Published in final edited form as:

School Ment Health. 2012 December 1; 4(4): 219–230. doi:10.1007/s12310-012-9082-0.

Self-Disclosure and Mental Health Service Use in Socially Anxious Adolescents

Daniela Colognori,

Kean University, 1000 Morris Avenue, Union, NJ 07083, USA

Petra Esseling,

New York University Langone Medical Center, Child and Adolescent Psychiatry, NYU Child Study Center, 1 Park Avenue, 8th Floor, New York, NY 10016, USA

Catherine Stewart,

New York University Langone Medical Center, Child and Adolescent Psychiatry, NYU Child Study Center, 1 Park Avenue, 8th Floor, New York, NY 10016, USA

Philip Reiss,

New York University Langone Medical Center, Child and Adolescent Psychiatry, NYU Child Study Center, 1 Park Avenue, 8th Floor, New York, NY 10016, USA

Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, USA

Feihan Lu,

New York University Langone Medical Center, Child and Adolescent Psychiatry, NYU Child Study Center, 1 Park Avenue, 8th Floor, New York, NY 10016, USA

Brady Case, and

Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, USA

Health Services Research Program, Emma Pendleton Bradley Hospital, East Providence, RI, USA

Carrie Masia Warner

New York University Langone Medical Center, Child and Adolescent Psychiatry, NYU Child Study Center, 1 Park Avenue, 8th Floor, New York, NY 10016, USA

Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, USA

Carrie Masia Warner: carrie.masia@nyumc.org

Abstract

Social anxiety disorder is highly prevalent in adolescence, persistent into adulthood, and associated with multiple impairments. Despite the development of efficacious treatments for socially anxious youth, few affected adolescents receive such treatment. This study examined service use in a sample of high school students ($n = 1,574$), as well as predictors of treatment delay and factors associated with adolescents' disclosure of social difficulties. Self-report measures of social anxiety and service utilization were administered by study staff to 10th- and 11th-grade classrooms across three public high schools. Consistent with the literature, results indicated low treatment utilization (14 %) and lengthy delays in treatment initiation. Symptom severity, impairment, and disclosing anxiety to school personnel were significant predictors of service utilization. Several demographic and illness-specific factors were associated with a higher

likelihood of disclosing social discomfort. These findings underscore the important role of school personnel in identifying and referring youth with anxiety disorders. Implications are discussed for increasing access to services, including school-wide screenings and training of school personnel to recognize and provide intervention for anxious youth.

Keywords

Service utilization; Anxiety; School; Dissemination; Help-seeking

Anxiety disorders are the most prevalent class of mental disorders in adolescents and affect approximately one-third of this age group (Merikangas et al., 2010). Social Anxiety Disorder (SAD), with a prevalence of 9 % during adolescence, is the second most common anxiety disorder after Specific Phobia. SAD is also one of the most impairing adolescent anxiety disorders, with only Post-Traumatic Stress Disorder having a higher percentage of youth classified as “severely impaired” based on ratings of distress and interference obtained through diagnostic interviews (Merikangas et al., 2010). Social anxiety disorder is associated with disturbances in school performance, loneliness, and depressed mood (Beidel, Turner, & Morris, 1999; Wittchen, Stein, & Kessler, 1999; Grover, Ginsburg, & Ialongo, 2007). In addition, SAD is often chronic and persists into adulthood (Pine, Cohen, Gurley, Brook, & Ma, 1998), leading to increased likelihood of suicide attempts, decreased occupational functioning, and lower quality of life (Essau, Condradt, & Petermann, 1999; Katzelnick et al., 2001).

The high prevalence of social anxiety disorder and its related impairment have fostered the development of several effective clinic-based treatments for youth with SAD (e.g., Beidel, Turner, & Morris, 1998; Albano, 1995; Kendall, 1994; Silverman et al., 1999). Yet, despite these successful efforts, social anxiety disorder is among the least likely of all mental disorders to be treated. According to a recent epidemiological study, only 12 % of socially anxious adolescents received services, with alcohol abuse being the only non-anxiety disorder associated with a lower service utilization rate (11.9 %; see Merikangas et al., 2011 for all rates). Another study investigating the types of services utilized by socially anxious adolescents found that 22.7 % made initial treatment contact with a physician or counselor, but did not provide information about whether they received ongoing therapy. Only a small percentage of youth were prescribed antidepressant medication (7.5 %), and results showed that adolescents with SAD were no more likely to be prescribed medication than a sample of adolescents without a clinical diagnosis of SAD.

Considering the low rates of service use and the potential for long-term impairment, it is important to understand factors that might facilitate or inhibit mental health treatment for anxious individuals. Several epidemiological and clinical treatment studies have examined whether demographic characteristics (e.g., age, gender, ethnicity, and SES) are associated with treatment utilization. Studies of socially phobic adults show that Caucasians and individuals with higher socioeconomic status (SES) and education are relatively more likely to access treatment (Coles, Turk, Jindra, & Heimberg, 2004; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). Research conducted with anxious youth has yielded inconsistent results. Some studies report that older age (e.g., adolescents; Essau, 2005) and youth from Caucasian families with higher SES have a higher likelihood of obtaining treatment (e.g., Chavira, Stein, Bailey, & Stein, 2004; Harrison, McKay & Batton, 2004), though a large longitudinal community study found no effects for age or race (Egger & Burns, 2004). Gender has not consistently emerged as a significant predictor of service utilization in anxious youth (Egger & Burns, 2004; Essau, 2005), but has been documented

in investigations conducted with youth in need of services for any type of mental disorder (e.g., Cuffe, Waller, Cuccaro, Pumariega, & Garrison, 1995).

Illness-specific factors (e.g., severity, age of onset) may also play an important role whether youth receive services. Studies of anxious and depressed adults have shown that symptom severity, subjective level of distress, and onset of anxiety and mood disorders during childhood predict higher treatment utilization (Darymple & Zimmerman, 2011; Angst et al., 2010; Nease, Volk, & Cass, 1999; Goldstein, Olfson, Wickramaratne, & Wolk, 2006). There is a dearth of research examining the association of illness-specific factors and service utilization in anxious youth; however, symptom severity and impairment have been found to predict treatment utilization in youth with externalizing disorders (e.g., ADHD; Bennett, Power, Rostain, & Carr, 1996). Parental perception of children's illness severity was a significant predictor of service use among youth presenting to a community clinic with various mental disorders (McMiller & Weisz, 1996), but clinician-rated severity, impairment, and age of onset have been largely overlooked.

