity proportions, and then dividing that figure by the total number of school-based mental health professionals who had a specificity proportion. Specifically, the average sensitivity proportion was calculated as follows:

$$54.54\% + 85.71\% + 82.56\% + 88.30\% + 68.75\% + 80.77\% + 11.43\% = 472.06$$

$$472.06 / 7 = 67.44\%.$$

The average anxiety specificity proportion was 67.44%, with all seven individual school based mental health professionals' specificity proportions being included in that mean.

Misidentified rate. The overall anxiety misidentified rate proportion was calculated using the same sample from which the overall specificity proportion was calculated (i.e., 211 students who self-reported MASC *T*-scores < 60 at Time 2). The following formula proposed by Green and Zar (1989) was used to calculate the overall misidentified rate:

$$\frac{\text{\# of false positives}}{(\text{\# of false positives} + \text{\# of true negatives})}$$

Therefore, the misidentified proportion was calculated as follows:

$$74 / (74 + 137) = 35.07\%.$$

In sum, the overall school-based mental health professional misidentified rate is 35.07%, meaning that these teams of school-based mental health professionals misidentified 35.07% of students who *did not* self-report elevated anxiety scores. Of note, the misidentified rate is also the converse of the specificity rate.

A 95% confidence interval constructed around the proportion yielded a lower limit of 11.48% and an upper limit of 69.23%. In other words, there is a 95% chance that the true misidentified rate falls between 11.48% and 69.23%.

Each individual school-based mental health professional misidentified rate, and the confidence interval associated with this proportion, can be seen in Table 15. Also as shown in the table, the individual school-based mental health professional misidentified rate proportions ranged from 11.70% to 88.57%. The same formula that was used to

calculate the overall misidentified proportion was used to calculate specificity rate proportions for the each individual school-based mental health professional within the sample, using values reported previously in Table 13 For example, the misidentified rate proportion for School-Based Mental Health Professional 1 was calculated as follows:

$$5 / (5 + 6) = 45.45\%,$$

where 5 corresponds to the number of false positives (i.e., school-based mental health professional nominated student *but* student did not self-report MASC *T*-scores ≥ 60), and 6 is the number of true negatives (i.e., school-based mental health professional did not nominate student, *and* student did not self-report MASC *T*-scores ≥ 60).

The average anxiety misidentified rate proportion was calculated by summing each of the individual school-based mental health professional's misidentified rate proportions, and then dividing that figure by the total number of school-based mental health professionals who had a misidentified rate proportion. Specifically, the average misidentified rate proportion was calculated as follows:

$$45.46\% + 14.29\% + 17.44\% + 11.70\% + 31.25\% + 19.23\% + 88.57\% = 227.94$$

$$227.94 / 7 = 32.56\%.$$

Thus, the average school-based mental health professional misidentified rate was 32.56%, with all seven individual school-based mental health professionals' proportions being included in that mean.

The sensitivity, specificity, miss rate, and misidentified rates, with corresponding confidence intervals, for individual school-based mental health professionals in relation to youth anxiety are located in Table 15. Also included in the table are the overall proportions, as well as the average individual proportions.

Table 15

Accuracy of School-Based Mental Health (SBMH) Professional Nominations to Identify Youth with Elevated Levels of Anxiety

SBMH	Sensitivity	CI	Miss Rate	CI	Specificity	CI	Misidentified Rate	CI
1	100%	20.65%-100%	0%	0.00%-79.34%	54.54%	28.00%-78.72%	45.45%	21.73%-71.99%
2	*	N/A	*	N/A	85.71%	48.68%-97.43%	14.29%	2.56%-51.31%
3	22.22%	6.31%-54.73%	77.78%	45.26%-93.68%	82.56%	73.19%-89.13%	17.44%	10.86%-26.80%
4	37.50%	13.68%-69.42%	62.50%	30.57%-86.31%	88.30%	80.25%-93.34%	11.70%	6.65%-19.74%
5	41.18%	21.61%-63.99%	58.82%	36.00%-78.38%	68.75%	58.90%-77.15%	31.25%	22.85%-41.09%
6	100%	51.05%-100%	0%	0.00%-48.98%	80.77%	62.12%-91.49%	19.23%	8.50%-37.87%
7	100%	51.05%-100%	0%	0.00%-48.98%	11.43%	4.53%-25.95%	88.57%	74.04%-95.46%
Overall	66.67%	46.14%-75.39%	33.33%	24.61%-53.85%	64.93%	30.76%-88.51%	35.07%	11.48%-69.23%
Average	66.82%	30.11%-90.40%	33.18%	9.60%-69.88%	67.44%	32.69%-89.83%	32.56%	11.73%-69.62%

Note: * indicates that the specific SBMH professional had no students with MASC scores within the “at-risk” range, or only indicated that they did not know the student and therefore the corresponding proportion was unable to be calculated,

Summary of Findings

This study examined the accuracy of teachers and school-based mental health professionals in identifying youth who repeatedly self-reported clinical levels of depression and anxiety symptoms. Analyses were conducted two ways: pooled across educator groups (i.e., across teachers or teams of school-based mental health professionals), and average for individual educators (i.e., mean accuracy of individual teachers or school-based mental health professionals). Table 14 summarizes the proportions that resulted from these analyses with regard to student depression (i.e., research questions 1 and 3). Table 15 summarizes the proportions that resulted with regard to student anxiety (i.e., research questions 2 and 4).

Table 16

Accuracy of Teachers and School-Based Mental Health Professionals in Identifying Students with Elevated Depressive Symptoms

	Sensitivity	Miss Rate	Specificity	Misidentified
Teachers				
Overall	50.00%	50.00%	83.80%	16.20%
Mean Individual	43.88%	56.11%	85.07%	14.92%
SBMH Professional				
Pooled Team	45.45%	54.54%	68.98%	31.02%
Mean Individual	27.27%	72.73%	74.55%	23.45%

Note. Overall = proportion calculated across all teachers, Mean Individual = average of all teacher's (or school mental health professional's) individuals proportions, Pooled Team = proportion calculated across all school-based mental health professionals in a given school.

Table 17

Accuracy of Teachers and School-Based Mental Health Professionals in Identifying Students with Elevated Anxiety Symptoms

	Sensitivity	Miss Rate	Specificity	Misidentified
Teachers				
Overall	40.74%	59.26%	82.46%	17.54%
Mean Individual	34.79%	65.21%	83.06%	16.94%
SBMH Professional				
Pooled Team	66.67%	33.33%	64.93%	35.07%
Mean Individual	66.82%	33.18%	67.44%	32.56%

Note. Overall = proportion calculated across all teachers, Mean Individual = average of all teacher's (or school-based mental health professional's) individuals proportions, Pooled Team = proportion calculated across all school-based mental health professionals in a given school.

Chapter Five: Discussion

The overarching purpose of the current study was to evaluate the accuracy of educators' nominations when used to identify elementary school students with internalizing psychopathology, namely symptoms of anxiety and depression. One aim of the study was to determine the accuracy (i.e., specificity, miss rate, specificity, and misidentified rate) of teachers as a mechanism to identify students with elevated levels of anxiety and/or depression. The second aim was to provide a preliminary examination of the accuracy of similar nominations made by school-based mental health professionals (i.e., school guidance counselors, school psychologists, and social workers).

This chapter summarizes the results of the current study and discusses the findings within the context of the extant literature. After the discussion of results and significant findings, implications of the results for school psychologists are presented. Finally, limitations of the current study and directions for future research are suggested.

Discussion of Results

Prevalence of depression and anxiety. Although not a research question in and of itself, the design of the current study permitted examination of the rate of internalizing psychopathology among a general sample of elementary school students. The proportion of youth who twice reported elevated levels of symptoms on assessment tools used often in clinical practice was 9% for depression and 11% for anxiety. While the study design precludes determining the rate of diagnosable anxiety and depressive disorders, it is notable that one in ten students consistently reported elevated levels of depressive or

anxious symptomatology. Prior epidemiology studies have found that prevalence rates of any depressive disorder within elementary school-age children (i.e., 8-11 years old) range from 1.3% to 2.2% (Avenevoli, Knight, Kessler, & Merikangas, 2008), which is lower than the prevalence rates of depressive symptoms obtained within the current study.

There are several possible explanations for the increased prevalence rates obtained within the current study. Previous research has typically examined the prevalence rates of youth who have met clinical criteria for depression. The current study did not attempt to diagnose students with depression, and instead used a more liberal *T*-score of 60 to identify those children who may be exhibiting elevated or at-risk symptoms but not necessarily meet the functional impairment criteria. It is possible that identifying youth who consistently report “at-risk” or higher levels of depressive symptoms results in a largely sub-clinical sample, which may be desirable from a preventative standpoint. It is also possible that given the current status of the economy and the particular impact of the economic crisis on the setting for the current study, students’ depressive symptoms were higher than previous research. Specifically, as a result of the economic downturn, students might have been experiencing and/or demonstrating increased risk factors for depression such as family distress and poverty.

Prior studies examining prevalence rates of any anxiety disorder among elementary school-age children ages 8-11 have yielded a fairly wide range, with estimates from 5.8% to 14.6% (Beesdo et al., 2009). The prevalence rate for elevated anxiety yielded in the current study (11%) is consistent with the range obtained in aforementioned prior research.

The finding that 15.9% of general education students reliably self-reported clinical rates of internalizing symptoms (anxiety and/or depression) underscores the need for clinical services in elementary schools. This finding is important in itself, as many individuals (e.g., educators, parents) may falsely presume that mental health services are not as relevant within elementary schools (as compared to middle or high schools), perhaps considering younger children as having fewer mental health problems. Findings from the current study underscore the need to ensure that preventative mental health interventions are provided to students in elementary schools, as approximately 16% of relatively young children in the study endorsed clinically significant symptoms.

