



# Assessing Adolescent Mental Health Service Use: Developing the Adolescent Mental Health Support Scale (AMHSS)

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## Abstract

Many schools and communities conduct regular surveillance surveys to monitor student mental health risk. These surveys rarely ask about use of mental health services, despite the potential importance of this information to support service planning and resource allocation. The current study developed and tested the Adolescent Mental Health Support Scale (AMHSS), a brief self-report measure that can be added to student surveillance surveys to evaluate adolescent mental health service use. The AMHSS includes questions assessing desire to use mental health services, use of mental health services, and barriers to accessing school mental health services. The development process included: (1) a search of the literature for existing questions to include in a question bank for use or adaptation for the new measure; (2) focus groups with adolescents to learn about their conceptualization of mental health services and obtain feedback on candidate survey items; (3) expert review and validation by school-based mental health service providers and research experts; and (4) survey administration and evaluation of psychometric properties. The AMHSS was administered as part of the fall 2018 MetroWest Adolescent Health Survey to students in 27 communities in the MetroWest region of Boston, Massachusetts. Analysis of survey results from 12,924 middle and 26,318 high school students indicated that response patterns were consistent with well-established demographic patterns in help-seeking and mental health service use. Results provide initial support for the AMHSS as a brief measure of mental health service use that could be administered in surveillance surveys to adolescents, with the goal of improving services access.

**Keywords** Mental health · Service use · Help-seeking · Schools · Adolescents

Nationally, studies find that approximately 30% of US youth with diagnosable psychiatric disorders receive mental health services each year (Green et al., 2013; Merikangas et al., 2011; Olfson et al., 2015) and that youth receiving mental health services are more likely to receive them in schools than in other settings (Duong et al., 2020; Merikangas et al., 2011). Increasing access to mental health services has been a stated priority of the National Institute of Mental Health (NIMH, 2020), and data on mental health service utilization rates have been highlighted as necessary data for federal laws and initiatives (Duong et al., 2020). Yet, the limited number of studies with data on youth mental health service

use, and discrepancies in their methods, have dampened the field's ability to draw conclusions about mental health service use and barriers to access (Duong et al., 2020).

## School Surveillance Surveys

One avenue for collecting systematic data on mental health service utilization and trends in mental health service use is by adding questions to existing school-based surveillance surveys. School-based surveillance surveys are routinely used across the US to collect data on youth mental health, physical health, and risk behaviors (Dowdy et al., 2010). Most notably, the Youth Risk Behavior Surveillance Survey (YRBS; <https://www.cdc.gov/yrbs>) is administered by the Centers for Disease Control and Prevention biennially to collect nationally representative data on mental health and health risk behaviors. School surveillance surveys are typically administered anonymously and results are used to

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provide aggregate local data to schools, districts, and communities on youth mental health and health risk that can inform service planning, professional development, and outreach activities (Dowdy et al., 2010). However, school-based surveillance surveys rarely include measures of mental health service utilization. This is a missed opportunity for schools that use local data from surveillance surveys to establish trends in mental health and health risk behaviors among students, advocate for resources, and inform their selection of interventions. Mental health interventions, especially preventive interventions, might not directly result in changes in school-wide rates of mental health symptoms, which have multiple and complex etiologies. A more useful and proximal data point for communities to consider is whether youth who may need mental health services receive those services.

## Existing Measures of Youth Mental Health Service Utilization

Methods to assess youth mental health service utilization have typically included analysis of administrative data (e.g., healthcare records; Olfson et al., 2015, medical expenditures; Marrast et al., 2016), administration of semi-structured and structured interviews to parents and youth (e.g., Langer et al., 2015; Mojtabai et al., 2016; Stiffman et al., 2000), and self-report measures (e.g., Amaral et al., 2011; Colognori et al., 2012; Cummings et al., 2010; Graeff-Martins et al., 2014). For example, a recent systematic review by Duong et al., (2020) analyzed nine articles published in the past 2 decades on mental health service utilization among general samples of youth in the USA (i.e., not clinical or treatment samples). Five studies used structured or semi-structured interviews to obtain information from youth and/or parents about mental health service use in multiple settings. Of these, two studies used the Services Assessment for Children and Adolescents (SACA; Alegría et al., 2004; Lindsey et al., 2010), one used the Child and Adolescent Services Assessment (CASA; Angold et al., 2002), one used the Composite International Diagnostic Interview (CIDI; Costello et al., 2014), and one used a self-administered audio interview (Ringeisen et al., 2016). Studies have been conducted with both the SACA and CASA to evaluate the reliability and validity of their service utilization questions (Ascher et al., 1996; Hoagwood et al., 2000). The remaining four studies used self-report measures developed for the specific study in which they were administered, or adapted from interviews, and publications include limited information about measurement development or psychometric properties (Amaral et al., 2011; Colognori et al., 2012; Cummings et al., 2010; Graeff-Martins et al., 2014).