Available research suggests that even among those who receive treatment, there is substantial delay in treatment initiation following disorder onset. Studies of adults with varying types of anxiety, mood, and substance abuse disorders have shown median delays ranging from 6 to 14 years (Kessler, Olfson, & Berglund, 1998; Christiana et al., 2000). An investigation of anxious adults diagnosed with either SAD, generalized anxiety disorder (GAD), or panic disorder with or without agoraphobia (PD) found significantly longer delays seeking treatment from a specialty mental health clinic for adults with SAD, with a mean of 13.9 years, compared to 7 years for adults with GAD, and 6.6 years for adults with PD (Wagner, Silove, Marnane, & Rouen, 2006). These results are consistent with the range of treatment delays across disorders and underscore that treatment initiation for SAD tends to be associated with delays at the high end of this range.

A large cross-sectional survey of adolescents and adults with a variety of mental disorders found that childhood or adolescent onset was associated with significantly longer time-to-treatment delays than adult onsets (Wang, Berglund, Olfson, & Kessler, 2004). This difference may be due to the fact that parents or other adults are responsible for seeking treatment for the child, so that only those with the most serious disorders or vigilant parents may receive timely care. Wang et al. (2005) also suggest that children with early-onset disorders may develop maladaptive coping strategies that ultimately interfere with accessing treatment (e.g., developing extreme social withdrawal or substance abuse). Lengthy time-to-treatment delays remain an important source of unmet need for mental health care (Olfson, Kessler, Berglund, & Lin, 1998), and further investigation of treatment delays in adolescents with anxiety is necessary to address this problem.

One avenue of research that may have an impact on decreasing delays and improving access to services for youth is gaining a better understanding of the decisions leading to treatment access (Cauce et al., 2002). Several important steps must occur for youth to access services. Janicke and Finney (2001) have conceptualized the process of parents seeking treatment for their children as similar to adults seeking services for themselves, comprised of three primary stages: (a) problem recognition, (b) decision to seek help, and (c) service selection (Andersen, 1995; Goldsmith, Jackson, & Hough, 1988; Prochaska, Di-Clemente, & Norcross, 1992; Srebnik, Cauce, & Baydar, 1996). Referring to the first stage of problem recognition, a recent study of youth with mood disorders found that parental psychoeducation about mood disorders, and perceived need for treatment, predicted the number of services received (Mendenhall et al., 2011). Perceived need may in turn be influenced by self-disclosure of social distress by adolescents, who typically seek help from family members and friends rather than professionals (e.g., teachers, counselors) (Chandra

& Minkovitz; 2006; Boldero & Fallon, 1995; Rickwood & Braithwaite, 1994; Rickwood, Deane, & Wilson, 2007). Research has documented sex effects on help-seeking decisions, with females more likely to disclose problems, especially interpersonal and health problems, while males are more likely to seek help for academic problems. Girls tend to approach friends while boys are more likely to talk to their parents (Boldero & Fallon, 1995; Cauce et al., 2002; Chandra & Minkovitz, 2006). Adolescents' hesitancy to approach school counselors and other personnel, who have greater potential for providing effective referral sources, may be a critical obstacle to accessing treatment.

The decision to seek help has been associated with several types of obstacles that interfere with service selection. In an urban, low-income sample, 35 % of parents of children who were identified as in need of services for a mental disorder reported various barriers to treatment utilization, including structural barriers (e.g., *not sure where to go expense, waiting lists*), barriers related to perception of the problem (e.g., *not serious, could handle within family*), and barriers related to stigma of mental health services (e.g., *lacked confidence in those recommending help, people trusted most did not recommend help*), with the latter being most commonly cited (25.9 %; Owens et al., 2002). Given these barriers to seeking help and service selection, the role of other gatekeepers to mental health services, such as school personnel, is particularly relevant. School personnel may be especially important in identifying social anxiety given that much of the impairment is peer and classroom-related (Ryan & Masia Warner, 2012).

The current study aimed to describe patterns of treatment initiation for adolescents reporting anxiety in social situations. We tested whether a number of demographic (e.g., gender, ethnicity) and illness-specific (e.g., severity, impairment) variables influenced the probability of disclosing anxiety to someone and the time from onset to treatment initiation. We also explored whether demographic or illness-specific factors were associated with the probability of disclosing anxiety to school personnel compared to parents.

Method

Recruitment Procedures

The current study was conducted as part of a controlled clinical trial examining the effectiveness of a school-based CBT program for social anxiety disorder delivered by school personnel. Data for the current investigation were obtained as part of recruitment procedures for the clinical trial. Participants were recruited from grades 10 and 11 in three public high schools in suburbs of New York City ($n = 1,838$ students). High schools were selected on the basis of proximity to the research institution and interest in participating in the study by school administration. Parents of these students were mailed information notifying them of our intent to administer questionnaires. They were asked to sign and return the form if they did not want their child to participate in the survey. Of the 1,838 potential students, 141 adolescents and their parents declined participation (8 %), 121 students were absent (7 %), and 2 students were excluded due to significant limitations understanding written English (0.1 %). The resulting sample included 1,574 adolescents, which reflects an 86 % participation rate. Participants who positively endorsed an initial question about whether they experience social discomfort were included in the current study ($n = 814$).

Participants

Participants were 14–18 year old (mean age = 16.0, $SD = 0.63$), were 52 % male ($n = 817$), and evenly distributed across 10th and 11th grade (50 % in each). The majority (77 %) identified themselves as *Caucasian*, 7 % as *Latino*, 5 % as *Asian/Indian*, 3 % as *African American*, 4 % as *more than one race*, 3 % as *other*, and 1 % did not specify ethnicity.

Measures

Questionnaires were administered in classrooms by study staff, typically requiring 15–25 min to complete.

Service Utilization Survey (adapted from the Services for Children and Adolescents, Parent Interview Jensen et al., 2004)—This survey consists of 6 multiple-part items, with an initial inquiry about whether the participant feels “*uncomfortable or shy in social situations*.” If endorsed, participants are instructed to answer questions identifying the age of onset of social discomfort and current impairment across 3 domains (school, family, and social), rated on a 4-point Likert scale from 0 (*not at all*) to 3 (*a lot*). The remaining items assess treatment-seeking behavior (e.g., whom they first told) and type of service utilization (e.g., community therapist, school counselor, religious leader, or psychiatric medication). Finally, participants who endorsed receiving services were asked whether treatment was helpful in reducing anxiety.

Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995)—The *SPAI-C* is a 26-item self-report questionnaire that assesses specific somatic symptoms, cognitions, and behavior across potentially fear-producing social situations. Questions are answered on a 3-point Likert scale ranging from (0) *Hardly Ever* to (2) *Most of the time*. A score of 18 has been suggested as the clinical cutoff. The *SPAI-C* has demonstrated good psychometric properties, including sensitivity and specificity for a social anxiety diagnosis (Beidel et al., 1995; Beidel, Turner, Hamlin, & Morris, 2000; Beidel, Turner, & Fink, 1996; Inderbitzen-Nolan, Davies, & McKeon, 2004).

Multidimensional Anxiety Scale for Children, Social Subscale (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) is a standardized 39-item self-report measure of anxiety yielding scores on four factors. Each item is rated on a 4-point Likert-type response scale ranging from 0 (*never true about me*) to 3 (*often true about me*). For the purposes of this study, only the social subscale was administered, which consists of 9 items assessing humiliation, rejection, and public performance fears. Based on the *MASC* norms, a subscale score of 16 for boys, and 18 for girls (T score = 65), was used as the clinical cutoff for this measure. The *MASC* has demonstrated excellent internal reliability and adequate test–retest reliability (March et al., 1997).

Data Analysis Procedures

Out of the 1,574 students who participated in the study, 814 positively endorsed social discomfort and thus proceeded to answer additional questions about service use. All analyses utilize this subsample ($n = 814$) of students.

Use of Services for Anxiety and Time-to-Treatment—Descriptive statistics were conducted on rates of self-reported social anxiety, disclosure of anxiety, and service utilization. In addition, two standard analytic procedures were used to study time to treatment initiation. First, the Kaplan–Meier method (Kaplan & Meier, 1958) was used to generate time-to-treatment curves estimating the cumulative probability of service utilization as a function of time from onset of self-reported symptoms. These curves are akin to survival curves but are inverted to display how the likelihood of the event of interest (treatment utilization) increases with time. Second, Cox (1972) proportional hazard models were used for formal inference regarding predictors of time to treatment. These models express the effect of a given predictor in the form of hazard ratios (HR), with values greater than one signifying faster time to treatment. Residual diagnostics (Grambsch and Therneau, 1994; Klein and Moeschberger, 2010) confirmed the goodness-of-fit of the Cox proportional hazards models.

Predictors of Time-to-Treatment—The Cox regression models were used to test four classes of predictors of time to treatment utilization: (1) self-reported social anxiety in the clinical range vs. non-clinical range, (2) demographic characteristics, (3) illness-specific variables, and (4) youth disclosure of anxiety. For the purposes of our analyses, clinical range anxiety was defined as meeting the clinical cutoff (see above) on either the *MASC* or the *SPAI-C*. The demographic predictors considered were gender and ethnicity. Due to small frequencies of certain ethnic groups listed above, analyses were conducted using dichotomous categories of identification as Caucasian or non-Caucasian. Illness-specific predictors of service utilization included were self-reported severity of anxiety symptoms (as indicated by *MASC* and *SPAI-C* scores) and impairment caused by anxiety in three domains: social, family, and school. On the basis of model assessment by the Akaike information criterion (Akaike, 1974), we treated the three Likert scores for severity as continuous variables (See Table 2 for additional details). Disclosure was operationalized as a categorical variable with the following levels: telling no one, telling school personnel (e.g., teacher, school counselor, or nurse), parents, or other (e.g., relatives, friends).

Factors Affecting Disclosure of Anxiety—Given that youth rely on adults to access services, we explored factors that may affect the likelihood of telling someone about social anxiety. Multiple logistic regression was used as the primary analysis to examine whether gender, ethnicity, age of onset, severity, and impairment predict this behavior. For factors emerging as predictors of disclosing anxiety, a multinomial regression was conducted to explore whether these variables predict *to whom* anxiety was disclosed.

Results

Prevalence of Self-Reported Social Anxiety

Of the 1,574 participants, 814 (51.7 %) endorsed the initial inquiry about feeling uncomfortable in social situations. Of these 814 adolescents who endorsed social discomfort, 270 also scored above the clinical cutoff on either the *MASC* or the *SPAI-C*, which serves as a proxy for social anxiety disorder. This represents an approximate prevalence of 17.2 % of the 1,574 students who completed questionnaires.

Youth Disclosure of Social Anxiety

Participants who endorsed social discomfort ($n = 814$) were asked whether they had ever told anyone about feeling shy or uncomfortable in social situations and, if so, whom they first told. A little less than half of these adolescents reported that they had told someone about their anxiety ($n = 390$, 48 %), most frequently a parent ($n = 306$, 37 %). Few reported confiding in school personnel ($n = 17$, 2 %) or other adults or friends ($n = 67$, 8 %; Table 1).

Use of Services for Anxiety

As expected, only a minority of the 814 students positively endorsing social discomfort reported receiving services for their anxiety ($n = 111$, 14 %; Table 1). This percentage rose to only 21.5 % when considering the subsample of students who scored above clinical cutoffs on one of the self-report social anxiety measures. Out of all students who reported service utilization ($n = 111$), most indicated they either saw a therapist or doctor outside of school ($n = 76$, 68 %) or spoke with their school counselor ($n = 24$, 22 %). A few students reported being treated with medication ($n = 6$, 5 %) or consulting with a religious figure ($n = 5$, 4.5 %). About two-thirds of those who received services described the experience as “helpful” ($n = 75$, 67.5 %). Among youth who reported receiving treatment, the median time elapsed between self-reported symptom onset to treatment initiation was 2 years (95 % CI 2–3).

Predictors of Time-to-Treatment

Figure 1 shows Kaplan–Meier estimates of the cumulative probability of treatment contact among those who reported symptoms in the clinical range ($n = 270$) and those who scored below the clinical range ($n = 544$). Adolescents reporting symptoms in the clinical range had a 5.6 % estimated probability (95 % CI 2.8–8.4 %) of receiving services within one year of illness onset. The estimated probability rose to 10 % (6.3–13.6 %) at 2 years from onset and 19.2 % (13.7–24.3 %) at 5 years from onset. Among those scoring below the clinical range, similar values were found at one year (4.8 %; 3–6.6 %) and 2 years (5.6 %; 3.6–7.5 %), but at 5 years from onset, the probability of having received services was estimated as only 9.2 % (6.5–11.9 %) for individuals in this group.

A Cox proportional hazard model found that gender was not a significant predictor of time to treatment (HR = 1.27, 95 % CI .87–1.87, *ns*), nor was ethnic group, whether we tested for any difference among the five ethnic groups (log-rank $\chi^2 = 5.00$ with 4 df, *ns*), or compared belonging to any non-Caucasian group vs. Caucasian (HR = .65, 95 % CI .39–1.08, *ns*).