Accuracy of teacher nominations in identifying students with elevated levels of depression. The purpose of the first research question was to determine the accuracy of teachers in identifying students with elevated levels of depression. When examining their overall proportions for sensitivity and specificity, it appears that teachers are moderately successful in detecting both the students they perceive might display at-risk depressive symptoms (i.e., sensitivity), as well as distinguishing those students who they feel do not display elevated depressive symptoms (i.e., specificity). Teachers were more accurate in identifying students who they felt displayed normal levels of depression (83%); they accurately nominated only one-half of participants who did in fact reliably self-report “at-risk” levels of depression. Taken together, the two proportions used to determine accuracy (sensitivity and specificity, respectively) suggest that teachers demonstrate at least initial or preliminary competence in detecting students who may be possibly depressed. These findings support the notion that teachers, as individuals who work with students on a daily basis, can identify a substantial proportion of students with

elevated depressive symptoms, as well as be particularly accurate in knowing which students are not currently experiencing depressive symptoms. These findings lend further support to previous research by Ollendick and colleagues (1989) and Moor and colleagues (2007), who found that teachers can be at least minimally accurate in their identification of students who may be possibly depressed.

Specifically, Ollendick et al. demonstrated that teachers were able to identify withdrawn students, and differentiate them from students who were identified as popular or aggressive. Children identified as withdrawn scored lower on the self-reported measures of locus of control, assertiveness, and self-efficacy, as well as both positive and negative interactions (Ollendick et al., 1989). The current study addressed some of the methodological limitations of this study by using a specific criterion for “at-risk” levels of depression (i.e., T -score of ≥ 60) via a psychometrically-sound narrowband measure of that construct. Unlike Ollendick’s design, the current study allowed for comparison of dichotomized subsamples created with defensible yes or no decision rules, permitting the calculation of specific accuracy proportions.

Moor and colleagues’ (2007) larger investigation of the impact of a teacher training on accuracy in identifying student depression found that educators (classroom teachers, as well as guidance teachers, specialized subject teachers, and learning support teachers) in the experimental and control conditions were able to recognize 52% and 41% of middle school students, respectively, who were diagnosed depressed (i.e., sensitivity). That particular finding provides support for teachers’ ability to identify middle school students who exhibit depressive symptoms, although among a unique group of educators, which may have contributed to the high sensitivity. The current study extends these

optimistic findings to a sample of general education elementary school teachers, and using a student depression criterion more likely to be employed in the schools (i.e., clinical status on a valid self-report measure of symptoms).

As mentioned previously in this document, sensitivity and miss rate proportions sum to 100%. As a result, the converse of the sensitivity finding is that while teachers were in fact able to correctly nominate 50% of the students who twice self-reported elevated depression symptoms, teachers also “missed” (by intentionally not nominating) 50% of students who in fact experienced clinical levels of depressive symptoms. This miss rate is consistent with findings in the aforementioned study of middle school students, in which educators failed to identify 48% (experimental group) and 59% (control group) of depressed students (Moor et al., 2007). Taken together, findings cast doubt on the validity of teachers as completely accurate gatekeepers of students referred for mental health assessment and intervention services.

On a more positive note, the current study found that teachers are likely to falsely label only a small percentage of non-symptomatic students as depressed (16.20%). This particular finding contrasts prior research with middle school students that yielded a substantially higher misidentification rate. Specifically, approximately 95% of students who were nominated by teachers were not identified as being depressed through a clinical interview (Auger, 2004). Discrepancies in misidentification rates may reflect the fact no “caps” were placed on the number of students an educator could nominate in the Auger study, whereas teachers in the current study were limited to nominating only up to three students.

The substantial number of students “missed” and misidentified by teachers in the current study suggests that many teachers have some trouble detecting symptoms of depression in students who experience clinical levels of problems. This result suggests the need for specific training in how to identify depression in students, beyond a simple list of behavioral indicators; such training may improve teachers’ sensitivity. The current study provided no training to teachers, and the vast majority of teachers (84%) reported receiving little to no prior professional development relevant to children’s mental health issues. It is possible that had training been provided to teachers, whether in the form of an in-service presentation or online didactic training, teachers’ recognition of depressive symptoms in youth would have been greater. However, previous research, while extremely limited (i.e., one study) indicated that training failed to improve teachers’ recognition of depressive symptoms in students (Moor et al., 2007). More research is needed to determine whether providing more thorough or in-depth training to teachers would positively influence their ability to accurately nominate students.

In addition to examining the overall accuracy of teachers, the current study also examined the accuracy of individual teachers. These rates ranged quite a bit, both within and across the four proportions of interest. For example, in regards to sensitivity and miss rate proportions, an individual teacher’s accuracy ranged from 0-100%, with the average rate being around 43% and 56%, respectively. Less variability was seen within the specificity and misidentified proportions. These two proportions both had a range of 33%; the individual specificity proportions ranged from 66.67% - 100%, while the misidentified proportions ranged from 0.00% - 33.33%. Consistent with the results from

the total sample, these findings suggest that teachers seem to be better, or more accurate, in not falsely identifying students as depressed.

When examining the individual teacher proportions, it is important to consider that the number of participants within each class (i.e., the number of students with positive consent to participate) varied greatly, from 1 to 18 students. Results for the individual teacher proportions must be considered within that context. For example, Teacher 24's sensitivity proportion of 100% suggests that *all* of the students that this teacher nominated as depressed self-reported elevated scores on the CDI. However, Teacher 24 only had one participant in his/her class. In contrast, Teacher 20's sensitivity proportion of 33.33% suggests that he or she was less accurate. However, this teacher had 18 participants, thereby increasing the chances of missing students who experience clinical levels of symptoms. This limitation, which resulted from uneven student participation rates across classrooms, suggests that the total teacher accuracy proportions may be interpreted with more confidence than the results for individual teachers.

Accuracy of teacher nominations in identifying students with elevated levels of anxiety. Research question two investigated teacher accuracy in regards to identifying students with at-risk levels of anxiety. Overall, teachers were slightly less accurate in identifying students who reported experiencing anxiety, as compared to their accuracy in identifying students with elevated levels of depression. Specifically, teachers detected about 40% of those students who consistently reported high levels of anxiety symptoms. Correspondingly, 60% of participants who twice reported clinical levels of anxiety were not unidentified by their teachers as anxious. The relatively higher miss rate for students

with elevated anxiety symptoms (vs. depressive symptoms) suggests that teachers have more trouble detecting how anxiety might manifest in their students.

Teachers evidenced a higher specificity rate (82.5%), further supporting the notion that teachers are able to identify which students *do not* demonstrate or display symptoms of anxiety (as well as depression). Just as promising is the finding that teachers are misidentifying similarly low rates of students for anxiety as they did for depression. Of note, the overall and mean teacher misidentification rates were quite similar to each other, indicating that individual teachers misidentified almost the same percentage of students as the entire group. From a prevention standpoint, a feasible number of misidentified youth may be preferable to a zero misidentified rate if the higher identification procedure contributes to a higher sensitivity rate. Regarding students misidentified in an early gatekeeping process, students who may be initially nominated as symptomatic are at the very least brought to the attention of a school-based mental health professional, who can provide further assessment or evaluation and then rule out children as appropriate. In instances that involve such clinical follow-up, it is arguably better to label/identify a student incorrectly at first, as opposed to missing symptomatic youth entirely (which would preclude such youth from further attention). Thus, the finding of most concern is the elevated miss rate, largely because had those students not been the recipient of a free universal assessment of their mental health (as done in the current study), they may have gone unidentified and subsequently unserved.

Only a few prior studies have examined accuracy of teacher nominations to identify students with anxiety. Layne and colleagues' (2006) findings provided some support for teachers' ability to discriminate students with somewhat elevated levels of

anxiety from their peers with lower levels of anxiety. The findings in the current study are more easily compared to results obtained in Dadds and colleagues' (1997) examination of elementary and middle school students. These researchers found that teachers had a 19% sensitivity rate as well as a 92% specificity rate in their identification of anxious students (i.e., students with at-risk or higher levels of anxious symptoms on the RADS). The 40.7% sensitivity rate obtained in the current study gives somewhat more reason for optimism. Whereas the teachers in Dadds et al "missed" 81% of students who self-reported elevated levels of anxiety, the miss rate within the current study was much lower (59.26%). Possible reasons for the more positive findings in the current study include differences in definition of student-report anxiety (i.e., use of age-specific cut scores vs. the same raw score for a heterogeneous sample), differences in the definition of anxiety provided to teachers to assist them in making nominations (i.e., the long list of behavioral descriptors provided in the current study vs. simply describing anxiety as: shy, nervous, afraid, inhibited), and possible differences in teacher familiarity with students due to students having predominantly one teacher (elementary school model) as compared to spitting their time between many teachers (middle school model).

Of note, the ranges for individual teacher proportions for all four anxiety proportions were exactly the same as the ranges of the depression proportions, with the ranges for the specificity proportion both disorders ranging from 66.67%-100%. These findings continue to suggest that teachers do a better job in knowing which students are not demonstrating elevated symptoms of anxiety or depression, by not nominating them. Given the aforementioned problems with student participation rates across classes, results of the individual teacher proportions are not discussed further.

Accuracy of school-based mental health professional nominations in identifying students with elevated levels of depression. The third research question pertained to the accuracy of school-based mental health professionals in identifying students with elevated symptoms of depression. As this was the first known investigation into the accuracy of school-based mental health professionals as informants of students' internalizing symptoms, the current study provides preliminary findings regarding the accuracy of these individuals. A team approach was used to calculate the proportions of interest, as most school-based mental health professionals do not operate in isolation in their schools, but rather as part of a larger mental health team. However, to explore the variability in individual school-based mental health professionals' accuracy rates, individual proportions were also calculated.

Examination of the accuracy results for teams of mental health professionals at a given school indicated that a team of 3 – 4 mental health providers correctly identified about 45% of students who reported clinically-elevated levels of depression. This sensitivity proportion was just slightly lower than the overall teacher proportion of 50%. These results suggest that relying on educators, be it classroom teachers or school mental health professionals, to identify students who experience symptoms of depression will uncover about half of the students of concern. The identification skills of school mental health professionals may not have surpassed the performance of the teachers because the school-based mental health professionals are often responsible for serving students in all grade levels, precluding them from spending as much face-to-face time with individual students as classroom teachers spend. Given this context, it is rather than impressive that school mental health professionals had a relatively accurate pulse on the students in a

given school who experienced elevated symptoms of depression. It is noteworthy that the team sensitivity rate was substantially higher than the mean individual sensitivity rate (i.e., 45.45% compared to 27.27%). This finding supports the validity of using a team approach when nominating students as symptomatic, as opposed to relying on the judgments of a single school-based mental health professional.

