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Identification of Social Anxiety in Schools: The Utility of a Two-Step Screening Process

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Abstract

Social anxiety disorder (SAD) is highly prevalent yet largely undetected and untreated in adolescents despite the availability of effective treatments. Implementing interventions in schools enhances recognition and access to treatment for SAD. However, without reliable means to accurately identify youth in need of services, school-based interventions are not feasible. The purpose of this study is to evaluate the utility of a two-step, school-based screening approach to identify youth with SAD. Students at three public high schools were screened with self-report questionnaires or nominated by school personnel. Subsequently, a brief telephone assessment of student symptoms was completed with students' parents. Results showed that using both questionnaires and telephone assessments yielded acceptable detection rates, while school staff nominations were not beneficial. This study provides support for the use of a two-step screening procedure consisting of student self-reports followed by brief parent telephone interviews to identify youth with clinically impairing social anxiety. Implications for enhancing school-based detection of and intervention for socially anxious adolescents are discussed.

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Compliance with Ethical Standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors. Informed consent was obtained from all individual participants included in the study.

Keywords

anxiety; school; screening; identification; school-based treatment

Anxiety disorders are the most common class of psychological disorders among adolescents, affecting approximately one-third of individuals in this age group (Merikangas et al., 2010). Social anxiety disorder (SAD) is second only to specific phobias, with a prevalence rate of 9.1% (Merikangas et al., 2010). SAD negatively impacts friendships and academic achievement (Grover, Ginsburg, & Ialongo, 2007; Langley, Bergman, McCracken, & Piacentini, 2004), is associated with depressive symptoms (Anderson, Jordan, Smith, & Inderbitzen-Nolan, 2009), and places youth at risk for later substance use (Bittner et al., 2007; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Furthermore, SAD tends to persist into adulthood if left untreated (Pine, Cohen, Gurley, Brook, & Ma, 1998).

Despite the availability of effective treatments, the majority of youngsters with SAD do not receive mental health services. In fact, over 80% of anxious youth remain untreated (Merikangas et al., 2011). Collaborating with schools may help enhance the identification and treatment of social anxiety in adolescents. Educating school staff in the recognition of SAD symptoms is particularly important, considering that the majority of students who connect to services do so with the assistance of school personnel (Colognori et al., 2012). School-based services also reduce common barriers to treatment such as cost and transportation. Participating in school treatment may additionally reduce stigma associated with mental health services in the community (Chandra & Minkovitz, 2006), a concern that is particularly pertinent to socially anxious adolescents who are likely sensitive to evaluation by others. Treating SAD in school settings also improves the feasibility of forming treatment groups, a modality that is particularly useful for social anxiety but difficult to implement in clinical settings (Beidel, Turner, & Morris, 2000). Finally, because many anxiety triggers are found in the school environment (e.g., speaking in class, interacting with peers), implementing treatments in schools allows for naturalistic exposures, real-world practice, and promotion of skill generalization.

To capitalize on the advantages of intervening in schools, clinic-based cognitive-behavioral interventions have been adapted to fit into the school context (e.g. Garcia-Lopez et al., 2006; Ginsburg & Drake, 2002; Masia Warner et al., 1999). Several of these interventions have been evaluated and shown to have positive clinical impact (Ginsburg & Drake, 2002; Masia Warner et al., 2005, 2007; Miller et al., 2011). However, a major challenge to implementing interventions for anxiety in schools is identifying students in need of services, because the majority of students with anxiety do not seek help (Merikangas et al., 2011). As anxiety symptoms are not easily observable and anxious youth are not commonly disruptive in classrooms, recognition may rely on self-disclosure of distress or systematic screening by the school (Masia Warner & Fox, 2012). Therefore, a proactive approach towards screening remains the most effective method for identifying anxious students to participate in school-based interventions.

Research studies evaluating school-based treatments (Bernstein, Layne, Egan, & Tennison, 2005; Masia Warner et al., 2007; Miller et al., 2011) have used a variety of screening

methods to identify students in need. These screenings usually utilize multi-method and multi-informant assessments to ensure the accuracy of diagnoses. For instance, Bernstein et al. (2005) used a self-report measure and teacher nominations followed by a clinical interview. Miller et al. (2011) used a combination of self, parent, and teacher reports to identify anxious children for a school-based cognitive behavioral intervention. Masia Warner et al. (2005, 2007) used self-report measures, school personnel nominations, and telephone screening with parents followed by clinical interviews. While the use of multiple informants and diagnostic interviews appears desirable, completing clinical interviews or obtaining teacher reports for all cases that initially screen positive can be impractical for school personnel with limited time and resources. Sustainable identification practices in schools will require more feasible methods to accurately identify students for program inclusion.