Structured and semi-structured interviews, such as the SACA and CASA, have the advantage of providing detailed information about service use in multiple sectors and, in some cases, providing opportunities to probe and ask follow-up questions. However, these tools are impractical to use as self-report measures, which is likely the reason that service use researchers have often developed their own study-specific tools. In reviewing the literature, we have not been able to find validated measures assessing mental health service use that can be administered as part of a systematic school-wide survey. Anecdotally, this has been problematic in our work in schools where we have sometimes asked students if they received “counseling services” and later heard from students that they consider meetings with guidance counselors about college plans or course selection, and discussions with coaches about play strategies, to be “counseling.” As there is no opportunity to probe or ask follow-up questions in a surveillance survey, the wording of questions needs to be particularly clear and straightforward for youth respondents.

## Theoretical Framework

Without clear data on mental health service utilization, schools may rely on incomplete or anecdotal data to make decisions about resource allocation and to design outreach efforts for students in their communities who are underserved. This is problematic as researchers and theorists have indicated for decades that disparities in mental health service use are rooted in the intersection of individual and systemic factors that jointly produce inequities in mental health service use (Andersen, 1995; Mukolo et al., 2010; Stiffman et al., 2004). For example, studies using the Gateway Provider Model (Stiffman et al., 2004) have demonstrated that youth mental health service use is driven by a combination of factors related to need (e.g., presence and severity of disorders), predisposing characteristics (e.g., demographic characteristics, risk and protective factors), factors enabling service use (e.g., availability and accessibility), and structural characteristics (e.g., organizational and management factors). These factors interact with the perceptions and knowledge of “gateway providers” (e.g., teachers and school staff) who help to facilitate service access (see, for example, Fong et al., 2018; Green et al., 2018; Planey et al., 2019; Splett et al., 2019).

The Gateway Provider Model has been used to explain disparities in mental health service access and how those disparities are associated with barriers to service use (Heidi et al., 2011), including stigma (Pescosolido et al., 2008). Research on barriers has often considered attitudinal barriers (e.g., beliefs and attitudes) as well as structural barriers (e.g., convenience, cost, availability) that impact use of mental health services (Andrade et al., 2014; Mojtabai et al., 2011).

Findings that race and ethnicity are differentially associated with perceptions of need for mental health services and barriers to accessing services (Green et al., 2020) further support the importance of assessing these barriers in studies of mental health service use.

## Current Study

The goal of the current study was to develop and test the Adolescent Mental Health Support Scale (AMHSS), a brief and freely available self-report measure that can be added to school surveillance surveys to evaluate adolescent mental health service use. Data on student mental health service use are important for school staff to collect; these data provide information that can be used by school staff to evaluate outreach, prevention, and intervention efforts, and also to identify and address disparities in mental health service access.

Although data from surveillance surveys are primarily used by school staff to support student health and wellness, some students do not receive mental health services at school *because* they are receiving community-based services. Therefore, we designed questions to identify whether students access services in either or both settings, with the goal of establishing the extent to which there are gaps and disparities in services access. For this project, we developed a scale that was added to the MetroWest Adolescent Health Survey, a regional surveillance survey conducted biennially with approximately 40,000 middle and high school students in 27 communities in and around the MetroWest Boston region of Massachusetts. Our measure development process followed the guidelines set forth in publications on best practices in survey development (e.g., Artino et al., 2014; Fowler, 2013). This process included: (1) a review of the literature to search for existing questions that might be included in a question bank for use or adaptation for the new measure (Study 1, Phase 1); (2) focus groups with adolescents to learn about their conceptualization of mental health services and to obtain feedback on candidate survey items (Study 1, Phase 2); (3) expert review and validation by school-based mental health service providers and research experts (Study 2); and (4) survey administration and evaluation of psychometric properties (Study 3). In Study 3, our evaluation of psychometric properties includes analyses of measure reliability and construct validity, using a known-groups method (Hattie & Cooksey, 1984), which compares groups theoretically expected to differ on the constructs measured.