One of the reasons that school mental health teams identified more students in the depressed subgroup was their tendency to simply nominate a greater number of students as potentially depressed. Specifically, the team specificity rate of almost 69% was notably lower than the specificity obtained by teachers (84%). In other words, when using a team approach for school-based mental health professional nominations, the accuracy rate increased but at the cost of increased misidentified rates. The team's misidentified rate is also higher in relation to rates obtained if any school-based mental health professional was making the decision on his or her own (i.e., mean misidentified rate of 23%). However, in a case where "missing" a depressed student could be potentially harmful (e.g., if the child had suicidal ideation), misidentification is arguably preferable to missing a student in need, as additional assessments could be used to determine which of the youth are actually depressed. This strategy would reduce the number of students that are "missed". This line of thought is consistent with recommendations of Levitt and colleagues (2007), who indicated that in the case of screening for depression, schools should consider selecting a screening instrument with higher sensitivity, which would reduce the risk of "missing" students, but increase the risk of possibly misidentifying students. The underlying assumption of this logic is that the risk of missing students who may be depressed is more serious than the costs

associated with follow-up assessments. At least the problem of misidentification is fixable; the school could administer a rating scale such as the CDI to all students nominated by the team (vs. all students in the entire school) to further determine who may be appropriate for the intervention services.

Examination of the accuracy rates of the individual school-based mental health professionals suggests some interesting trends. First, out of the seven participants, it was a guidance counselor whose individual proportion was higher than the proportion for the pooled team. A school psychologist generated the lowest sensitivity proportion of 0%. However, similar to the number of eligible students for teachers to nominate, these findings must be considered in the context of the number of students with whom a particular professional was familiar. For example, School-Based Mental Health Professional 1 (school psychologist) reported being familiar with only 12 of the 112 participating students, and nominated half of those students as depressed. Given the low base rate of depression in general populations, the specificity proportion for this professional was bound to be high. School-Based Mental Health Professional 5 (guidance counselor) knew 113 of the 124 students, and nominated 42 as depressed. The sheer increase in the number of students known by and nominated by this individual increased his or her chances of identifying more of the students in the depressed subsample (sensitivity).

Accuracy of school-based mental health professional nominations in identifying students with elevated levels of anxiety. The fourth and final research question pertained to the accuracy of school-based mental health professionals in identifying students with elevated symptoms of anxiety. The results for the team

suggested remarkable sensitivity with respect to identification of this subgroup of youth. The pooled sensitivity proportion was almost 67%, approximately 25% higher than the overall teacher sensitivity proportion, and about 20% higher than their individual sensitivity rate for depression. The school-based mental health professional team also “missed” far fewer anxious students than their teacher colleagues, with miss rate proportions of 33.33% and 59%, respectively. Notably, the mean individual school-based mental health professional sensitivity proportion was identical to the team rate, suggesting little is to be gained by relying on a team (vs. individual mental health provider) to identify students with elevated anxiety. In regards to specificity, the team rate was almost 65%, indicating that they were able to appropriately identify a sizeable percentage of youth who did not demonstrate elevated levels of anxiety. Specifically, the team misidentified 35% of students as anxious, a rate rather similar to the mean result obtained for an individual school-based mental health professional (32.56%).

Potentially optimistic conclusions drawn from the mean individual school-based mental health professional sensitivity and specificity rates for anxiety (in comparison to team rates) are tempered by the great variability among and within these professionals. Some school-based mental health professionals appeared to be more accurate in identifying students with a particular problem, like anxiety or depression. For example, the accuracy rate for School-Based Mental Health Professional 1 was 0% for depression and 100% for anxiety. School-Based Mental Health Professionals 3, 6, and 7 were also better able to identify youth who experienced anxiety. In contrast, School-Based Mental Health Professional 5 more accurately identified students with depression (50.00% vs. 41.18%). Only School-Based Mental Health Professional 4 had the same individual

sensitivity proportion (i.e., 37.50%) for both depression and anxiety. The variability in team member's individual sensitivity proportions further supports arguments to use a team approach when considering use of school-based mental health professionals to identify students with internalizing symptomatology. Moreover, the fact that some of the school-based mental health professionals on their own would have only accurately identified 0 – 44% of youth with elevated anxiety further supports the use of a team to make identification decisions.

The misidentified rates of some school-based mental health professionals are also noteworthy. For instance, one social worker misidentified 88.57% of students as anxious. This finding further support use of a team approach, which resulted in the less egregious misidentified rate of 35%. Taken together, the majority of findings suggest use of a team of school-based mental health providers when relying on this type of educator to most accurately identify students with anxiety and depression.

Interestingly, the current study found that for the majority of the accuracy indicators, teachers outperformed their school-based mental health professional colleagues (particularly with regard to identification of youth with depression). Specifically, the team of school-based mental health professionals only demonstrated superior results for the anxiety sensitivity and miss rate proportions. Given the background and training of these mental health professionals, these results were a bit surprising. There are a few possible explanations for these findings. First, teachers spend more time with the students they were asked to judge, so it is possible that they are more knowledgeable regarding these students' behavior. Classroom teachers were also able to evaluate their students' behavior within the context of the classroom, and determine if it

was discrepant from their same-age peers. Conversely, school-based mental health professionals work with students across all grade levels, and therefore likely have less frequent face-to-face contact with individual students. In the current study, the number of students known by an individual mental health professional varied greatly, supporting the fact that these professionals might not come into contact with all students. School-based mental health professionals were also asked to nominate from long grade-level rosters of students, which contained 114 students (School A) or 124 students (School B). The sheer number of students that school-based mental health professionals were expected to identify/recall and evaluate their behavior (i.e., judge if they demonstrated elevated levels of anxiety and/or depression) could have made the nomination process a cognitively taxing one.

Implications for School Psychologists

Several implications can be gleaned from the primary findings in the current study. First, the prevalence of students with either or both symptom types within the current sample of elementary school students underscores the need to ensure the mental health concerns of children are considered, and appropriate prevention and intervention services are provided. School psychologists play a crucial role in both advocating for and implementing such mental health services (NASP, 2008). Findings within the current study confirm the presence of both anxiety and depressive symptoms in a general population of elementary school children. Prevention and intervention services are essential to address the needs of already identified students and prevent the development or manifestation of these disorders later in adolescence or adulthood (Dunlap et al., 2006; Greenberg, Domitrovich, Bumbarger, 2001; NASP, 2003). Given the negative outcomes

associated with the presence of mental health problems in children, identifying students who display elevated, but not necessarily functionally impairing, levels of symptoms, is in line with a proactive and preventative stance on mental health treatment.

Overall, the results of the current study suggest that educators, both teachers and school-based mental health professionals, are capable of identifying 40 to 67% of students who report clinically elevated levels of anxiety and depression. This finding is extremely noteworthy, as a relatively small literature base exists on this important topic. Given the numerous concerns raised in regards to using a universal screener to identify students with mental health concerns (Center for Mental Health in the Schools, 2005; Levitt et al., 2007), the current study provides some support for the validity of an alternative— asking teachers or school-based mental health professionals to identify students with anxiety and/or depression. Thus, using educator nominations to identify students with anxiety and/or depression can be a moderately accurate mechanism to ensure that the students in need are identified and thus eligible for invitation to receive subsequent assessment and intervention services. School psychologists are ideally trained and positioned to implement a nomination process when attempting to identify students with internalizing psychopathology, as well as to train teachers and staff on signs and symptoms in efforts to hopefully increase the accuracy of educator nominations.

Anecdotal findings gleaned from the procedures used in the current study also indicate that the process of using educator nominations seemed to circumvent some of the barriers associated with universal screeners. Use of a nomination process was time efficient; teachers took approximately 10-15 minutes to complete the nomination forms. As there were significantly fewer teachers than students, the entire nomination process

for two grade levels in a given school could be facilitated by one person and completed in less than two hours. While school-based mental health professionals took more time than teachers to complete their nominations, they were still able to complete them in a doable timeframe (specifically, approximately 30 minutes). Using a nomination process was also expedient in that there were no measures to score, which drastically reduced the amount of time required to yield a final list of students. From start to finish, the entire screening process completed via educator nominations was able to be completed in a single day. Finally, the costs associated with the nomination process were negligible, with manpower and printing the largest associated costs. Perhaps the largest barrier encountered during the educator nomination procedure was ensuring that educators completed the nomination forms independently, as several times educators asked the principle investigator for permission to discuss nominations with other teachers or school-based mental health professionals (permission was denied). Simple reiteration of the directions, as well as proximal supervision, ensured that educators made their nominations independent of each other.

Schools that elect to use an educator nomination approach in lieu of universal screening via student self-report should expect to miss approximately one-third to almost 60 percent of students who experience clinical levels of anxiety if relying on school mental health professionals or teachers as informants, respectively, and approximately half of the students who report at-risk or higher levels of depressive symptoms. Thus, it may be argued that it is important to ensure that the entire student population should be screened via self-report to ensure that fewer (or no) students are “missed.” Given the potential risks associated with missing a student with elevated symptoms of anxiety

and/or depression (e.g., school refusal, suicidal thoughts), it is important that using a more comprehensive assessment, such as a universal screener, would subsequently miss fewer students who may be in need of mental health services. At the same time, issues associated with universal screeners, such as identification of a large group of students with clinical levels of symptoms for whom schools would be responsible for providing or coordinating treatment, as well as manpower and cost, might preclude schools from selecting this option anyway. Examples of these barriers were encountered within the current study, and rendered the screening of a large number of students difficult.

Regarding logistics, the screening process, repeated twice to increase trustworthiness in student self-report, was time intensive (took 30-60 minutes per group of students screened). More than one person was needed during survey administration events, as teachers often forget to send all of their students at the designated time to the private location; a research team member located those students and administered the student self-report instruments separately. Due to student absences, multiple members of the research team were needed to assess those students individually at a later date. Cost to purchase the published self-report measures administered was substantial. Specifically, although the researcher received a 30% student discount from the publishing company, list prices of the measures are approximately \$2.20 per CDI and \$1.90 per MASC; thus, schools would face a cost of approximately \$1135 for materials needed to assess 238 students using procedures akin to those used in the current study. Hand scoring the measures, a process repeated to ensure accuracy, was also quite time-consuming. The universal screening was also complicated by parent resistance to children providing information about their mental health. As detailed in the methods section, 12% of parents

who communicated in writing with the research team (i.e., returned consent forms) refused to allow their child to participate in the project, which was described as a mental health screening. Only 50% of students in the two participating schools were ultimately eligible to participate in the mental health screening due to the written parent consent requirement. Thus, the mental health status and needs of approximately half of students were unable to be considered in systematic ways.