Purpose of the Current Study

Schools will require a cost-effective way to identify anxious students that can be feasibly implemented without external resources and support. The current study examines the potential value of a two-step screening process that does not require costly and burdensome diagnostic interviews, to identify adolescents with SAD. The screening consists of adolescent self-report measures and student nominations by school personnel, followed by a brief telephone screening with parents. Evaluating the utility of such an approach is essential in determining its value for detecting anxiety in school settings. Creating a viable system for school personnel to identify socially anxious adolescents will improve the sustainability of school-based treatments for anxiety. Adolescence is a crucial time to intervene because of the many demands associated with this developmental phase (e.g., independence, expanding social networks) that will be challenging to those with social anxiety and influence future functioning.

Method

Participants

The screening was part of the recruitment for a larger clinical trial evaluating the effectiveness of a school-based intervention delivered by school counselors. The initial sample consisted of 4742 adolescents in 9th through 11th grades across three suburban public high schools. All students were invited to participate in the school screening. Parents of 259 students refused and 279 students were absent on the screening days, resulting in a participation rate of 89% ($n = 4204$) in the initial screening. Eighteen students did not complete either self-report measure but were nominated by a teacher or school counselor as described below, and thus are included in the screening sample. The final sample consisted of 4222 (2041 female, 2168 male, 13 unknown) high school students. Mean age was 14.9 years old ($SD = 0.82$; range 13-19 years old). Participants were 79.4% Caucasian, 5.1% Asian, 6.7% Hispanic, 6.4% other, and 2.4% Black.

Measures

Multidimensional Anxiety Scale for Children-Social Anxiety subscale—The Multidimensional Anxiety Scale for Children-Social Anxiety subscale (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) is a nine-item self-report questionnaire designed to measure social anxiety. The MASC is scored on a four-point Likert scale ranging from 0 (*never true about me*) to 3 (*often true about me*), with higher scores indicating higher levels of social anxiety. The MASC has been shown to have good psychometric properties (March et al., 1997; March, Sullivan, & Parker, 1999) and had excellent internal consistency in the current sample ($\alpha = .87$). A cutoff score of 14 for males and 16 for females is recommended to define scoring positive for social anxiety. The MASC has been shown to have sensitivity of 62.8% and specificity of 81.7% at the recommended cutoffs in a sample of non-referred adolescents (Anderson et al., 2009). We used a cutoff score of 14 for both genders to maximize identification of positive cases for the larger clinical trial. Students only completed the 9-item social subscale of the MASC because of its specific relevance to the aims of this study.

Social Phobia and Anxiety Inventory for Children—The Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995) is a 26-item self-report measure designed to assess cognitive, physical, and behavioral social anxiety symptoms. Questions are rated on a three-point scale of 0 (*Never*), 1 (*Sometimes*), or 2 (*Always*), with higher scores indicating higher levels of social anxiety. The SPAI-C has been found to have strong psychometric properties (Beidel et al., 1995) and had excellent internal consistency in the current sample ($\alpha = .95$). A cutoff of 18 and above is recommended, but a score of 17 was used to maximize identification of positive cases for the larger clinical trial, consistent with past research that has used intentionally liberal screening criteria (Masia Warner et al., 2007). Research shows that the SPAI-C has a sensitivity of 61.5% and specificity of 82.7% at the recommended cutoff in a community-based sample of adolescents (Inderbitzen-Nolan, Davies, & McKeon, 2003).

Anxiety Disorders Interview Schedule for DSM-IV: Parent and Child Versions—The Anxiety Disorders Interview Schedule for DSM-IV: Parent and Child Versions (ADIS-P/C; Silverman & Albano, 1996) is a semi-structured diagnostic interview that assesses anxiety disorders and various other diagnoses in adolescents. The ADIS-P/C consists of a parent interview and a child interview, which are administered separately by the same interviewer. For each disorder assessed, the interviewer determines a clinical severity rating (CSR) based on symptom severity and interference, ranging from 0-8. A CSR of 4 or above merits a clinical diagnosis. The ADIS-P/C has been shown to have strong psychometric properties (Silverman, Saavedra, & Pina, 2001; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002). Results from the ADIS-P/C determined the presence or absence of social anxiety disorder. A subset of interview audiotapes ($n = 86$) were randomly selected and a rated by a second interviewer. Inter-rater reliability for the ADIS-P/C was excellent ($\kappa = .84$).