Speed to treatment was significantly lower for those scoring in the clinical range (HR = 2.26, 95 % CI 1.55–3.29, $p < .0001$). In separate Cox regressions, both measures of self-reported severity (total *SPAI-C* score and *MASC* social subscale entered as a continuous variable) were significantly associated with lower time to treatment. However, when both severity measures were included in a multiple regression, total *SPAI-C* remained significantly predictive, while the *MASC* social subscale did not. Similarly, while separate Cox regressions found impairment in each of the three domains (school, family, and social) to be significantly predictive of lower time to treatment, a multiple regression including all three domains found that impairment in the school domain was not significant.

Disclosure of social anxiety was a significant predictor of time to treatment. As expected, adolescents who told someone about their social anxiety had lower time to treatment (HR = 5.54, 95 % CI 3.25–9.43, $p < .001$). We further examined the effect of whom they told on time to treatment using parents, the most frequently endorsed category, as the reference level. Disclosing to school personnel was significantly predictive of shorter time to treatment initiation compared to disclosing to parents (HR = 3.09, 95 % CI 1.48–6.47, $p < .01$), but disclosing to others did not differ significantly from telling parents (HR = 1.35, 95 % CI .80–2.28, *ns*. See Table 2 for details about predictors of time-to-treatment).

Adolescents disclosing anxiety to school personnel had an 18.8 % estimated probability (95 % CI 0–35.8 %) of receiving services within one year of reported onset. The estimated probability rose to 25.5 % (0.4–44.3 %) at 2 years from onset and 47.9 % (14.1–68.4 %) at 5 years from onset. In contrast, adolescents who disclosed to their parents had only a 7.9 % estimated probability (95 % CI 4.8–10.9 %) of treatment initiation within one year of illness onset, 11 % (95 % CI 7.4–14.4 %) at 2 years from onset, and 18.3 % (95 % CI 13.5–22.8 %) at 5 years from onset. Time-to-treatment curves for each group are displayed in Fig. 2.

Factors Affecting Disclosure of Anxiety

Multiple logistic regression was used as the primary analysis to examine factors predicting whether or not adolescents told someone about their social discomfort. Three standard sequential procedures (forward addition of terms, backward elimination, and stepwise selection) were used to choose an optimal model, and all three converged on the same final model. Female gender, earlier age of onset, higher severity (as indexed by *SPAI-C* score), higher impairment in the school domain, and higher impairment in the social domain were significant predictors of being more likely to disclose social discomfort to someone. Higher family impairment was significantly associated with *lower* likelihood of disclosing social discomfort to someone. Two predictors, ethnicity and *MASC* total score, were not

significant and thus excluded from the model. The final model estimates are shown in Table 3.

Lastly, we conducted a multinomial logistic regression to explore the differential impact of each predictor identified in the model above on the recipient of disclosure, using parents as the baseline level. Differences did not emerge for gender, *SPAI-C* severity, or age of onset; however, results varied across types of impairment. Higher school impairment was associated with an *increased* likelihood of disclosure to school personnel rather than parents (OR = 3.93, 95 % CI 1.96–7.91, $p < .0001$). Higher family impairment was predictive of *increased* likelihood of disclosure to other adults compared to parents (OR = 1.51, 95 % CI 1.07–2.13, $p < .05$), while higher social impairment was associated with a *decreased* likelihood of disclosure to school personnel relative to parents (OR = 0.46, 95 % CI 0.24–0.87, $p < .05$).

Discussion

The high rates of self-reported social anxiety and low rates of service use described in this study reinforce the literature documenting the significant unmet mental health needs of anxious youth. Only 14 % of all youth endorsing social discomfort and 21.5 % of those reporting symptoms in the clinical range accessed services. These findings are consistent with two recent epidemiological studies estimating service utilization rates ranging from 12.1 to 22.7 % for adolescents with a clinical diagnosis of SAD (Merikangas et al., 2011; Burnstein, Ameli-Grillon, & Merikangas, 2011). Consistent with Burnstein and colleague's findings (2011) suggesting that treatment accessed by socially anxious youth most often involves counseling rather than medication, 20 % of our clinical subsample reported having received services from a counselor (e.g., therapist, school counselor, and religious figure), while only 1.5 % reported medication use.

Furthermore, the current study examined delays between symptom onset and treatment initiation. Adolescents reporting social anxiety in the clinical range only had a 5.6 % likelihood of accessing treatment in a timely manner (within one year of onset). Interestingly, adolescents who disclosed their anxiety to school personnel had an increased likelihood of accessing treatment with shorter delays. The potential role of school personnel may be critical to improving access to treatment for anxious youth, which has substantial importance considering the significant impairment (Beidel et al., 1999; Wittchen et al., 1999; Grover et al., 2007; Essau et al., 1999; Katzelnick et al., 2001), chronic course (Pine et al., 1998), and significant costs (Rice & Miller, 1998; Greenberg et al., 1999) associated with untreated anxiety disorders.

One avenue for improving treatment access for anxious youth is gaining a better understanding of the variables related to mental health service use. This study did not find a significant association for gender and treatment utilization, although females were more likely to tell someone about their social discomfort. Ethnicity has been associated with treatment use in some previous studies (e.g., Chavira et al., 2004; Harrison et al., 2004) but did not emerge as a predictor in the current study. However, very few ethnic minority youth reported service use for social discomfort ($n = 19$), resulting in a wide confidence interval for the hazard ratio (0.39–1.08). These considerations suggest that the lack of statistical significance does not strongly contradict previous studies showing that Caucasian youth are more likely to seek help.

Several illness-specific factors were shown to be significant predictors of accessing treatment in a timely manner. As expected, adolescents endorsing greater symptom severity were more likely to utilize services and report shorter delays to accessing treatment. We also

found that adolescents reporting more interference in their family and social lives as a result of social anxiety had a higher likelihood of treatment utilization and shorter time to treatment. Taken together, these findings indicate that adolescents with more severe and impairing symptoms are more likely to access services in a timely manner.

While it is important to understand the illness-specific factors associated with service use, these variables cannot be targeted in an effort to improve access to services. For this reason, we have also focused on behavior related to the process of seeking help. We found that females were more likely to disclose social anxiety, which replicates previous studies documenting gender effects for help-seeking behaviors. Adolescents reporting earlier onset, and more severe symptoms were more likely to tell someone about their discomfort in social situations. We can also not discount the possibility that this discussion may have been initiated by a concerned parent or friend, rather than by the distressed adolescent. Participants with higher impairment in family life as a result of social anxiety were *less* likely to tell someone about the problem, but when they did, were more likely to disclose to others compared to parents. Therefore, if social anxiety is causing arguments or other types of impairment in the home, it may be difficult for teenagers to discuss anxiety openly with their parents. Lastly, adolescents with higher interference in school due to anxiety were more likely to tell school personnel rather than parents about their discomfort in social situations. This finding begs the question whether adolescents with greater school interference actually initiated disclosure of anxiety to school personnel or were approached by school personnel who recognized their academic struggles. Additional research on the relationship between school impairment due to anxiety and recognition by school personnel may provide further support for training school personnel in the identification of anxiety disorders.