In sum, there are both positive and negative aspects to identification methods such as universal screeners and teacher nominations. As such, schools must carefully evaluate the evidence for and against both methods; school psychologists are ideally situated to assist in this important decision-making process. The identification methods used by schools should vary based upon their purpose, type of symptoms, and intention for follow-up. For example, schools that aim to identify *all* students with clinically significant symptoms should consider a universal screener, as results from the current study indicate that not all students will be identified using educator nominations. However, if the school aims to only identify *some* students who might benefit from a limited amount of supplemental mental health services available at the school (e.g., from a single community provider), the nomination procedures used in the current study may prove a feasible method to identify a specific subgroup of students. In regards to the type of symptoms, if the school aims to identify students with elevated levels of anxiety, then findings from the current study support the use of a team of school mental health professionals. If the school is interested in identifying students with elevated levels of depression, then asking teachers for nominations may be adequate. Regarding a school's intention for follow-up, if a clinical assessment will occur between initial identification

and clinical service provision, then a school should not be discouraged by methods associated with low specificity rates.

Another important implication of the current study involves ethical issues in youth mental health services, including stigma and parent consent for student participation. Experiences in the current study suggest that regardless of the identification method used, approximately 50% of students are going to be excluded from consideration due to lack of consent. In the current study, 12% of students who returned consent forms were not permitted to participate; their parents actively declined participation. Of the total sample of 4th and 5th grade students, 44% of consent forms were not returned at all, suggesting a passive decline of participation. These rates suggest that a large percentage of parents do not, for one reason or another, want their child to be identified for or receive mental health services. It is possible that providing psychoeducation to parents regarding mental health services (e.g., benefits, outcomes of untreated mental health problems), and working proactively to dispel the stigma that surrounds mental health, might increase the number of parents who would permit their child to receive or be considered for mental health services. School psychologists can spearhead this endeavor by ensuring that their school administration and staff are supportive of school-based mental health services.

The current findings support the use of a school-based mental health professional team to identify approximately 45 to 66 percent of youth with clinically elevated symptoms of internalizing psychopathology. As an important member of such a team, school psychologists can facilitate the use of this method, as opposed to relying on themselves or a colleague alone to identify students to target for services. There may be

some advantages to using a team of school mental health professionals (vs. teachers) to provide nominations. For instance, using a team approach would require less time than eliciting nominations from every teacher within the school or grade. Mental health stigma, or teachers' discomfort with imposing judgments of mental health on students, would likely not be an issue when relying on school-based mental health professionals. Further, school mental health professionals also receive training in mental health issues, whereas teachers in the current study reported receiving almost no training in children's mental health issues. It is possible that having a mental health background might have increased the accuracy of school-based mental health professionals. Using a team of school mental health professionals would ease the process of facilitating and coordinating school-based intervention services. However, it should also be noted that should schools choose to pursue using a team of school-based mental health professionals to make nominations, the issue of reduced specificity would have to be addressed. More research is needed to determine if capping the proportion of a student body eligible for nomination would reduce specificity while retaining specificity.

The moderate accuracy rates obtained in the current study suggest that it might be beneficial for school psychologists to provide training to teachers and staff on how to identify students who may be exhibiting signs or symptoms of anxiety and/or depression. The current study utilized only a list of behavioral indicators to assist educators in making their nominations. While it is unknown if more formalized training would have increased educators' accuracy rates, teacher trainings and in-service presentations fit within the role of the school psychologist. For the purposes of both identification and treatment, it is important that all school personnel who come into contact with students

on a daily basis are able to identify symptoms of depression and anxiety, and be aware of the referral procedures in the school to ensure that the student receives the assistance he or she may require.

Delimitations

A delimitation is the intentional inclusion of a limitation in a study's design. A delimitation of the current study relates to using self-report measures of anxiety and depression in children (i.e., MASC, CDI), instead of a diagnostic clinical interview, as the outcome. This decision was made in line with the purpose of the study, which was to determine an effective and appropriate identification mechanism for use in schools. Diagnostic clinical interviews are rarely utilized in school-based mental health services, as they require substantial time and resources in regards to training in the individual administration procedures. Another delimitation was that study results only apply to older elementary school students. This sample was purposefully selected due to the ages of students in fourth and fifth grade, typically nine and ten years old, respectively. Most current gold standard school-based interventions for anxiety and depression are appropriate for youth no younger than 8 years of age (Kendall & Hedtke, 2006; Stark, Schnoebelen, Simpson, Hargrave, Molnar, & Glen, 2007). Students in younger elementary school grades are not appropriate for inclusion in these school-based interventions. For reasons of practicality, the current study thus focused exclusively on students that, if identified as in need of mental health services, could be invited to participate in the interventions offered later in the school year.

Limitations

Limitations refer to potential weaknesses that are difficult to control for given the unique parameters of the research study. One limitation in the current study involves teachers' unknown levels of comfort and confidence in identifying students with mental health problems. Such concerns would significantly impact teachers' desire to provide such nominations. In the current study, 100% of teachers who were recruited to participate agreed to do so after they were provided with a rationale for the importance of the study. This participation rate suggests that being provided sufficient information on the importance of identifying youth with mental health problems helps teachers feel sufficiently comfortable to participate in identification endeavors. However, the dramatically different student participation rate within classrooms may be a more accurate index of the varying levels of enthusiasm with which teachers approach identification of youth with mental health concerns.

Other study limitations pertain to challenges encountered during attempts to obtain student consent. In previous similar studies, only 50-60% of students who were provided consent typically returned them (Layne et al., 2006; Stark et al., 2010). The overall return rate of consent forms in the current study was 56%, and the participation rate was lower (i.e., 48%) because parents of 31 students who returned consent forms explicitly denied permission for their children to take part in the study. While the participation rate and resulting sample size was within expected range, it is possible that students at the participating schools who had the highest elevations in anxiety and/or depressive symptoms were excluded due to lack of positive parental consent. Had these students been able to take part, teachers would have had additional students eligible for

nomination, possibly including some of the small number of students in their classes that evidenced clinical symptoms levels.

Another limitation of the current study pertains to variability in teacher-student contact/familiarity. Specifically, student recruitment (i.e., distribution of consent forms) and nominations procedures were conducted through and with homeroom teachers. All teachers met the stipulation of having at least five hours of face-to-face contact with the students (range: 10 to 35 hours per week). However, several teachers noted that they engaged in a “co-teaching” system with another teacher. Thus, some students were split between two teachers for part of the day depending upon the subject (e.g., with a different teacher 2 hours per day for reading instruction). In the majority of cases, the homeroom teacher who provided the nominations for a given group of students also taught those students in one or more subject areas throughout the course of the day and/or week. This co-teaching system could have resulted in some teachers knowing some students better than others, therefore impacting their ability to detect problems within all students in their classrooms. The relationship between individual teachers’ accuracy rates and weekly contact with individual student participants is unknown.

A final limitation pertains to the sole reliance on student self-report data as the gold standard method for determining the presence of youth psychopathology. It is important to consider issues related to readability and/or comprehension of the questions, recall of symptoms (i.e., reflecting on their feelings/behaviors at the time of the screening and not during the time frame as directed by the measure), and students’ own abilities to evaluate their feelings or problems. Given the fact that there were no other ratings of students’ symptoms (e.g., parent ratings), it is impossible to determine the validity (i.e.,

accuracy) of students' self-report ratings. However, students who self-reported elevated or at-risk symptoms endorsed such ratings two times, thus lending some support to the consistency/reliability of their own evaluations of their anxiety and/or depression levels.

Directions for Future Research

As this was an initial investigation into the accuracy of educator nominations to identify youth with at-risk or higher levels of anxiety and depression, the results of the current study are in need of replication prior to making definitive conclusions from findings. Additionally, rather than attempting to generalize results from the current study to older population of students (e.g., middle or high school), similar studies should be conducted, with more attention to the role of student-teacher contact frequency in educator accuracy rates.

Future studies should also try and recruit a larger sample of students, so that the subsample of youth who endorse elevated symptoms of anxiety and/or depression is larger. Larger sample sizes would be associated with diminished sizes of confidence intervals, which may enable for more confidence in the obtained proportions of interest.

As the co-teaching model seems to be increasing in popularity at the elementary school level, it might be beneficial for future studies to address this via allowing more than one teacher to provide nominations for a specific student when examining this population of students. Another direction for future research concerns the issue of teacher training on the signs and symptoms of anxiety and depression, and the potential impact of such training on educators' abilities to provide accurate nominations.

Future studies should attempt to determine the extent to which limiting the number of students that a teacher could nominate in her/her class would affect sensitivity

and specificity levels. The current study limited teachers to nominating three students for a given symptom type; sensitivity may have improved if teachers could have nominated as many students for whom they had concerns. This increased-nomination procedure (i.e., up to 21 students per grade) used for school-based mental health professionals was associated with a worse specificity rate, and a similar problem may arise if nominations are not capped within a classroom.

Future studies should also consider including school nurses as a part of the school-based mental health professional team. As previous research has demonstrated that they are frequent recipients of referrals for youth with possible mental health problems, obtaining data regarding their individual accuracy rates as well as their impact on the accuracy of the overall team of mental health professionals would be interesting.

Finally, given the large numbers of students who were “missed” by teachers and/or school-based mental health professionals, future research should focus on this unique population of youth. Namely, specific characteristics of this population should be identified, such as the demographic features and/or mean rating scale *T*-scores, in order to identify the personal characteristics and clinical features of these students who repeatedly report diminished mental health but are not identified by educators.

Conclusions

This study sought to determine the accuracy of educators in identifying students who experience symptoms of internalizing mental health disorders. Results from the current study clarify and extend the relevant literature base by showing that teachers can identify approximately 40 to 50% of older elementary school students who report elevated levels of anxiety and depression, respectively. Teachers were more accurate in

discerning which students did not experience elevated problems; in particular, the misidentification rate of 17% indicated they falsely identified less than one in five non-symptomatic students as depressed or anxious. Perhaps more concerning was that students “missed” 50 and 60% of youth who consistently reported at-risk levels of depression and anxiety, respectively. Teachers may require specific professional development on mental health problems of youth in order to accurately pick-up on behavioral manifestations of childhood anxiety and depression.