## Study 1: Scale Development

Study 1 focused on the initial development of the AMHSS based on a review of the literature to identify candidate items (Phase 1) and item refinement using feedback from adolescents (Phase 2).

### Method

#### Phase 1: Item Development

Candidate items for the AMHSS were identified through a literature search. We began by searching existing surveys of mental health and health risk behaviors to determine whether they included questions assessing school mental health service use (e.g., the California Health Kids Survey, the National Comorbidity Survey Adolescent Supplement, the Add Health Survey, the Oregon Adolescent Depression Project, Monitoring the Future). In addition, we searched two databases for articles that included measures for adolescents related to mental health service use in school (PubMed and PsycINFO) using the following search terms: mental health service\*or psychiatric service\*; youth\*or adolescen\*or child\*; and school\*. (The asterisk is used as a “wildcard” symbol in searches, indicating that searches should include all words that start with the same set of letters. For example, “adolescen\*” will retrieve searches with the terms “adolescent,” “adolescents,” and “adolescence”.) Our search revealed 910 results; however, most of these articles brought us back to previously identified surveys. We identified 16 additional articles that described questions about mental health service use and added them to our question bank. We found no articles describing the psychometric properties of self-report measures of mental health service use for adolescents. In addition, we found no self-report surveys that had been validated by comparing them to other measures or to clinical records. From the literature review, we identified a total of 15 initial candidate items assessing mental health service use generally, and in schools. Items included, for example, “How many times this school year have you seen a counselor individually?” (Johnston et al., 2015) and “When did you last have counseling, psychological testing, or any mental health or therapy service?” (McLeod & Uemura, 2012).

#### Phase 2: Focus Groups

From January to April of 2018, we conducted a total of five focus groups at two middle schools and three high schools in school districts in the MetroWest region of Massachusetts (this number of focus groups is consistent with the recommendation discussed in Vogt et al., 2004). These schools

were selected because their populations were representative of schools across the MetroWest region of Massachusetts. School contacts (i.e., school counselors, nurses, and administrators) identified students for focus group participation. They were asked to identify typical students in the school and not specifically those with mental health need or receiving mental health services. IRB approval was obtained from the Boston University Institutional Review Board. In total, 45 parents provided consent for their children to participate in focus groups. Of these, 33 adolescents participated, with non-participation due to student absences and competing activities. Each focus group consisted of 6–9 students. To protect student confidentiality, the only demographic information collected was student gender identity, which was collected from parents providing consent. Based on parent identification, 64.4% of participants were female, 33.3% were male, and 2.2% indicated another gender identity. All students received \$20 gift cards for their time, with the exception of students in one school district that did not allow the distribution of gift cards.

Focus groups lasted 45–60 min and were facilitated by two researchers, one who led the focus group and the other who took notes. The groups followed a semi-structured format. Facilitators had a list of questions that they asked and they followed those questions with prompts to gather more information. Student names were not collected and students were instructed not to share any information about their own mental health. In focus groups, students were first asked to describe the mental health problems or challenges they see at their school. Students were then asked to describe the different ways adolescents get help for those problems. From these responses, we identified language that youth use to describe mental health providers in their schools and communities. To learn about barriers to mental health service access, we asked open-ended questions about the reasons that a student in their school might not receive counseling, even if it could be helpful to them. These lines of questioning about how students conceptualize mental health, mental health services, and barriers to mental health service use is consistent with the scale development framework provided by Gehlbach and Brinkworth (2011), which includes collecting data from the target population about their conceptualization of the constructs being assessed.