Our study suggests that telling school personnel about social anxiety may be critical to treatment initiation among anxious adolescents. We showed that adolescents who told school personnel (e.g., teachers, counselors, and nurses) about their social anxiety were more likely to access treatment and do so with shorter time to treatment, compared to those who told parents and others. We hypothesize that school professionals may have greater access to treatment, since they likely encounter the need to refer students far more frequently than parents face this need for their children.

However, since few adolescents confide in school professionals, it seems that school personnel's ability to identify anxious youth may play an integral role in our efforts to improve access to services for youth in need. Thus far, research on the ability of school personnel to recognize social anxiety in youth is inconclusive and has mostly focused on teachers. One study showed that teachers' ratings were concordant with elementary-aged students' self-reported social anxiety (Layne et al., 2006), while another study failed to demonstrate teachers' ability to identify social anxiety in their students (Weeks et al., 2009). Further research is necessary to clarify teachers' competence in identifying anxiety and to shed light on the ability of more highly trained school personnel (e.g., guidance counselors, social workers, nurses, etc) to identify internalizing disorders and refer youth to appropriate services.

School-Wide Screening

Given that research on school-based professionals' ability to identify anxiety disorders is in its infancy, recent efforts have also focused on school-wide screening procedures to identify previously unidentified internalizing disorders. A recent study featured implementation of a two-stage procedure, in which adolescents who screened positive on a computerized self-report assessment were then followed up with a clinical interview to determine whether a referral was necessary (Husky, Sheridan, McGuire, & Olfson, 2011). Results showed that

only 26 % of youth identified as “at-risk” were currently receiving either school-based or community-based treatment. Another investigation found that approximately one-third of mental health problems identified through screening were not previously known to school personnel (Scott et al., 2009). Such findings underscore the utility of periodic screenings to identify mental health problems in students.

School-Based Intervention

Recognition that a problem exists is only the first step in the help-seeking process. Once a problem is identified, adolescents and their families must make the decision to seek help, and select appropriate services (Janicke & Finney, 2001; Andersen, 1995; Goldsmith et al., 1988; Prochaska et al., 1992; Srebnik et al., 1996), to which many barriers may exist (Owens et al., 2002). School-based intervention may increase access to services by eliminating adolescents’ reliance on parents to locate appropriate services, as school-based services often allow the opportunity for students to self-refer. School-based services offer several other advantages over traditional mental health settings due to the reduction of barriers such as cost, transportation, and stigma (Catron, Harris, & Weiss, 1998; Wu et al., 1999), which may be particularly relevant to socially anxious youth. Interventions delivered within the school setting have the potential to become one of many normalized services embedded in school culture. The recent study by Husky et al. (2011) confirms adolescents’ preference for school-based services. Results showed that youth “at-risk” for a mental health problem were more likely to successfully access treatment when referred for school-based services (80 %), compared to community-based treatment (42 %). Given these advantages, school-based services have been increasingly recognized as a critical avenue for helping address the unmet mental health needs of youth with anxiety disorders (Masia Warner, Nangle, & Hansen, 2006).

Offering services within the school setting not only minimizes barriers linking anxious children to community providers outside of school, but has the added benefit of being an ecologically valid setting for treating anxiety disorders (Fox, Herzig-Anderson, Colognori, Stewart, & Masia Warner, 2012). Common triggers of anxiety for youth are commonly found at school, ranging from worries about tests and class presentations to interacting with peers and teachers. Implementing treatment for anxiety disorders in schools, therefore, allows for practicing new skills and engaging in exposure exercises in a real-world setting that may promote generalization (Evans, 1999; Evans, Langberg, & Williams, 2003).

Research evaluating school-based anxiety treatments implemented by research-based providers has generally demonstrated effectiveness (e.g., Masia Warner et al., 2005; Masia Warner, Fisher, Shrout, Rathor, & Klein, 2007). Given that this model is not likely to be sustainable, recent efforts have shifted toward evaluating programs delivered by school-based providers (e.g., school counselors). Training personnel who are readily available in schools but lack specialized mental health training to deliver treatment for anxious youth may be a cost-effective and sustainable model for dissemination (Ryan & Masia Warner, 2012). Additional research is needed to develop and test strategies for training school personnel to implement evidence-based treatments as intended with fidelity (Fox et al., 2011).

Limitations

While this study offers meaningful contributions to the literature, several important limitations exist. First, the methodology is limited by the reliance on self- and retrospective reports. Future research should include a secondary informant to corroborate age of symptom onset as well as service utilization history. Given the important role parents play in connecting youth with services, this study is also limited by the omission of parental report

of parental anxiety and depression, perceived need for services for their children, and burden on family functioning, which have been identified as predictors in previous research (e.g., Angold et al., 1998; Essau, 2005). In order to further evaluate the seemingly critical role of disclosure to various adults in time to treatment initiation, we considered conducting a meditational analysis but were limited by the small sample size of some of the levels of the variable. However, this would be an interesting direction for future research. Finally, the school-screening methodology that was utilized posed time constraints that did not allow for the assessment of comorbidity, which may be an important factor given that comorbid depression has been previously shown to be a predictor of service utilization for anxious youth (e.g., Chavira, Garland, Yeh, McCabe, & Hough, 2009; Goldstein et al., 2006; Alegria et al., 2004).

Conclusions

It has been well-documented that anxious youth often go undetected and untreated (Essau, 2005; Merikangas et al., 2011). However, few studies have investigated delays associated with accessing treatment or examined factors predictive of treatment utilization among socially anxious youth. The current study offers important contributions to the literature by describing typical time to treatment delays and factors associated with service utilization in this population. The finding that school personnel may be critical in linking youth to treatment supports the current movement in our field to increase mental health services within the school setting. The psychosocial and financial consequences of untreated anxiety disorders underscore the necessity of exploring alternate methods and venues for identifying anxious youth and providing effective treatment (Weist, 1999). Future research should evaluate cost-effective methods for training school personnel to identify anxiety disorders, the implementation of school-wide screenings, and the delivery of evidence-based treatments for anxious youth.

Acknowledgments

This work was supported by an NIMH grant awarded to Dr. Masia Warner, Grant No. R01MH081881.