Procedure

See Figure 1 for a complete flowchart of participation in the study.

Screening Step One—Parents of students received an information form detailing the study screening and were asked to return it if they or their child did not want to participate. The first step of the screening consisted of the administration of the two self-report measures, the MASC and the SPAI-C. These measures were chosen given their prior use in school-based screenings for social anxiety (Masia Warner et al., 2007), strong psychometric properties, and applicability to *DSM-IV-TR* diagnostic criteria for SAD. Simultaneous use of two different narrowband measures aimed to maximize identification efforts. The questionnaires were administered by members of the research team in classrooms of about 25 students. Participation required approximately 20 minutes. The measures were scored electronically using an optical scanner (i.e. Scantron).

In addition, during a routine faculty meeting, teachers and school counselors received a 10-minute review of the symptoms of social anxiety from a member of the research team. They were then asked to nominate any students who experience significant social anxiety symptoms and would benefit from a group program to address these difficulties. Teachers submitted student names in writing to the research team. Overall, 123 students were nominated by school personnel. Students were considered positive for Step One if they scored above study cutoffs on the SPAI-C or MASC or were nominated by school personnel.

Screening Step Two—Parents of children positive for Step One received a second information form about the telephone screening and asked to return it if they or their child did not wish to receive a telephone call. Step Two consisted of a brief, 15-minute parent telephone interview to further assess the presence of clinically significant social anxiety. Because the initial screenings were completed in school, telephone interviews aimed to engage parents in the identification and referral process, and capitalize on the benefits of using multiple informant reports, such as gaining corroborating information about students in various contexts. We used telephone calls to enhance feasibility of the process and minimize family burden. Postdoctoral, graduate, and undergraduate members of the research team conducted telephone contacts with parents. The telephone screening included six questions about nervousness, shyness, or reluctance associated with: 1) unfamiliar people, 2) initiating conversations, 3) attending social events such as school clubs or parties, 4) inviting others to get together, 5) speaking up in class, and 6) interference with functioning. These questions were developed for the study based on consensus of two experts in the field of adolescent SAD on the main areas of impairment. Cases were considered positive if parents positively endorsed at least two questions, one of which had to be the question about interference. A positive response on the impairment question was required to identify SAD symptoms that are clinically significant rather than subthreshold in nature.

Diagnostic Interview—To confirm the presence of a social anxiety diagnosis, students who were considered positive in Step Two of the screening and their parents were invited to participate in an in-person diagnostic evaluation using the ADIS-P/C. A trained independent evaluator conducted these face-to-face interviews in participants' homes, which took approximately 90 minutes to complete. Independent evaluators were clinical psychology postdoctoral psychologists or graduate students who received extensive training in the

ADIS-P/C administration. Consensus CSR ratings were assigned at weekly research meetings.

Results

Step One

Of the 4204 participants who completed at least one of the self-report measures, 1193 (28.4%) scored positive on at least one of the two measures. This included 585 students (13.9%) who scored above study cutoffs on both measures, 308 (7.3%) who were positive on the MASC only, and 300 (7.1%) who were positive on the SPAI-C only. The correlation between the MASC and SPAI-C total scores was .78 ($p < .001$).

The MASC mean total score was 8.89 ($SD = 5.70$) for the total sample and 17.28 ($SD = 3.06$) for the 893 who scored above the cutoff. The SPAI-C mean total score was 10.96 ($SD = 7.79$) for the total sample and 22.87 ($SD = 5.63$) for the 885 students who scored above the clinical cutoff. Males ($M = 7.51$, $SD = 5.34$) scored significantly lower than females ($M = 10.37$, $SD = 5.67$) on the MASC, $t(4177) = -16.80$, $p < .05$, $d = -0.52$. Males ($M = 9.67$, $SD = 7.40$) also scored significantly lower than females ($M = 12.34$, $SD = 7.92$) on the SPAI-C, $t(4179) = -11.31$, $p < .05$, $d = -0.35$.

Of the 4742 students in the three grades evaluated, only 123 (2.6%) students were nominated by school personnel. Of those, 45 students (36.6%) also were identified as positive by the self-report measures, and 78 students (63.4%) were identified only through nomination.