We then passed out copies of potential survey questions identified in Phase 1. We asked students to review the questions and to make note of any feedback. We used this approach to provide students an opportunity to gather their own thoughts before opening the focus group for discussion. We then used a cognitive interviewing approach, with the goal of determining whether respondents interpreted items as we intended (Artino et al., 2014). Specifically, we began by asking students “In your own words, what do you think this question is asking?” We next asked students if there was

anything confusing or unclear about the question, if there was a better way of asking the question, and if most students would feel comfortable answering the question on an anonymous survey. In some cases, we gave students two similar questions to review and we asked them to compare and contrast the questions. For example, we asked students to compare the same question with different response options, or to compare two questions designed to address the same construct, but with different wording.

For the list of potential barriers, we started with the list of 15 barriers used in the National Comorbidity Adolescent Supplement (NCS-A; <https://www.hcp.med.harvard.edu/ncs/instruments.php>), which are similar to items used in the SACA (Owens et al., 2002). We gave this list to students and asked them for feedback on the barriers included and if there were other barriers they might add. In all cases, the development of questions was iterative across the five focus groups. Two members of the research team met after each focus group to review the notes and discuss the feedback generated in the discussion and identified feedback that was consistent across two or more focus groups. Feedback generated from multiple focus groups was brought back to the larger research team and was used to make refinements to the questions. Refined questions were presented to subsequent focus groups.

## Results

Through this process, we developed three categories of questions: (1) desire to use mental health services at school, (2) use of mental health services and supports (at school and outside of school), and (3) barriers to mental health service use at school. Students indicated that candidate questions were generally clearly written and understandable. At their recommendation, we included a statement at the start of the scale specifying that the questions were asking about mental health, rather than help-seeking for other reasons (e.g., academic). Students had a number of recommendations related to terminology, time frame, and response options. We provide examples below.

### Desire to Use Mental Health Services

Initial items that we considered for assessing desire to use mental health services at school asked students whether they wanted to speak with a mental health service provider and listed a series of potential school-based and community-based providers. For example, we asked if students wanted to talk to a “therapist, psychiatrist, psychologist, or social worker” in an initial draft of the survey. Students in one focus group said that these were “big words” and that they did not know the differences among the different types of providers that were listed. In a second focus group, several

students specifically said that they did not know what a “psychiatrist” was or how a psychiatrist differed from a “therapist.” When we asked students what they thought was the job of “therapists,” students said “listening” and “prescribing.” In a third focus group, students also flagged the word “psychiatrist,” saying that they did not know what it meant, that it sounded like someone who would treat very serious problems, and recommended that we remove the term altogether. Students in more than one focus group also indicated that they see “school counselors” for many reasons, including problems with class scheduling and college application preparation. In one focus group, students said that we should refer to “guidance” instead of “school counselors,” indicating that they perceived these roles to be interchangeable. Students recommended that if we wanted to specifically assess help-seeking related to mental health, that we specify the reason for the visit in our question. The final question (Appendix A) includes the terms “school counselor, school therapist, or school psychologist,” and specifies that we are interested in help-seeking related to “emotional challenges or problems.”

As another example, we asked students to provide input on the most appropriate time frame for the question. Many of the candidate questions used a 12-month time frame. While some students questioned if 12 months was too long a time frame to remember whether they desired mental health services, other students were concerned that a shorter time frame might not capture a challenging time in students’ lives that had passed. Students also indicated that if we asked about “this school year” the time frame might be very short depending on the time of year in which the survey is administered. The final question used a 12-month time frame to capture an adequate range of student mental health experiences and to align with other questions on the MetroWest Adolescent Health Survey and similar surveys of youth health and risk behaviors, such as the mental health measures on the high school version of the YRBS.

Finally, multiple focus groups discussed the question stem and whether to ask students if they “want” to talk to someone about their mental health or if they “need” to talk to someone. In one focus group, students said that they might “need” to talk to someone, but might not “want” to talk to someone (i.e., they might be forced into counseling services). In contrast, in a second focus group, students said that the word “need” felt too strong and that they might not “need” help, but might still “want” help. The final question asked students whether they “wanted” to speak with someone, which we considered the best indicator of desire to seek help, rather than reflecting their judgment of the severity of problems. In addition, students recommended adding a “not sure” option, which we added to the final question.