References

- Akaike H. A new look at the statistical model identification. *IEEE Transactions on Automatic Control*. 1974; 19:716–723.
- Albano AM. Treatment of social anxiety in adolescents. *Cognitive and Behavioral Practice*. 1995; 2:271–298.
- Alegria M, Takeuchi D, Canino G, Duan N, Shrout P, Meng XL. Considering context, place and culture: the national Latino and Asian American study. *International Journal of Methods in Psychiatric Research*. 2004; 13(4):208–220. [PubMed: 15719529]
- Andersen R. Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*. 1995; 36:1–10. [PubMed: 7738325]
- Angold A, Messer SC, Stangl D, Farmer EM, Costello EJ, Burns BJ. Perceived parental burden and service use for child and adolescent psychiatric disorders. *American Journal of Public Health*. 1998; 88(1):75–80. [PubMed: 9584037]
- Angst J, Gamma A, Clarke D, Ajdacic-Gross V, Roessler W, Regier D. Subjective distress predicts treatment seeking for depression, bipolar, anxiety, panic, neurasthenia and insomnia severity spectra. *Acta Psychiatrica Scandinavica*. 2010; 122:488–498.10.1111/j.1600-0447.2010.01580.x.
- Beidel DC, Turner SM, Fink CM. Assessment of childhood social phobia: Construct, convergent, and descriptive validity of the social phobia and anxiety inventory for children (SPAI-C). *Psychological Assessment*. 1996; 8(3):235–240.
- Beidel DC, Turner SM, Hamlin K, Morris TL. The social phobia and anxiety inventory for children (SPAI-C). External and discriminative validity. *Behavior Therapy*. 2000; 31:75–87.

- Beidel DC, Turner SM, Morris TL. A new inventory to assess childhood social anxiety and phobia: The social phobia and anxiety inventory for children. *Psychological Assessment*. 1995; 7(1):73–79.
- Beidel, DC.; Turner, SM.; Morris, TL. Social effectiveness therapy for children: A treatment manual. Charleston: Medical University of South Carolina; 1998.
- Beidel DC, Turner SM, Morris TL. Psychopathology of childhood social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1999; 38(6):643–650. [PubMed: 10361781]
- Bennett DS, Power TJ, Rostain AL, Carr DE. Parent acceptability and feasibility of ADHD interventions: Assessment, correlates, and predictive validity. *Journal of Pediatric Psychology*. 1996; 21(5):643–657. [PubMed: 8936894]
- Boldero J, Fallon B. Adolescent help-seeking: What do they get help for and from whom? *Journal of Adolescence*. 1995; 18:193–209.
- Burnstein M, Ameli-Grillon L, Merikangas KR. Shyness versus social phobia in US youth. *Pediatrics*. 2011; 128:917–924.10.1542/peds.2011-1434 [PubMed: 22007009]
- Catron, T.; Harris, VS.; Weiss, B. Posttreatment results after 2 years of services in the Vanderbilt school-based counseling project. In: Epstein, MH.; Kutash, K.; Duchnowski, A., editors. Outcomes for children and youth with emotional and behavioral disorders and their families: Programs and evaluation best practices. Austin: PRO-ED; 1998. p. 633-656.
- Cauce AM, Domenech-Rodriguez M, Paradise M, Cochran BN, Shea JM, Srebnik D, et al. Cultural and contextual influences in mental health help seeking: A focus on ethnic minority youth. *Journal of Consulting and Clinical Psychology*. 2002; 70(1):44–55.10.1037/0022-006X.70.1.44 [PubMed: 11860055]
- Chandra PH, Minkovitz CS. Stigma starts early: Gender differences in teen willingness to use mental health services. *Journal of Adolescent Health*. 2006; 38(754):1–8. [PubMed: 16387241]
- Chavira DA, Garland A, Yeh M, McCabe K, Hough RL. Child anxiety disorders in public systems of care: Comorbidity and service utilization. *The Journal of Behavioral Health Services & Research*. 2009; 36:492–504.10.1007/s11414-008-9139-x [PubMed: 18688725]
- Chavira DA, Stein MB, Bailey K, Stein M. Child anxiety in primary care: Prevalent but untreated. *Depression and Anxiety*. 2004; 20:155–164.10.1002/da.20039 [PubMed: 15643639]
- Christiana JM, Gilman SE, Guardino M, Kessler RC, Mickelson K, Morselli PL. Duration between onset and time of obtaining initial treatment among people with anxiety and mood disorders: An international survey of members of mental health patient advocate groups. *Psychological Medicine*. 2000; 30:693–703. [PubMed: 10883723]
- Coles ME, Turk CL, Jindra L, Heimberg RG. The path from initial inquiry to initiation of treatment for social anxiety disorder in an anxiety disorders specialty clinic. *Journal of Anxiety Disorders*. 2004; 18:371–383. [PubMed: 15125983]
- Cox DR. Regression models and life-tables. *Journal of the Royal Statistical Society: Series B*. 1972; 34(2):187–220.
- Cuffe SP, Waller JL, Cuccaro ML, Pumariega A, Garrison CZ. Race and gender differences in the treatment of psychiatric disorders in young adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1995; 34:1536–1543. [PubMed: 8543522]
- Darymple KL, Zimmerman M. Treatment-seeking for social anxiety disorder in a general outpatient psychiatry setting. *Psychiatry Research*. 2011; 187:375–381. [PubMed: 21310497]
- Egger, HL.; Burns, BJ. Anxiety disorders and access to mental health services. In: Ollendick, T.; March, J., editors. Phobic and anxiety disorders in children and adolescents: A clinician's guide to effective psychosocial and pharmacological interventions. New York: Oxford University Press; 2004. p. 530-549.
- Essau CA. Frequency and patterns of mental health service utilization among adolescents with anxiety and depressive disorders. *Depression and Anxiety*. 2005; 22:130–137.10.1002/da.20115 [PubMed: 16175563]
- Essau CA, Conradt J, Petermann F. Frequency and comorbidity of social phobia and social fears in adolescents. *Journal of Anxiety Disorders*. 1999; 37(9):831–843.
- Evans SW. Mental health services in schools: Utilization, effectiveness, and consent. *Clinical Psychology Review*. 1999; 19:165–178. [PubMed: 10078418]