Overall, 1271 (30.1%) students were positive for screening Step One and thus moved on to Step Two of the screening. Of the 1271 positive at Step One, 1148 (90.3%) were identified through the self-report measures only, 78 (6.1%) were nominated only, and 45 students (3.5%) were identified through both nominations and self-report measures.

Step Two

Of the 1271 students identified in Step One, 847 (66.6%) of their parents completed the phone screen, 244 (19.2%) of parents refused to participate and 180 (14.2%) were unreachable. More than half ($n = 454$; 53.6%) of the parents completing phone screens endorsed interference related to social anxiety. Of those, 432 (95.2%) students reported heightened social anxiety on at least one of the self-report measures, and 256 (30.3%) were identified by elevated scores on both measures. Of those who were identified by only one measure, the MASC and SPAI-C both separately identified 88 (19.4%) cases.

Telephone screening results were dichotomous (positive vs. negative on the screen). MASC total scores were positively correlated with telephone screen results in the Step Two sample, $r(805) = .14$, $p < .01$. After correction for restriction of range (Cohen, Cohen, West, & Aiken, 2003), the correlation increased to .18. Similarly, SPAI-C total score was positively correlated with telephone screen results in the Step Two sample, $r(803) = .17$, $p < .01$ and increased to .20 after correction for range restriction. To provide an analog of the procedure by which the scales were combined during Step One (in which elevation on either scale was

grounds for advancement to Step Two), MASC and SPAI-C total scores were converted to z -scores. A new variable was created that consisted of the higher of the two z -scores for each person. This combined variable was positively correlated with phone screen results in the Step Two sample, $r(805) = .17, p < .01$. Correcting for restriction of range increased this correlation to .25.

Nominations identified 48 (10.6%) of the students whose parents endorsed impairment on the phone screen. Of those 48, 26 were also identified by a self-report measure, resulting in 22 cases identified solely by school staff.

Diagnostic Interview

Of the 454 students invited to participate in an in-person diagnostic interview, 286 (63.0%) students completed the ADIS-P/C. The majority ($n = 204$; 71.3%) received a diagnosis of SAD based on the interview. Most students who received SAD diagnoses ($n = 197$; 96.6%) had been identified by at least one of the self-report measures. Specifically, 158 (77.4%) students had been identified by the MASC, 164 (80.3%) by the SPAI-C, and 125 (61.2%) scored positive on both measures.

MASC total scores were positively correlated with diagnostic results, though this relationship did not reach significance, $r(239) = .10, p = .12$. After correction for range restriction, the correlation increased to .13. SPAI-C total scores were also positively correlated with diagnostic interview results without reaching significance, $r(239) = .12, p = .07$. After correction for restriction of range, the correlation increased to .13. The same outcome was found for the variable that combined the two measures, $r(239) = .11, p = .08$. Correcting for restriction of range increased this correlation to .16.

Only 25 (12.3%) of the 204 had been nominated by a teacher or guidance counselor. Eighteen of these 25 nominated students also had elevated social anxiety self-ratings, leaving only 7 students with SAD diagnoses who had *exclusively* been identified through nomination.

Clinical Cutoffs

Students receiving SAD diagnoses had a mean MASC score of 16.41 ($SD = 4.27$; range 5-27) and mean SPAI-C score of 22.0 ($SD = 6.93$; range 3-52), which is above recommended clinical cutoffs for these measures. However, of the 204 cases of confirmed SAD, 30 students screened positive based on the lowered MASC cutoff and 10 students screened positive based on the lowered SPAI-C cutoff. Students receiving diagnoses were offered participation in a school-based SAD treatment program as part of the larger trial.

Discussion

The goal of the current study was to examine the utility of a two-step screening process to identify youth with clinically significant social anxiety in school settings. Overall, this study demonstrated that the use of social anxiety self-report measures followed by a brief telephone contact with parents is a potentially useful method for identifying youth with

impairing SAD. Study findings highlight several important points that inform future efforts to identify anxiety in schools.

First, self-report measures coupled with a brief telephone screen are likely sufficient for identifying students with impairing social anxiety in need of school-based interventions. Seventy-one percent of students considered impaired per the telephone screening ultimately received a SAD diagnosis. Unlike research studies where individuals must strictly meet diagnostic criteria to participate, school services can benefit students exhibiting clinically significant symptoms regardless of diagnosis. Using the two screening steps, 454 students were identified who could potentially benefit from intervention for social anxiety. Although the exact accuracy rate of the two-step screening is uncertain due to interview refusals, 71% of interviewed cases received a diagnosis, suggesting a sound hit rate.