## Mental Health Service Use and Other Supports

The majority of candidate items that we identified assessed formal mental health service use (e.g., seeing a counselor or therapist). We discussed with students the best way to word items and response options. In several focus groups, students stated that they did not use the terms “receiving counseling” or “receiving services,” but rather “speaking with the counselor” (and in many cases they did not use the word “counselor,” but referred directly to the names of specific staff in their schools). Relatedly, when we provided students with questions that asked separately about speaking with school counselors, social workers, and school psychologists, students indicated that they knew staff by their names, but did not know their positions or titles. Students encouraged us to expand the list of potential people and sources that they go to for mental health services and supports beyond formal mental health services. As a result of their feedback, we added friends and social media groups as potential sources of help. Students also recommended asking separately whether they spoke with adults at school or outside of school, which we did in the final question.

In addition, conversations with students focused on the optimal response options for the questions about mental health service use. Some candidate items asked about the number of times that students talked with a support provider, whereas others asked about the frequency of those meetings. Students in the focus groups expressed that meetings are often irregular (e.g., as needed), or will be quite frequent for a period of time (e.g., every day for a week when the student is in crisis) and then less frequent later. In the final question, we therefore asked about the number of times that students had talked to each source of support or provider in the past 12 months, rather than the frequency of visits. Finally, students provided feedback on the formatting of questions. We tested a number of different presentation formats. Students indicated that they preferred the grid format, which was more efficient for answering questions.

## Barriers to Mental Health Service Use

The question about barriers to school-based service use was the most challenging to develop. One of the first issues we discussed was whether to ask about personal barriers to service use (e.g., reasons students themselves would not seek help), reasons other students at school would be unlikely to seek help, or generally about attitudes related to barriers. Because surveillance surveys are typically administered to the entire student body, we wanted questions to be relevant to all students, not just those with mental health services need. The final question therefore asked students to rate their agreement with general attitudes about barriers relevant to school service use rather than their personal barriers.



We introduced students to a list of barriers from the National Comorbidity Survey Adolescent Supplement (Kessler et al., 2009) that included both attitudinal barriers (e.g., beliefs about effectiveness of treatment) and structural barriers (e.g., convenience of treatment). Students provided feedback on barriers that they thought were irrelevant to mental health supports in school settings (e.g., cost of treatment) and provided suggestions for additional barriers to include. Most notably, students in multiple focus groups said that having a busy schedule and being concerned about missing class were primary barriers to service use. Students also talked at length about being embarrassed to see a school counselor. For example, in one middle school that we visited, students said that they would run back to class as they left the school counselor's office so that they would be seen by as few of their peers as possible. Many students also spoke about not wanting their parents to know that they were struggling with mental health issues. The final survey included a list of 10 potential barriers to seeking help at school.

## Study 2: Expert Review and Validation

Study 2 was designed to refine the questions developed in Study 1 using feedback from a group of expert raters. For each of the three categories of questions (desire for use of services, service use, and barriers to school-based services receipt), we used student focus group responses to identify the two best question options for expert review.

### Methods

We surveyed experts who were mental health professionals in participating MetroWest region schools ( $N=28$ ) or school mental health research experts identified through professional contacts ( $N=6$ ). The highest degree earned by experts was a Bachelor's degree ( $n=1$ ), M.Ed. ( $n=5$ ), M.A. or M.S. ( $n=13$ ), M.S.W. ( $n=7$ ), and doctoral degree ( $n=7$ , with an additional respondent indicating they had completed all doctoral coursework). Job titles of experts were School Nurse or Nurse Leader ( $n=7$ ), School Social Worker ( $n=6$ ), Professor ( $n=6$ ), Guidance Counselor or Head of Guidance ( $n=5$ ), School Counselor ( $n=3$ ), Wellness Teacher or Director of Wellness ( $n=2$ ), School Psychologist ( $n=2$ ), Director of Student Services ( $n=1$ ), Evaluation Team Supervisor ( $n=1$ ), and Physical Education/Health Teacher ( $n=1$ ). Most (82.7%) of respondents reported that they were currently employed by a school or school district. Experts reported that they had spent an average of 12.8 years ( $SD=10.4$ ) providing direct clinical services to children and adolescents (Median = 10.0, range = 0–36).