This study was the first known investigation into the accuracy of school-based mental health professionals’ in identifying students within a two grade-level span as potentially anxious and/or depressed. The preliminary findings are encouraging; as a team, school-based mental health professionals seem almost as accurate as classroom teachers in their abilities to identify students with elevated depression within a given school. Additionally, a school mental health team was able to identify two-thirds of students with elevated levels of anxiety. Individual team members were less accurate (as compared to the team’s collective judgment) in correctly identifying students who self-reported symptoms of depression. The sensitivity for detecting anxious students was similar regardless of whether the nominations were made as a team or individually. The accuracy of the school mental health team was compromised by the relatively low specificity rates, as teams falsely identified 30 – 35% of mentally healthy students as symptomatic.

In sum, the findings from the current study indicated that approximately 16% of students in typical elementary schools report clinical levels of internalizing disorders. Valid mechanisms must be put in place to identify these students so that these youth are

targeted for inclusion in prevention and intervention services. Findings from the current study provide some support for the use of educator nominations to identify approximately half of students with elevated anxious and depressive symptomatology. As such, educator nominations appear to be a promising mechanism for identifying youth who may otherwise go unrecognized, particularly in social contexts in which more invasive universal strategies such as school-wide self-report screenings may not be feasible.

References

- Achenbach, T. M. & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington: University of Vermont, Research Center for Children, Youth & Families.
- Auger, R. W. (2004). The accuracy of teacher reports in the identification of middle school students with depressive symptomatology. *Psychology in the Schools, 41*, 379-389.
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision. Washington, DC, American Psychiatric Association.
- Armbruster, P. & Lichtman, J. (1999). Are school based mental health services effective? Evidence from 36 inner city schools. *The Community Mental Health Journal, 35*, 493-504.
- Avenevoli, S., Knight, E., Kessler, R. C., & Merikangas, K. R. (2008). Epidemiology of depression in children and adolescents. In J. R. Z. Abela & B. L. Hankin (Eds). *Handbook of depression in children and adolescents* (pp. 6–32). New York: Guilford.
- Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: Developmental issues and implications for DSM-V. *Psychiatry Clinics of North America, 483-524*.

- Bernstein, G. A., Layne, A., Egan, E. A., & Tennison, D. M. (2005). School-based interventions for anxious children. *The Journal of American Academy of Child and Adolescent Psychiatry, 44*, 1118-1127.
- Bittner, A., Egger, H. L., Erkanli, A., Costello, E. J., Foley, D. L., & Angold, A. (2007). What do childhood anxiety disorders predict? *The Journal of Child Psychology and Psychiatry, 48*, 1174-1183.
- Brener, N. D., Weist, M., Adelman, H., Taylor, L., & Vernon-Smiley, M. (2007). Mental health and social services: Results from the School Health Policies and Programs Study 2006. *Journal of School Health, 77*, 486-499.
- Brock, S.E. (2002). School suicide prevention. In S. E. Brock, P. J. Lazarus, & S. R. Jimerson (Eds.), *Best practices in school crisis prevention and intervention* (pp. 553-576). Bethesda, MD: National Association of School Psychologists.
- Center for Mental Health in Schools. (2003). Youngster's mental health and psychosocial problems: What are the data? Los Angeles: Author. Retrieved May 1, 2010 from <http://smhp.psych.ucla.edu/pdfdocs/prevalence/youthMH.pdf>.
- Center for Mental Health in Schools. (2005). Screening Mental Health Problems in Schools: A Policy and Practice Analysis. Los Angeles: Author. Retrieved April 1, 2010 from <http://smhp.psych.ucla.edu/pdfdocs/policyissues/mhscreeningissues.pdf>
- Center for Mental Health in Schools. (2006). The current status of mental health in schools: A policy and practice analysis. Los Angeles: Author. Retrieved May 1, 2010 from <http://smhp.psych.ucla.edu/currentstatusmh.htm>.

- Christner, R. W., Mennuti, R. B., & Whitaker, J. S. (2008). An overview of school-based mental health practice: From systems service to crisis intervention. In R. W. Christner & R. B. Mennuti (Eds.), *School-Based Mental Health: A Practitioner's Guide to Comparative Practice* (pp. 3-22). New York: Routledge.
- Committee on School Health (2004). School-based mental health services, *Pediatrics* 113, 1839–1845.
- Cooper, J. L. (2008). The federal case for school-based mental health services and supports. *The Journal of the American Academy of Child and Adolescent Psychiatry*, 47, 4-8.
- Copeland, W. E., Miller-Johnson, S., Keeler, G., Angold, S., & Costello, E. J. (2007). Childhood psychiatric disorders and young adult crime: A prospective, population-based study. *American Journal of Psychiatry*, 164, 1668-1675.
- Copeland, W. E., Shanahan, L., Costello, E. J., & Angold, A. (2009). Childhood and adolescent psychiatric disorders as predictors of young adult disorders. *The Archives of General Psychiatry*, 66, 764-772.
- Costello, E.J., & Angold, A. (1988). Scales to assess child and adolescent depression: Checklists, screens, and nets. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 726–737.
- Costello, E. J., Egger, H. L., & Angold, A. (2004). Developmental epidemiology of anxiety disorders. In T. H. Ollendick, & J. S. March (Eds.), *Phobic and anxiety disorders in children and adolescents: A clinician's guide to effective psychosocial and pharmacological interventions* (pp. 61-91). New York, NY, US: Oxford University Press.

- Costello, E. J., Egger, H. L., & Angold, A. (2005a). The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. *Child and Adolescent Psychiatric Clinics of North America*, *14*, 631-648.
- Costello, E. J., Egger, H. L., & Angold, A. (2005b). 10-Year Research Update Review: The Epidemiology of Child and Adolescent Psychiatric Disorders: I. Methods and Public Health Burden. *Journal of the American Academy of Child & Adolescent Psychiatry*, *44*, 972-986.
- Council for Accreditation of Counseling and Related Educational Programs (CACREP). (2009). *2009 Standards*. Retrieved October 17, 2010 from <http://www.cacrep.org/doc/2009%20Standards%20with%20cover.pdf>.
- Dadds, M. R., Spence, S. H., Holland, D. E., Barrett, P. M., Laurens, K. R. (1997). Prevention and early intervention for anxiety disorders: A controlled trial. *Journal of Consulting and Clinical Psychology*, *65*, 627-635.
- Drummond, T. (1994). *The student risk screening scale*. Grants Pass, OR: Josephine County Mental Health Program.
- Dywer, S. B., Nicholson, J. M., & Battistutta, D. (2006). Parent and teacher identification of children at risk of developing internalizing or externalizing mental health problems: A comparison of screening methods. *Prevention Science*, *7*, 343-357.
- Duchnowski, A. J. & Kutash, K. (2009). Integrating PBS, mental health services, and family-driven care. In W. Sailor, G. Dunlap, G. Sugai, & R. Horner (Eds.) *Handbook of Positive Behavior Support* (pp. 203-232). New York: Springer.

- Dunlap, G., Strain, P. S., Fox, L., Carta, J., Conroy, M., Smith, B.J., et al. (2006). Prevention and intervention with young children's challenging behavior: Perspective regarding current knowledge. *Behavioral Disorders, 32*, 29 – 45.
- Epstein, M. H., Cullinan, D., Quinn, K. P., Cumblad, C. (1994). Characteristics of children with emotional and behavioral disorders in community-based programs designed to prevent placement in residential facilities. *Journal of Emotional and Behavioral Disorders, 2*, 51-57.
- Farmer, E. M., Burns, B. J., Philip, S. D., Angold, A., & Costello, E. J. (2003). Pathways into and through mental health services for children and adolescents. *Psychiatric Services, 54*, 60-67.
- Fergusson, D. M. & Woodward, L. J. (2002). Mental health, educational and social role outcomes of adolescents with depression. *Archives of General Psychiatry, 59*, 225-231.
- Flanagan, R., Allen, K., & Henry, D. J. (2010). The impact of anger management treatment and rational emotive behavior therapy in a public school setting on social skills, anger management, and depression. *The Journal of Rational-Emotive Cognitive Behavior Therapy, 28*, 87-99.
- Foster, S., Rollefson, M., Doksum, T., Noonan, D., Robinson, G., & Teich, J. (2005). *School mental health services in the United States, 2002-2003*. DHHS Pub no. (SMA) 05-4068. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Administration.

- Friedrich, A. & Suldo, S. M. (2010, March). *School-based mental health services: A national survey of school psychologists*. Paper presented at the National Association of School Psychologists Annual Conference, Chicago, IL.
- Glover, T. A. & Albers, C. A. (2007). Considerations for evaluating universal screening assessments. *Journal of School Psychology, 45*, 117-135.
- Green, H.G. & Zar, J. H. (1989). A Basic program to compute the sensitivity, specificity, and predictive values of screening tests. *Educational and Psychological Measurement, 49*, 147-150.
- Greenberg, M.T., Domritovich, C., & Bumberger, B. (2001). The prevention of mental disorders in school-age children: The current state of the field. *Prevention and Treatment, 4*, 1-62.
- Grills-Taquechel, A. E., Ollendick, T. H., & Fisak, B. (2008). Reexamination of the MASC factor structure and discriminate ability in a mixed clinical and outpatient sample. *Depression and Anxiety, 25*, 942-950.
- Huberty, T. J. (2008). Best practices in school-based interventions for anxiety and depression. In A. Thomas & J. Grimes (Eds). *Best Practices in School Psychology V* (pp. 1473-1486). Bethesda: The National Association of School Psychologists.
- Johnson B. & Christensen L. (2006) *Educational research: Quantitative, qualitative, and mixed approaches (3rd ed)*. Thousand Oaks, CA: Sage.
- Kalafat, J., & Lazarus, P.J. (2002). Suicide prevention in schools. In S.E. Brock, P.J. Lazarus, & S.R. Jimerson (Eds.), *Best Practices in School Crises Prevention and Intervention*. Bethesda, MD: National Association of School Psychologists.