The accuracy of the two-step assessment is further encouraging because of its feasibility relative to costly and time-intensive diagnostic interviews. Our high rate of interview refusals suggests that families may have found lengthy in-person evaluations to be unacceptable. In addition, clinical interviews are too burdensome for school personnel who have several competing demands. While this limits the conclusions we are able to draw regarding the exact accuracy of the telephone screenings, it suggests requiring extensive evaluations for program participation may serve as a significant barrier to treatment. In contrast, questionnaires were easy to administer and efficient to score. In school settings, self-rating measures can be completed during a nonacademic period with little disruption to the school day. While these self-report instruments were valuable, using them exclusively was likely not sufficient as the telephone screening eliminated 393 students who did not experience impairment related to reported social discomfort. The telephone contacts were also brief and could potentially be completed by guidance counselors or other school personnel. Thus, both screening steps may be necessary to maximize accuracy and efficiency of referrals, and seem feasible for independent implementation by schools.

Our findings also suggest that using more than one anxiety questionnaire may maximize identification of students in need. Each instrument identified unique students with minimal additional burden. Of the 197 SAD cases that were identified by the self-report measures, 33 students were elevated on *only* the MASC and 39 on *only* the SPAI-C. Results showed that while both questionnaires alone showed positive associations with telephone screening results, this association was strengthened when used together. Thus, administering both questionnaires simultaneously may be an advantageous approach for enhanced detection.

Moreover, we would have missed several students with SAD utilizing the established cutoff scores for the self-report measures. Of the 204 confirmed SAD cases in our sample, 30 students scored below recommended cutoffs but were positive by our cutoffs on the MASC and 10 students scored below recommended cutoffs but were positive by our cutoffs on the SPAI-C. When using these instruments for screening purposes, lowering the cutoffs and considering gender differences may be beneficial for heightening identification.

Lastly, nominations provided by teachers and school counselors were not optimal means for identifying socially anxious students. Nominations had low accuracy, with only seven

unique SAD cases identified. Thus, this strategy did not add sufficient value to the self-report measures to be deemed worthwhile. It is possible that our nomination procedure which required teachers to generate names from memory may be limiting. Rather, providing teachers with class lists on which to indicate shy students may enhance the accuracy of nominations. Another strategy to improve accuracy may be to train school personnel to better identify functional indicators. Such a referral process is appealing because it mimics the system that naturally occurs in schools, making it more likely to be implemented. Alternatively, it may be possible that internalizing disorders, particularly those of mild and moderate severity, are too difficult for teachers to notice in brief classroom interactions with several competing academic demands. In addition, school counselors meet with students infrequently unless actively sought out by students, a behavior which is atypical of adolescents with social anxiety. Consequently, systematic and objective measures like questionnaires may be the best option to recognize internalizing symptoms like anxiety that are not readily observable.

Limitations

Our results should be considered in light of several limitations. First, a major limitation of this study is that we did not complete telephone screenings or diagnostic interviews with students who were initially negative. Thus, we are unable to empirically verify the trade-off between classification errors at both stages of screening. In addition, because self-report measures were used in conjunction, we cannot report how each questionnaire performed alone, and are lacking decision rules on how best to combine these instruments. An additional limitation is that many families refused to complete the telephone screenings (19.2%) and diagnostic interviews (37%). Because we did not collect reasons for refusals, we are unable to assess trends among those declining further evaluation. It is possible that a telephone screening is burdensome for some families, which may potentially detract from feasibility.

Conclusions and Future Directions

Overall, a two-step screening demonstrated initial utility for identifying anxious youth for school-based SAD interventions. Developing a viable system for school personnel to identify socially anxious adolescents will enhance the sustainability of school-based services for anxiety. Future studies should assess students who screen negative at each stage to determine specificity and sensitivity of the measures and determine appropriate decision rules for combining the two questionnaires. Additionally, future research should investigate reasons parents refuse assessments for treatment. Potential refusal reasons may include parents believing their child does not experience impairing symptoms or parents attempting to shield their child from anxiety-provoking situations by avoiding assessments. Examining these reasons may offer insight into how best to approach parents about school intervention. In addition, future research should measure teacher and school counselor acceptability of this screening process. Assessing feasibility and burden on those who would be responsible for implementation is important for determining the likelihood of sustainability. Additionally, future research should examine the accuracy with which these screenings are implemented when school personnel are fully responsible.

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Fig. 1.
Flowsheet of study participation