IRB approval was obtained from the Boston University Institutional Review Board. We asked each expert to review a total of six questions (2 in each of the 3 categories) and randomized the order of the questions within each category. Consistent with the recommendations of Artino et al. (2014), experts rated each question on: (1) the understandability of the question stem for adolescents, (2) the understandability of the response options for adolescents, and (3) the relevance of the question to measuring student mental health service use. All ratings were made on a five-point Likert-type scale; understandability was rated as *not at all understandable* (1), *slightly understandable* (2), *somewhat understandable* (3), *quite understandable* (4), or *extremely understandable* (5); and relevance to service use was rated as *not at all relevant* (1), *slightly relevant* (2), *somewhat relevant* (3), *quite relevant* (4), or *extremely relevant* (5). Experts were also asked to provide any additional feedback on the questions. We used the results of the ratings to select among the two question options, and we used the feedback to further refine item wording and response options.

### Results

We used expert ratings to select the final questions for the AMHSS. Experts rated the final question about desire for mental health services as an understandable question ( $M=4.2$ ,  $SD=0.8$ ) with understandable response options ( $M=4.5$ ,  $SD=0.6$ ). Ratings of relevance to mental health service use were somewhat lower ( $M=3.9$ ,  $SD=1.0$ ). Experts suggested adding school psychologists to the list of professionals in addition to providing more specific examples to the description at the start of the survey about mental health problems that the questions were referencing. These changes were made in the final survey.

Experts rated the final question about service use as understandable ( $M=4.3$ ,  $SD=0.7$ ) and relevant ( $M=4.2$ ,  $SD=0.8$ ), but provided lower ratings for understandability of response options ( $M=4.0$ ,  $SD=1.0$ ). Experts recommended removing a question about "other mental health providers," collapsing across categories of mental health providers for students who might not know the difference between professional titles, and adding school nurses as an additional sources of services. These changes were made in the final survey.

The final question about barriers to service use was rated as understandable ( $M=4.4$ ,  $SD=0.6$ ), with understandable response options ( $M=4.5$ ,  $SD=0.6$ ), and high relevance ( $M=4.6$ ,  $SD=0.5$ ). Experts suggested removing a question about whether a barrier to help-seeking is fear of being sent to the hospital, because they felt that this question might raise new concerns for students. They also recommended changing the response scale to allow for a broader range of responses. These changes were made in the final survey.

### Study 3: Psychometric Analysis

In Study 3, the AMHSS survey questions were administered to middle and high school students in 25 communities in the MetroWest region of Boston, Massachusetts as part of the MetroWest Adolescent Health Survey (MWAHS), funded by the MetroWest Health Foundation, as well as two additional communities in close proximity to the MetroWest region. The MWAHS is based on the YRBS (CDC, 2019), including questions on mental health and substance use, and is administered locally to inform school and community policies and programs. Mental health measures focus specifically on internalizing symptoms (anxiety, depressive symptoms, suicidality), which are known to increase in adolescence (Merikangas et al., 2010) and are less likely to be associated with mental health service use in school settings than externalizing symptoms (Costello et al., 2014). The survey, which is both anonymous and voluntary, was administered using scannable paper-and-pencil forms in the fall of 2018. IRB approval was obtained from the Boston University Institutional Review Board. Parents were notified in advance of the survey administration and had an option to opt-out their child(ren). These data were used to analyze: (1) descriptive information about AMHSS item responses, (2) the factor structure and internal reliability of items on the barriers scale, and (3) the preliminary construct validity of the AMHSS.

As the nature of the surveillance methods of the MWAHS did not allow for the inclusion of a gold standard measure of mental health service use, our assessment of the preliminary validity of the AMHSS used a known-groups approach. Known-groups approach is a method to assess validity by comparing specific groups that are expected to differ on the constructs that are assessed (Hattie & Cooksey, 1984). Other studies of school-based mental health measures have similarly used this approach (e.g., Bjørnsen et al., 2017). In the current study, we compare our findings to well-established patterns in mental health service utilization related to youth demographics. We expect, first, that youth with mental health need (in this case, defined by responses to questions about internalizing symptoms) will report greater desire for mental health services and actual use of those services. Second, we expect that females will report greater desire for use of mental health service than males, consistent with literature findings regarding gender differences in help-seeking and attitudes about mental health service use among adolescents (Chandra & Minkovitz, 2006; Rickwood et al., 2005). However, we expect to see higher rates of actual service use in schools among males, given studies have found that males are more likely than females to receive mental health services in schools (Costello et al., 2014). Third, given well-established racial/ethnic disparities in mental