- Evans, SW.; Langberg, J.; Williams, J. Treatment generalization in school-based mental health. In: Weist, MD.; Evans, SW.; Lever, NA., editors. *Handbook of school mental health: Advancing practice and research*. New York: Kluwer Academic/Plenum Publishers; 2003.
- Fox, JK.; Herzig-Anderson, K.; Colognori, D.; Stewart, CE.; Masia Warner, C. School-based treatment of anxiety in children and adolescents: New developments in transportability and dissemination. In: Weist, MD.; Lever, NA.; Bradshaw, CP.; Owens, JS., editors. *Handbook of school mental health*. New York: Springer; 2012.
- Goldsmith, HF.; Jackson, DJ.; Hough, RL. Process model of seeking mental health services: Proposed framework for organizing the research literature on help-seeking, 49US Department of Health and Human Services. National Institute of Mental Health, Mental Health Services System Reports, Series BN: Needs assessment; 1988.
- Goldstein RB, Olfson M, Wickramaratne PJ, Wolk SI. Use of outpatient mental health services by depressed and anxious children as they grow up. *Psychiatric Services*. 2006; 57(7):966–975. [PubMed: 16816281]
- Grambsch PM, Therneau TM. Proportional hazards tests and diagnostics based on weighted residuals. *Biometrika*. 1994; 81(3):515–526.
- Greenberg PE, Sisitsky T, Kessler RC, Finkelstein SN, Berndt ER, Davidson JR, et al. The economic burden of anxiety disorders in the 1990s. *Journal of Clinical Psychiatry*. 1999; 60:427–435. [PubMed: 10453795]
- Grover RL, Ginsburg GS, Ialongo N. Psychosocial outcomes of anxious first graders: A seven-year follow-up. *Depression and Anxiety*. 2007; 24:410–420. [PubMed: 17041929]
- Harrison ME, McKay MM, Bannon WM. Inner-city child mental health service use: The real question is why youth and families do not use services. *Community Mental Health Journal*. 2004; 40(2): 119–131. [PubMed: 15206637]
- Husky MM, Sheridan M, McGuire L, Olfson M. Mental health screening and follow-up care in public high schools. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2011; 50(9): 881–891. [PubMed: 21871370]
- Inderbitzen-Nolan H, Davies CA, McKeon ND. Investigating the construct validity of the SPAI-C: Comparing the sensitivity and specificity of the SPAI-C and the SAS-A. *Journal of Anxiety Disorders*. 2004; 18(4):547–560. [PubMed: 15149713]
- Janicke DM, Finney JW. Children's primary health care services: A social-cognitive model of sustained high use. *Clinical Psychology: Science and Practice*. 2001; 8(2):228–241.
- Jensen PS, Hoagwood KE, Roper M, Arnold LE, Odbert C, Crowe M, et al. The services for children and adolescents—parent interview: Development and performance characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2004; 43(11):11334–11344.
- Kaplan EL, Meier P. Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association*. 1958; 53:457–481.
- Katzelnick DJ, Kobak KA, DeLeire T, Henk HJ, Greist JH, Davidson JR. Impact of generalized social anxiety disorder in managed care. *The American Journal of Psychiatry*. 2001; 158(12):1999–2007. [PubMed: 11729016]
- Kendall PC. Treating anxiety disorders in children: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology*. 1994; 62(1):100–110. [PubMed: 8034812]
- Kessler RC, Olfson M, Berglund PA. Patterns and predictors of treatment contact after first onset of psychiatric disorders. *American Journal of Psychiatry*. 1998; 155:62–69. [PubMed: 9433340]
- Klein, JP.; Moeschberger, ML. *Survival analysis: Techniques for censored and truncated data*. 2. New York: Springer; 2010.
- Layne AE, Bernstein GA, March JS. Teacher awareness of anxiety symptoms in children. *Child Psychiatry and Human Development*. 2006; 23:383–392.10.1007/s10578-006-0009-6 [PubMed: 16736381]
- March JS, Parker JD, Sullivan K, Stallings P, Conners CK. The multidimensional anxiety scale for children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1997; 36:554–565. [PubMed: 9100431]

- Masia Warner C, Fisher PH, Shrout PE, Rathor S, Klein RG. Treating adolescents with social anxiety disorder in school: An attention control trial. *Journal of Child Psychology and Psychiatry*. 2007; 48:676–686. [PubMed: 17593148]
- Masia Warner C, Klein RG, Dent HC, Fisher PH, Alvir J, Albano AM, et al. School-based intervention for adolescents with social anxiety disorder: Results of a controlled study. *Journal of Abnormal Child Psychology*. 2005; 33:707–722. [PubMed: 16328746]
- Masia Warner C, Nangle DW, Hansen DJ. Bringing evidence-based child mental health services to the schools: General issues and specific populations. *Education and Treatment of Children*. 2006; 29:165–172.
- McMiller WP, Weisz JR. Help-seeking preceding mental health clinic intake among African-American, Latino, and Caucasian youths. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1996; 35(8):1086–1094. [PubMed: 8755806]
- Mendenhall AN, Demeter C, Findling RL, Fraizer TW, Fristad MA, Youngstrom EA, et al. Mental health service use by children with serious emotional and behavioral disturbance: Results from the LMAS study. *Pediatric Services*. 2011; 62(6):650–658.
- Merikangas KR, He JP, Burnstein M, Swanson SA, Avenevoli S, Cui L. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the national comorbidity survey replication-adolescent supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*. 2010; 49(10):980–989. [PubMed: 20855043]
- Merikangas KR, He J, Burstein M, Swendsen J, Avenevoli S, Case B, et al. Service utilization for lifetime mental disorders in U.S. adolescents: Results from the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*. 2011; 50:32–45. [PubMed: 21156268]
- Nease DE, Volk RJ, Cass AR. Does the severity of mood and anxiety symptoms predict health care utilization? *The Journal of Family Practice*. 1999; 48(10):769–777. [PubMed: 12224674]
- Olfson M, Kessler RC, Berglund PA, Lin E. Psychiatric disorder onset and first treatment contact in the United States and Ontario. *American Journal of Psychiatry*. 1998; 155(10):1415–1422. [PubMed: 9766774]
- Owens PL, Hoagwood K, Horwitz SM, Leaf PJ, Poduska JM, Kellam SG, et al. Barriers to children's mental health services. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2002; 41:731–738. 10.1097/00004583-200206000-00013 [PubMed: 12049448]
- Pine DS, Cohen P, Gurley D, Brook J, Ma Y. The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry*. 1998; 55:56–64. [PubMed: 9435761]
- Prochaska JO, DiClemente CC, Norcross JC. Application to addictive behaviors. *American Psychologist*. 1992; 47(9):1102–1114. 10.1037/0003-066X.47.9.1102 [PubMed: 1329589]
- Rice DP, Miller LS. Health economics and cost implications of anxiety and other mental disorders in the United States. *British Journal of Psychiatry*. 1998; 173:4–9. [PubMed: 9850201]
- Rickwood DJ, Braithwaite VA. Social-psychological factors affecting help-seeking for emotional problems. *Social Science and Medicine*. 1994; 39(4):563–572. [PubMed: 7973856]
- Rickwood DJ, Deane FP, Wilson CJ. When and how do young people seek professional help for mental health problems? *Medical Journal of Australia*. 2007; 287(7):35–39.
- Ryan JL, Warner CM. Treating adolescents with social anxiety disorders in schools. *Child and Adolescent Psychiatric Clinics of North America*. 2012; 21(1):105–118. [PubMed: 22137815]
- Schneier FR, Johnson J, Hornig CD, Liebowitz MR, Weissman MM. Social phobia: Comorbidity and morbidity in an epidemiologic sample. *Archives of General Psychiatry*. 1992; 49:282–288. [PubMed: 1558462]
- Scott M, Wilcox H, Schonfeld IS, Davies M, Hicks RC, Turner JB, et al. School-based screening to identify at-risk students not already known to school professionals: The Columbia Suicide Screen. *American Journal of Public Health*. 2009; 99:334–339. [PubMed: 19059865]
- Silverman WK, Kurtines WM, Ginsberg GS, Weems CF, Lumpkin PW, Carmichael DH. Treating anxiety disorders in children with group cognitive-behavioral therapy: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*. 1999; 67(6):995–1003. [PubMed: 10596522]