- Kaufman, J., Birmaher, B., Brent, D., Rao, U., Flynn, C., Moreci, P., et al. (1997). Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 980-988.
- Kendall, P. C., & Hedtke, K. A. (2006). *Cognitive-behavioral therapy for anxious children: Therapists manual 3rd Edition*. Ardmore, PA: Workbook publishing.
- Klein, R. G. (2009). Anxiety disorders. *The Journal of Child Psychology and Psychiatry*, 50, 153-162.
- Lavigne, J. V., LeBailly, S. A., Hopkins, J., Gouze, K. R., & Binns, H. J. (2009). The prevalence of ADHD, ODD, depression, and anxiety in a community sample of 4-year olds. *The Journal of Clinical Child and Adolescent Psychology*, 38, 315-328.
- Layne, A. E., Bernstein, G. A., & March, J. S. (2006). Teacher awareness of anxiety symptoms in children. *Child Psychiatry and Human Development*, 36, 383-392.
- Levitt, J. M., Saka, N., Romanelli, L. H., & Hoagwood, K. (2007). Early identification of mental health problems in schools: The status of instrumentation. *The Journal of School Psychology*, 45, 163-191.
- March J. (1997). Multidimensional anxiety scale for children. MultiHealth Systems Inc., North Tonawanda, NY.
- March J.S., Parker J. D. A., Sullivan K., Stallings P., & Conners C.K. (1997). The multidimensional anxiety scale for children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 554-565.
- Mash, E. J. & Barkley, R. (2003). *Child Psychopathology*. New York: Guilford.

- McCarthy, J., Downes, E. J., & Sherman, C. J. (2008). Looking back at adolescent depression: A qualitative study. *Journal of Mental Health Counseling, 30*, 49-68.
- Merrell, K.W. (2008a). *Behavioral, Social, and Emotional Assessment of Children and Adolescents*. New York: Lawrence Erlbaum Associates.
- Merrell, K. W. (2008b). *Helping Students Overcome Depression and Anxiety*. New York: Guilford.
- Moffitt, T. E., Harrington, H., Caspi, A., Kim-Cohen, J., Goldberg, D., Gregory, A. M., & Poulton, R. (2007). Depression and generalized anxiety disorder: Cumulative and sequential comorbidity in a birth cohort followed prospectively to age 32 years. *Archives of General Psychiatry, 64*, 651-660.
- Moor, S., Maguire, A., McQueen, H., Wells, E. J., Elton, R., Wrate, R., & Blair, C. (2007). Improving the recognition of depression in adolescence: Can we teach the teachers? *Journal of Adolescence, 30*, 81-95.
- Mufson, L. H., Pollack Dorta, K., Olfson, M., Weissman, M. M., & Hoagwood, K. (2004). Effectiveness research: Transporting interpersonal psychotherapy for depressed adolescents (IPT-A) from the lab to school-based clinics. *Clinical Child and Family Psychology Review, 7*, 251-261.
- Nabors, L. A. & Prodent, C. A. (2002). Evaluation of outcomes for adolescents receiving school-based mental health services. *Children's Services: Social Policy, Research, and Practice, 5*, 105-112.
- National Association of Social Workers (NASW). (2002). *NASW standards for school social work services*. Retrieved online October 17, 2010 from http://www.naswdc.org/practice/standards/NASW_SSWS.pdf

National Association of School Psychologists (NASP). (2008). Position statement on early intervention services. Retrieved September 2011 from the National Association of School Psychologists website:

http://www.nasponline.org/about_nasp/pospaper_eis.aspx

National Association of School Psychologists (NASP). (2008). *The importance of school mental health services*. Retrieved September 2011 from the National Association of School Psychologists website:

http://www.nasponline.org/about_nasp/positionpapers/MentalHealthServices.pdf

National Association of School Psychologists (NASP). (2010). *NASP standards for graduate preparation of school psychologists*. Retrieved October 17, 2010 from

http://www.nasponline.org/standards/2010standards/1_Graduate_Preparation.pdf

Nelson, J. R., Benner, G. J., Reid, R. C., Epstein, M. H., & Currin, D. (2002). The convergent validity of office discipline referrals with the CBCL-TRF. *Journal of Emotional and Behavioral Disorders, 10*, 181-188.

Newcombe, R. G. (1998). Two-sided confidence intervals for the single proportion: Comparison of seven methods. *Statistics in Medicine, 17*, 857-872.

Ollendick, T. H., Oswald, D. P., & Francis, G. (1989). Validity of teacher nominations in identifying aggressive, withdrawn, and popular children. *Journal of Clinical Psychology, 18*, 221-229.

O'Rourke, N., Hatcher, L., & Stepanski, E. J. (2010). A step-by-step approach to using SAS for univariate and multivariate statistics, second edition. Cary, NC: SAS Publishing.

- Pastor, P., & Reuben, C. (2008). Diagnosis of attention deficit hyperactivity disorder and learning disability: United States, 2004-2006. National Center for Health Statistics. *Vital Health Statistics*. *10*, (237).
- President's New Freedom Commission on Mental Health*. (2003). Retrieved May 18, 2010 from <http://www.mentalhealthcommission.gov/reports/FinalReport/downloads/FinalReport.pdf>
- Renk, K. (2005). Cross-informant ratings of the behavior of children and adolescents: The "gold standard." *The Journal of Child and Family Studies*, *14*, 457-468.
- Repie, M. S. (2005). A school mental health issues survey from the perspective of regular and special education teachers, school counselors, and school psychologists. *Education and Treatment of Children*, *28*, 279-298.
- Reynolds, C. R., & Kamphaus, R. (2004). *Behavior Assessment System for Children - Second Edition*. Circle Pines, MN: American Guidance Services.
- Reynolds, C. R., & Richmond, O. B. (1979). What I think and feel: A revised measure of children's manifest anxiety. *Journal of Personality Assessment*, *43*, 281-283.
- Richardson, M. J., Caldarella, P., Young, B. J., Young, E. L., & Young, K. R. (2009). Further validation of the systematic screening for behavior disorders in middle and junior high school. *Psychology in the Schools*, *46*, 605-615.
- Robinson, K. E. & Rapport, L. J. (2002). Outcomes of a school-based mental health program for youth with serious emotional disorders. *Psychology in the Schools*, *39*, 661-675.

- Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology Review*, 3, 223-241.
- SAS Institute. (2008). *SAS software version 9.2*. Cary, NC: SAS Institute Inc.
- Scahill, L. & Schwab-Stone, M. (2000). Epidemiology of ADHD in school-age children. *Child and Adolescent Psychiatric Clinics of North America*, 9, 541-555.
- Stark, K. D., Simpson, J., Schnoebelen, S., Hargrave, J., Molnar, J., & Glen, R. (2007). *Treating Depressed Youth: Therapist Manual for "ACTION."* Ardmore, PA: Workbook Publishing.
- Substance Abuse and Mental Health Services Administration. (2009). *Results from the 2008 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD.
- Suldo, S. M., Friedrich, A., & Michalowski, J. (2010). Personal and systems-level factors that limit and facilitate school psychologists' involvement in school-based mental health services. *Psychology in the Schools*, 1-20.
- U.S. Department of Health and Human Services. (1999). *Mental health: A report of the surgeon general (executive summary)*. Retrieved in March, 2010 from www.surgeongeneral.gov/library/mentalhealth/children.html. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Mental Health Services; National Institute of health, National Institute of Mental Health.
- Van Ameringen, M., Mancini, C., Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Anxiety Disorders*, 17, 561-571.

- Walker, B., Cheney, D., Stage, S., & Blum, C. (2005). Schoolwide screening and positive behavior supports: Identifying and supporting students at risk for school failure. *The Journal of Positive Behavior Interventions, 7*, 194-204.
- Walker, H., & Severson, H. H. (1992). *Systematic screening for behavior disorders*. Longmont, CO: Sopris West.
- Weinberg, R. B. (1990). Serving large numbers of adolescent victim-survivors: Group interventions following trauma at school. *Professional Psychology: Research and Practice, 21*, 271-278.
- Weist, M. D., Rubin, M., Moore, E., Adelsheim, S., & Wrobel, G. (2007). Mental health screening in schools. *Journal of School Health, 77*, 53-58.
- Whitmore, K. Y. (2004). *School-based family counseling practices: A national survey of school counselors, school psychologists, and school social workers*. Unpublished doctoral dissertation, The College of William and Mary, Virginia.
- Woodward, L. J. & Fergusson, D. M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1086-1093.

Appendices

Appendix A: Teacher Consent Letter

Dear Teacher:

This letter provides information about a research study that will be conducted in your elementary school by investigators from the University of South Florida. Research shows that students with common mental health problems like anxiety and depression often underperform in school due to challenges focusing and participating in class. Only about one-third of students with mental health problems receive the psychological assistance that they need. In order for schools to offer services to the students most in need, it is important to develop accurate and efficient methods to identify students with elevated levels of anxiety and depression. This letter provides information about a study that will be conducted to determine how accurately educational professionals (i.e., teachers, guidance counselors) can identify students with diminished wellness.