health service use, we expected white students to report higher rates of mental health service use than Black, Latinx, and Asian students (Merikangas et al., 2011; Olfson et al., 2015). Although the literature on barriers is sparse, given gender and racial/ethnic disparities in service use among adolescents with internalizing disorders, we expected that male students and white students would report fewer barriers to mental health service use than their peers.

### Method

#### Sample

The 27 communities surveyed range from small towns to large towns and small cities and are generally middle- to upper-middle class. The middle school version of the MWAHS was completed by 12,924 students in grades 7 and 8 attending 32 middle schools (92% response rate). Almost half (49.7%) responded that they were male and 50.3% that they were female on a question about sex at birth. Over half of middle school students identified as white (63.5%), 8.4% identified as Hispanic or Latinx, 6.7% identified as Asian, 3.5% identified as Black or African American, and 17.9% identified as other or multiple races/ethnicities.

The high school version of the MWAHS was completed by 26,318 students in grades 9 through 12 in 28 high schools (88% response rate). Almost half (49.8%) of students were male and 50.2% were female. Over half of high school students identified as white (68.0%), 7.8% identified as Hispanic or Latinx, 6.7% identified as Asian, 3.4% identified as Black or African American, and 14.1% identified as other or multiple races/ethnicities.

#### Measures

As described above, the final set of AMHSS survey questions addressed three aspects of mental health service use: (1) desire for use of mental health services, (2) use of mental health services and supports, and (3) barriers to use of school-based mental health services. For desire for mental health services, students answered one question about whether they had wanted to talk to school mental health staff about emotional challenges or problems (*yes, no, not sure*). Students were categorized as having desire for mental health services if they responded yes to this question. For mental health service use, students indicated how often they had spoken with 10 different sources of support about emotional challenges or problems in the past 12 months. Answer options were *zero times (0), one time (1), two or three times (2), or four or more times (3)*. For the purposes of this paper, we focus on formal mental health services received in school and outside of school (e.g., seeing a counselor, social worker, or psychologist). For barriers to service

use, students indicated on 5-point scale (*strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), *strongly agree* (5)) how strongly they agreed with 10 statements about why students might not seek help for emotional challenges or problems at school. These were summed to create a barriers scale. Completion rates for the AMHSS survey questions were high, with missing data ranging from 3.4% to 8.7% for questions in these three measures.

Depressive symptoms were assessed using one yes/no item from the YRBS (CDC, 2019): “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” This question was endorsed by 14.5% of middle school students and 20.0% of high school students. This item is frequently used to document trends and patterns in depressive symptoms among adolescents (e.g., Bettis & Liu, 2019).

Anxiety was assessed using the Generalized Anxiety Disorder 2-item brief scale (GAD-2; Kroenke et al., 2007). Students reported how often they experienced “feeling nervous, anxious or on edge,” and “not being able to stop or control worrying” in the past two weeks. Answer choices are *not at all* (0), *several days* (1), *more than half the days* (2), or *nearly every day* (3). Students with a score of 3 or more were classified as having elevated symptoms of anxiety that warranted further evaluation. Elevated symptoms of anxiety were reported by 23.3% of middle school students and 34.6% of high school students.

Suicidal ideation was assessed using one yes/no question from the YRBS (CDC, 2019). Middle school students were asked a lifetime suicidal ideation question, “Have you ever seriously thought about killing yourself?” whereas high school students were asked about past-year ideation, “During the past 12 months, did you ever seriously consider attempting suicide?” Lifetime suicidal ideation was endorsed by 14.2% of middle school students, and past-year ideation was endorsed by 13.2% of high school students. The YRBS suicidal ideation items have previously been demonstrated to have good test–retest reliability (Brener et al., 2002) and convergent and discriminant validity (May & Klonsky, 2011).