- Srebnik D, Cauce AM, Baydar N. Help-seeking pathways for children and adolescents. *Journal of Emotional and Behavioral Disorders*. 1996; 4(4):210–220. doi:10.1177/106342669600400402.
- Wagner R, Silove D, Marnane C, Rouen D. Delays in referral of patients with social phobia, panic disorder and generalized anxiety disorder attending a specialist anxiety clinic. *Anxiety Disorders*. 2006; 20(3):363–371. doi:10.1016/j.janxdis.2005.02.003
- Wang PS, Berglund PA, Olfson M, Kessler RC. Delays in initial treatment contact after first onset of a mental disorder. *Health Service Research*. 2004; 39(2):393–415.
- Wang PS, Berglund P, Olfson M, Pincus HA, Wells KB, Kessler RC. Failure and delay in initial treatment contact after the first onset of mental disorders in the national comorbidity survey replication. *Archives of General Psychiatry*. 2005; 62:603–613. [PubMed: 15939838]
- Weeks M, Coplan RJ, Kingsbury A. The correlates and consequences of early appearing social anxiety in young children. *Journal of Anxiety Disorders*. 2009; 23:965–972. [PubMed: 19596545]
- Weist MD. Challenges and opportunities in expanded school mental health. *Clinical Psychology Review*. 1999; 19:131–135. [PubMed: 10078416]
- Wittchen HU, Stein MB, Kessler RC. Social fears and social phobia in a community sample of adolescents and young adults: Prevalence, risk factors, and co-morbidity. *Psychological Medicine*. 1999; 29:309–323. [PubMed: 10218923]
- Wu P, Hoven CW, Bird HR, Moore RE, Cohen P, Alegria M. Depressive and disruptive disorders and mental health service utilization in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1999; 38:1081–1090. [PubMed: 10504806]

Fig. 1.
Time-to-treatment curves for those reporting symptoms in the clinical and non-clinical range on one of the self-report measures (MASC or SPAI-C)

Fig. 2.
Time-to-treatment curves for adolescents endorsing social discomfort, separated by whom they told

Table 1

Disclosure and service utilization among adolescents endorsing social discomfort

		Total (n = 814)	Clinical (n = 270)	Non-clinical (n = 544)
Disclosed	<i>n (%)</i>	390 (48 %)^a	165 (60 %)^c	225 (41 %)^e
Parent	<i>n</i>	306	132	174
School	<i>n</i>	17	8	9
Other	<i>n</i>	67	25	42
Received help	<i>n (%)</i>	111 (14 %)^a	58 (21.5 %)^c	53 (10 %)^e
Therapist	<i>n</i>	76	42	34
School counselor	<i>n</i>	24	9	15
Medication	<i>n</i>	6	4	2
Religious figure	<i>n</i>	5	3	2
If received help, beneficial	<i>n (%)</i>	75 (68 %)^b	32 (55 %)^d	43 (81 %)^f

^aOf the 814 who endorsed social discomfort (total)^bOf the 111 in total sample who received help^cOf the 270 who endorsed social discomfort and scored above clinical cutoff (clinical)^dOf the 58 in clinical sample who received help^eOf the 544 who endorsed social discomfort and scored below clinical cutoff (non-clinical)^fOf the 53 in non-clinical sample who received help

Table 2

Predictors of time to treatment among adolescents endorsing social discomfort

Predictor	Hazard ratio (95 % CI)	p
Clinical range social discomfort (vs. subclinical)	2.26 (1.55–3.29)	<.001
Demographic predictors		
Gender (Female vs. Male)	1.27 (.87–1.87)	.22
Ethnicity (non-Caucasian vs. Caucasian)	.65 (0.39–1.08)	.098
Illness-specific predictors		
Severity		
MASC	1.09 (1.05–1.13)	<.001
SPAI-C	1.05 (1.03–1.08)	<.001
MASC + SPAI-C:		
MASC	1.04 (.99–1.10)	.12
SPAI-C	1.04 (1.01–1.07)	<.05
Impairment		
School	1.87 (1.55–2.25)	<.001
Family	1.83 (1.56–2.15)	<.001
Social	2.10 (1.74–2.54)	<.001
School + Family + Social:		
School	1.21 (.95–1.52)	.12
Family	1.37 (1.12–1.68)	<.01
Social	1.59 (1.26–2.02)	<.001
Disclosure of anxiety		
Told someone	5.54 (3.25–9.43)	<.001
Whom they told		
School personnel vs. parents	3.09 (1.48–6.47)	<.01
Other vs. parents	1.35 (.80–2.28)	.27

“MASC + SPAI-C” and “School + Family + Social” refer to results of multiple regressions with the Cox model. All other results are from separate Cox regressions on individual predictors

Table 3

Factors affecting disclosure of anxiety

Predictor	Odds ratio (95 % CI)	<i>p</i>
Gender (Female vs. Male)	.59 (.44–.80)	<.001
Age of onset	.90 (.85–.95)	<.001
Severity (SPAI-C)	1.03 (1.01–1.06)	<.01
Impairment		
School	1.42 (1.13–1.78)	<.01
Family	.65 (.53–.80)	<.001
Social	1.28 (1.04–1.58)	<.05