- ✓ **Who We Are:** The research team is led by Jennifer Cunningham, M.A., a doctoral candidate in the School Psychology Program at the University of South Florida (USF) and Shannon Suldo, Ph.D., a professor in the School Psychology Program at USF. We are planning the study in cooperation with the administration of your elementary school to make sure that the study provides information that will be useful to the school.
- ✓ **Why We are Requesting Your Participation:** This study is being conducted as part of a project entitled, “Wellness of Elementary School Children.” You are being asked to participate in this project because you are a 4th or 5th grade teacher at an elementary school that has agreed to take part in the research project. More specifically, a primary aim of the study is to examine the appropriateness of using teacher nominations to identify students with “at-risk” levels of anxiety and/or depression, as compared to students’ self-report of their own symptoms.
- ✓ **Why You Should Participate:** Because we need to know more about how to accurately identify students in need of mental health services! Specifically, students with elevated levels of anxiety or depression tend to “fly under the radar,” and therefore often fail to be identified as in need of mental health services. Therefore, it is crucial that we know more about potential methods of identification aimed specifically at this sub-group of students. In this study, information that you provide will be combined with information from all other participating teachers and students. These group-level results of the study will be shared with the teachers, school mental health providers, and administrators at your elementary school in order to increase their knowledge of accurate methods of identifying students with elevated levels of anxiety or depression. In sum, this information will allow us to evaluate effective mechanisms for identifying students that are often overlooked, and ensure they receive the mental health services to make them successful. Each teacher who agrees to participate will receive a \$25 giftcard. Please note, students will only be able to participate in the free mental health screening if their classroom teacher agrees to participate.
- ✓ **What Participation Requires:** Teachers who agree to participate will be provided with a list of students in their class for whom written consent for participation has been obtained. Teachers will then be asked to identify up to three students in their classroom who show elevated symptoms of anxiety and/or depression, to the extent that intervention might be beneficial. This nomination process is expected to take between 5-10 minutes. Teachers will also be asked to fill out a brief (less than 5 minute) demographic questionnaire.
- ✓ **Please Note:** Your decision to participate in this research study must be completely voluntary. You are free to participate in this research study or to withdraw from participation at any time. If you choose not to participate, or if you withdraw at any point during the study, this will in no way affect your relationship with your elementary school, USF, or any other party.
- ✓ **Confidentiality of Your Responses:** There is minimal risk for participating in this research. Your privacy and research records will be kept confidential to the extent of the law. Authorized research

personnel, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but your individual responses will not be shared with school system personnel or anyone other than the USF research team. Your completed nomination form will be assigned a code number to protect the confidentiality of your responses. Only the USF research team will have access to the locked file cabinet stored at USF that will contain all records linking code numbers to participants' names.

- ✓ What We'll Do With Your Responses: We plan to use the information from this study to determine the appropriateness of using teacher nominations to identify students with elevated levels of anxiety or depression. It is anticipated that these results can inform future practices within schools. The results of this study may be published. However, the data obtained from you will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.
- ✓ Questions? If you have any questions about this research study, please contact me (Ms. Cunningham) at [REDACTED] or [REDACTED]. If you have questions about your rights as a person who is taking part in a research study, you may contact a member of the Division of Research Compliance of the USF at [REDACTED] please refer to eIRB # 2534).
- ✓ Want to Participate? To participate in this study, please sign the attached consent form.

Sincerely,

Jennifer Cunningham, M. A.
School Psychology Doctoral Candidate
University of South Florida

Shannon Suldo, Ph.D.
Associate Professor of School Psychology
Department of Psychological and Social Foundations

Consent to Take Part in this Research Study

I freely give my permission to take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

Signature of teacher

Printed name of teacher

Date

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

Signature of person
obtaining consent

Printed name of person
obtaining consent

Date

Appendix B: School-Based Mental Health Professional Consent Letter

Dear School-Based Mental Health Professional:

This letter provides information about a research study that will be conducted in your elementary school by investigators from the University of South Florida. Research shows that students with common mental health problems like anxiety and depression often underperform in school due to challenges focusing and participating in class. Only about one-third of students with mental health problems receive the psychological assistance that they need. In order for schools to offer services to the students most in need, it is important to develop accurate and efficient methods to identify students with elevated levels of anxiety and depression. This letter provides information about a study that will be conducted to determine how accurately educational professionals (i.e., teachers, guidance counselors) can identify students with diminished wellness.

- ✓ **Who We Are:** The research team is led by Jennifer Cunningham, M.A., a doctoral candidate in the School Psychology Program at the University of South Florida (USF) and Shannon Suldo, Ph.D., a professor in the School Psychology Program at USF. We are planning the study in cooperation with the administration of your elementary school to make sure that the study provides information that will be useful to the school.
- ✓ **Why We are Requesting Your Participation:** This study is being conducted as part of a project entitled, “Wellness of Elementary School Children.” You are being asked to participate in this project because you are a school-based mental health professional at an elementary school that has agreed to take part in the research project. More specifically, a primary aim of the study is to examine the appropriateness of using nominations by school-based mental health professionals to identify students with “at-risk” levels of anxiety and/or depression, as compared to students’ self-report of their own symptoms.
- ✓ **Why You Should Participate:** Because we need to know more about how to accurately identify students in need of mental health services! Specifically, students with elevated levels of anxiety or depression tend to “fly under the radar,” and therefore often fail to be identified as in need of mental health services. Therefore, it is crucial that we know more about potential methods of identification aimed specifically at this sub-group of students. In this study, information that you provide will be combined with information from all other participating school-based mental health professionals and students. These group-level results of the study will be shared with the teachers, school mental health providers, and administrators at your elementary school in order to increase their knowledge of accurate methods of identifying students with elevated levels of anxiety or depression. In sum, this information will allow us to evaluate effective mechanisms for identifying students that are often overlooked, and ensure they receive the mental health services to make them successful.
- ✓ **What Participation Requires:** School-based mental health professionals who agree to participate will be provided with a list of students by grade level for whom written consent for participation has been obtained. School-based mental health professionals will then be asked to nominate up to 20 students per grade who show elevated symptoms of anxiety and/or depression, to the extent that intervention might be beneficial. This nomination process is expected to take between 5-10 minutes. School-based mental health professionals will also be asked to fill out a brief (less than 5 minute) demographic questionnaire.
- ✓ **Please Note:** Your decision to participate in this research study must be completely voluntary. You are free to participate in this research study or to withdraw from participation at any time. If you choose not to participate, or if you withdraw at any point during the study, this will in no way affect your relationship with your elementary school, USF, or any other party.
- ✓ **Confidentiality of Your Responses:** There is minimal risk for participating in this research. Your privacy and research records will be kept confidential to the extent of the law. Authorized research

personnel, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but your individual responses will not be shared with school system personnel or anyone other than the USF research team. Your completed nomination form will be assigned a code number to protect the confidentiality of your responses. Only the USF research team will have access to the locked file cabinet stored at USF that will contain all records linking code numbers to participants' names.

- ✓ What We'll Do With Your Responses: We plan to use the information from this study to determine the appropriateness of using educator nominations to identify students with elevated levels of anxiety or depression. It is anticipated that these results can inform future practices within schools. The results of this study may be published. However, the data obtained from you will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.
- ✓ Questions? If you have any questions about this research study, please contact me (Ms. Cunningham) at [REDACTED] or [REDACTED]. If you have questions about your rights as a person who is taking part in a research study, you may contact a member of the Division of Research Compliance of the USF at [REDACTED] (please refer to eIRB # 2534).
- ✓ Want to Participate? To participate in this study, please sign the attached consent form.

Sincerely,

Jennifer Cunningham, M. A.
School Psychology Doctoral Candidate
University of South Florida

Shannon Suldo, Ph.D.
Associate Professor of School Psychology
Department of Psychological and Social Foundations

Consent to Take Part in this Research Study

I freely give my permission to take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

Signature of educator

Printed name of educator

Date

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

Signature of person
obtaining consent

Printed name of person
obtaining consent

Date

Appendix C: Parent Consent Letter

Dear Parent or Caregiver:

Research shows that students with common mental health problems like anxiety and depression often underperform in school due to challenges focusing and participating in class. Only about one-third of students with mental health problems receive the psychological assistance that they need. In order for schools to offer services to the students most in need, it is important to develop accurate and efficient methods to identify students with elevated levels of anxiety and depression. This letter provides information about a study that will be conducted to determine how accurately educational providers (i.e., teachers, guidance counselors) can identify students with diminished wellness.

- ✓ Who We Are: The research team is led by Jennifer Cunningham, M.A., a doctoral candidate in the School Psychology Program at the University of South Florida (USF) and Shannon Suldo, Ph.D., a professor in the School Psychology Program at USF. We are planning the study in cooperation with the administration of your elementary school to make sure that the study provides information that will be useful to the school.
- ✓ Why We are Requesting Your Child's Participation: This study is being conducted as part of a project entitled, "Wellness of Elementary School Children." Your child is being asked to participate in this project because he or she is a 4th or 5th grade student at an elementary school that has agreed to take part in the research project.
- ✓ Why Your Child Should Participate: Because we need to know more about how to accurately identify students in need of mental health services! In this study, information about your child will be combined with information about all other participating students. These group-level results of the study will be shared with the teachers, school mental health providers, and administrators at your elementary school in order to increase their knowledge of accurate methods of identifying students with elevated levels of anxiety or depression. You may also want to allow your child to participate due to the opportunity to receive important information about your child's current level of anxiety and depression. Specifically, participating students will take part in a free screening of their mental health. In the event a student indicates elevated levels of anxiety or depression, parents will be notified via a written letter. This letter will also direct you how to seek appropriate mental health services in the community. In sum, this information will give your family current knowledge about your child's mental health, as well as appropriate referral resources. Please note neither you nor your child will be paid for your child's participation in this study. However, small rewards will be provided to classes in which a high proportion of students return this parent permission form.
- ✓ What Participation Requires: Children with written permission to participate in the study will fill out two self-report surveys that ask about their symptoms of anxiety and depression. These surveys contain questions about your child's thoughts, feelings, and behaviors over the past few weeks. These surveys will take approximately 15-20 minutes to complete. Members of the USF research team will administer the surveys at your child's elementary school, during school hours, to large groups of students. Children whose initial scores indicate elevated levels of anxiety and/or depression will be asked to complete the same survey(s) a second time approximately one week later. In total, participation will take between 15 and 40 minutes of your child's time. Please note that the parents of students who report elevated levels of anxiety and/or depression at both time points will receive a letter notifying them of such. This letter will also include contact information for available community mental health services. Another part of participation involves allowing your child's teachers to consider him or her when the teacher is asked to identify up to three students in his or her classroom who show symptoms of anxiety or depression. Similarly, school mental health providers (e.g., guidance counselors, social workers) will also be asked to review a list of students who have parent permission to participate in the study, and then asked to identify which of these students show symptoms of anxiety and depression. Shortly after the winter break, your school mental health

providers will receive a list of participating students who twice reported elevated levels of anxiety and/or depression, as well as a list of students who were identified by teachers or other educators as exhibiting symptoms of anxiety or depression at school. Your school mental health staff will consider these lists when deciding which students to invite for participation in group counseling interventions that will be provided at school for students with elevated levels of anxiety and/or depression. Parents of those students will then be contacted by the school to see if you would like for your child to take part in the appropriate intervention. Agreeing to take part in the screening does not obligate you to take part in later group counseling interventions.

- ✓ Please Note: Your decision to allow your child to participate in this research study must be completely voluntary. You are free to allow your child to participate in this research study or to withdraw him or her at any time. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student status, his or her grades, or your relationship with your elementary school, USF, or any other party.
- ✓ Confidentiality of Your Child's Responses: There is minimal risk to your child for participating in this research. Your child's privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but we will not share your child's individual responses to the surveys with school system personnel or anyone other than us and our research assistants. Your child's completed surveys will be assigned a code number to protect the confidentiality of his or her responses. Only we will have access to the locked file cabinet stored at USF that will contain: (1) all records linking code numbers to participants' names, and (2) all information provided by teachers and school mental health providers. All records from the study (completed surveys, information from teachers) will be destroyed in five years. *Please note that although your child's specific responses will not be shared with school staff, if your child indicates that he or she intends to harm him or herself or someone else, we will immediately contact your school mental health providers to ensure your child's safety as well as the safety of others. Additionally, after the study concludes, school mental health providers will receive a list of the names of all students whose responses on the surveys twice indicate that they are potentially in need of assistance due to experiencing elevated levels of anxiety and/or depression.*
- ✓ What We'll Do With Your Child's Responses: We plan to use the information from this study to determine the appropriateness of using educators to identify students with elevated levels of anxiety or depression. It is anticipated that these results can inform future practices within schools. Results of this study may be published. However, the data obtained from your child will be combined with data from other students in the publication. The published results will not include your child's name or any other information that would in any way personally identify your child.
- ✓ Questions? If you have any questions about this research study, please contact me (Ms. Cunningham) at [REDACTED] or [REDACTED]. If you have questions about your child's rights as a person who is taking part in a research study, you may contact a member of the Division of Research Compliance of the USF at [REDACTED]; please refer to eIRB # 2534.
- ✓ Want Your Child to Participate? To permit your child to participate in the study, please complete the attached consent form and have your child turn it in to his or her classroom teacher.

Sincerely,

Jennifer Cunningham, M. A.
School Psychology Doctoral Candidate
University of South Florida

Shannon Suldo, Ph.D.
Associate Professor of School Psychology
Department of Psychological and Social Foundations

Consent for Child to Take Part in this Research Study

I freely give my permission to let my child take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

Printed name of child	Grade level of child	Child's Teacher
Signature of parent of child taking part in the study	Printed name of parent	Date

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

Signature of person obtaining consent	Printed name of person obtaining consent	Date
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Appendix D: Student Assent Form

You are being asked to take part in a research study about how you think, feel, and act. The title of the study is “Wellness of Elementary School Children.” You are being asked to take part in this study because you are in 4th or 5th grades. Your parent/guardian has already said its okay for you to take part in this study.

To take part in this study, you will be asked to fill-out two surveys, now and maybe again one week from now. These surveys will ask you questions about your thoughts, feelings, and things you have done recently. Your answers will stay private unless you are in danger, then we will have to get help to make sure you stay safe. If you decide to take part in the study you still have the right to change your mind later. No one will think badly of you if you decide to stop.

Assent to Participate

I understand what the person running this study is asking me to do. I have thought about this and agree to take part in this study.

Name of person agreeing to take part in the study

Date

Name of person providing information to child

Date

Appendix E: Teacher Nomination Form

ID #: _____

Thank you for agreeing to participate in a research study about different methods to accurately identify students in need of mental health services.

Directions: Please nominate up to three (3) students that, based on your knowledge of this student and his/her their typical behavior, demonstrate symptoms of anxiety and/or depression. You may nominate a student for anxiety, for depression, or for both conditions, for a total number of up to six (6) students.

Please do not discuss your nominations with any colleagues; please complete this form independently.

Thank you!

Anxiety

Appears nervous
Acts in a fearful manner
Cries, tantrums, freezes in social situations
Reluctant or afraid to attend school
Acts jittery or fidgety
Worries often
Is timid or unassertive
Has trouble separating from caregiver
Worry about harm befalling caregiver
Physical complaints (headache, stomachache)
Fear of being humiliated or embarrassed

Depression

Cries often
Looks sad
Excessively shy
Avoids or withdraws from social situations
Lack/diminished interest in peers or activities
Prefers to spend time alone
Has a lack of energy/appears tired
Might act irritable or agitated
Changes in appetite – increased or decreased
Difficulty concentrating

Students showing elevated anxiety:

1. _____
2. _____
3. _____

Students showing elevated depression:

1. _____
2. _____
3. _____

Behavioral descriptors adapted from the Systematic Screening for Behavior Disorders (Walker & Severson, 1992), Multidimensional Anxiety Scale for Children (March, 1997), & the Children's Depression Inventory (Kovacs, 2003), Phobic and Anxiety Disorders in Children and Adolescence (Ollendick & March, 2004)

Appendix F: School-Based Mental Health Professional Nomination Form

ID #: _____

Thank you for agreeing to participate in a research study about different methods to accurately identify students in need of mental health services.

Directions: Please circle up to 21 students from each grade for each category, using the attached grade level rosters of students that, based on your knowledge of this student and his/her typical behavior, demonstrate symptoms of anxiety and/or depression. You may nominate a student for anxiety, for depression, or for both conditions for a total number of up to 42 students per grade. If you are unfamiliar with a student (i.e., do not recognize this student by name), please check the “I do not know this student” column next to that student’s name.

Please do not discuss your nominations with any colleagues; please complete this form independently.

Thank you!

To assist you in determining students that may be demonstrating symptoms of anxiety and/or depression, we have provided behavioral descriptors of how these symptoms might look in children. Please note, the examples listed below are not exhaustive; they are provided to provide a basis for nomination

Anxiety

Appears nervous
Acts in a fearful manner
Cries, tantrums, freezes in social situations
Reluctant or afraid to attend school
Acts jittery or fidgety
Worries often
Is timid or unassertive
Has trouble separating from caregiver
Worry about harm befalling caregiver
Physical complaints (headache, stomachache)
Fear of being humiliated or embarrassed

Depression

Cries often
Looks sad
Excessively shy
Avoids or withdraws from social situations
Lack/diminished interest in peers or activities
Prefers to spend time alone
Has a lack of energy/appears tired
Might act irritable or agitated
Changes in appetite – increased or decreased
Difficulty concentrating

Behavioral descriptors adapted from the Systematic Screening for Behavior Disorders (Walker & Severson, 1992), Multidimensional Anxiety Scale for Children (March, 1997), & the Children’s Depression Inventory (Kovacs, 2003), Phobic and Anxiety Disorders in Children and Adolescence (Ollendick & March, 2004)

Appendix G: Letter to Parents of At-Risk Students

Dear Parent or Caregiver:

Earlier this school year, you provided permission for your child to participate in a brief assessment of his or her mental health. This assessment was conducted by a research group within USF to determine the relationship between students' self-reports of their anxiety and depression, and teachers' perceptions of students' mental health. When your child completed the brief measures of anxiety and depression symptoms, your child's reported a sufficient number of symptoms to fall in the "at-risk" level. This means that your child endorsed more symptoms of anxiety (such as being fearful or worried, being scared to come to school, being nervous in social situations) and/or depression (such as crying or feeling sad, wanting to be alone, lack of interest in peers or social activities) than most children your child's age. While this is not necessarily cause for alarm, we wanted to bring this to your attention so you can decide if you would like to seek immediate assistance for your child.

Please note that in the coming months, mental health providers at your school (specifically, your school psychologist and guidance counselor) intend to invite several students identified as "at risk" to take part in counseling groups intended to decrease students' symptoms of anxiety and depression. If your school mental health providers feel your child may be an appropriate fit for these groups, you will receive a separate permission form from the school regarding this free service. If you would prefer to seek immediate mental health services from outside the school, the bottom of this letter contains information on accessing mental health services within your local community. If you have questions about the information contained in this letter, please contact either the USF research team (Dr. Suldo's phone number is [REDACTED]) OR your school psychologist (Ms. Snodgrass's phone number is [REDACTED] ([REDACTED] Elementary: Monday/Tuesday) and [REDACTED] ([REDACTED] Elementary: Thursday/Friday).

Sincerely,

Jennifer Cunningham, M. A.
School Psychology Doctoral Candidate
University of South Florida

Shannon Suldo, Ph.D.
Associate Professor of School Psychology
Department of Psychological and Social Foundations

Hillsborough County Community Mental Health Services

Camelot Community Mental Health..... (813) 635-9765
http://www.camelotcommunitycare.org/fl_services.asp

Northside Mental Health Center..... (813) 977-8700
<http://www.northsidemhc.org/>

Mental Health Care (MHC)..... (813) 272-2244
<http://www.mhcinc.org/>

Attainable Solutions (813) 933-1425
<http://www.attainablesolutions.net/index.html>

University of South Florida – Psychological Services Center (813) 974-2496
<http://psychology.usf.edu/policies/psychological/>

Crisis Services

Crisis Center of Tampa Bay 2-1-1
www.crisiscenter.com

7. Have you received professional development specific to student mental health issues?
Yes No

If YES, please list professional development sessions you have attended related to mental health issues:

Please respond to the following questions based upon the time you spend at this school:

6. Number of days (based upon an 8 hour school day) per week spent at this school:

7. Please estimate the number of hours per week you spend consulting with teachers at this school: _____

8. Please estimate the number of hours per week you spend in classrooms engaged in programming (e.g., classroom guidance) at this school:

9. Please estimate the number of hours per week you spend providing individual or small group counseling at this school: _____

10. How do you become informed of individual students at this school who might be in need of mental services?

Appendix J: Student Demographic Information Form

Student Demographic Information Form

ID # _____

Birthdate: _____ - _____ - _____
(month) (day) (year)

PLEASE READ EACH QUESTION AND CIRCLE **ONE** ANSWER PER QUESTION:

1. I am in grade: 4 5
2. My gender is: Male Female
3. Do you receive free or reduced-price school lunch? Yes No
4. My race is:
 - a) Hispanic or Latino
 - b) Not Hispanic or Latino
5. My ethnic identity is:
 - b. American Indian or Alaska Native
 - c. Asian
 - d. Black or African American
 - e. Native Hawaiian or Other Pacific Islander
 - e. White
 - f. Multi-racial (please specify): _____
 - g. Other (please specify): _____