Students were classified as having any internalizing symptoms if they reported depressive symptoms, anxiety symptoms, and/or suicidal ideation. Any internalizing symptoms were reported by 31.0% of middle school students and 41.5% of high school students.

## Analysis

All analyses were completed separately for middle and high school students. First, we examined the distribution of AMHSS items. Second, for the barriers scale, we used a principal components analysis with a Varimax rotation

to estimate the number of latent constructs represented in the scale. We tested the internal reliability of each identified scale. Finally, we tested demographic differences in responses to the AMHSS items. A series of  $\chi^2$  analyses was used to compare rates of student desire for mental health services (*yes, no, not sure*) between students who did and did not report internalizing symptoms (depressive symptoms, anxiety symptoms, and/or suicidal ideation), as well as by sex and race/ethnicity. A series of  $\chi^2$  analyses were also used to determine whether use of mental health services in each category differed by any internalizing symptoms, sex, and race/ethnicity. Independent samples t-tests were used to compare total scores for the 10 barriers to mental health service use items by internalizing symptoms, sex, and race/ethnicity.

## Results

### Descriptive Information

Overall, 14.0% of middle school students and 19.4% of high school students said they wanted to talk with a school counselor, school therapist, or school psychologist about emotional challenges or problems. In addition, 9.5% of middle school students and 10.0% of high school students said they were unsure (Table 1). The majority of students said they did not have a desire to use mental health services (76.5% of middle school students; 70.7% of high school students). Note that missing data for this question were low, with 97.6% of middle school youth and 93.8% of high school youth responding.

When asked about mental health service use, 17.4% of middle school students reported they had met with a school-based mental health service provider at least one time in the past 12 months, 14.0% reported they had seen a mental health service provider at least once outside of school; these questions were answered by 97.2–97.6% of middle school youth (Table 2). Among high school students, 17.4% reported meeting with a school mental health provider at least one time in the past 12 months and 17.6% reported meeting with a mental health provider outside of school at least once; these questions were answered by 94.2–95.6% of high school youth. Students reported relying on a number of informal sources of support to talk about emotional challenges or problems, as well. Both middle and high school students were most likely to report talking to a friend around the same age as them at least once in the past year about emotional challenges or problems (44.1% for middle school, 52.6% for high school) or a parent/other relative/adult outside of school (42.8% for middle school, 44.0% for high school).

Respondents rated each of the 10 barriers to service use on a scale from 1 (strongly disagree) to 5 (strongly agree).



**Table 1** Demographic characteristics and desire for help with emotional challenge or problems among middle and high school youth, 2018 MetroWest Adolescent Health Survey

	Middle school				High school			
	% Yes	% No	% Not sure	N	% Yes	% No	% Not sure	N
Total	14.0	76.5	9.5	12,619	19.4	70.7	10.0	24,693
<i>Sex</i>								
Male	8.4	84.5	7.1	12,397	11.1	80.2	8.6	24,419
Female	19.3	68.8	11.9		27.0	61.7	11.2	
		$\chi^2_{2,12,397} = 437.2^{***}$				$\chi^2_{2,24,419} = 1132.6^{***}$		
<i>Race/ethnicity<sup>1</sup></i>								
White	13.8	77.4	8.9	12,277	18.6	71.7	9.7	24,424
Black or African American	16.4	76.0	7.6		16.8	74.0	9.2	
Hispanic or Latinx	16.2*	72.1	11.7*		22.4*	67.8*	9.8	
Asian	10.0*	80.8*	9.2		19.2	69.4	11.3	
Other/multiple	14.8	74.5*	10.8*		22.2*	67.5*	9.9	
		$\chi^2_{8,12,277} = 36.0^{**}$				$\chi^2_{8,24,424} = 45.2^{***}$		
<i>Internalizing symptoms</i>								
None	5.9	86.9	7.2	11,821	8.3	83.9	7.8	23,922
1 or more	31.0	54.5	14.5		34.9	52.3	12.8	
		$\chi^2_{2,11,821} = 1,656.6^{***}$				$\chi^2_{2,23,922} = 3087.1^{***}$		

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>1</sup> For all post hoc Chi-square tests, reference group = white

At the middle school level, the most commonly reported barrier (with 44.5% of respondents reporting agree or

**Table 2** Demographic characteristics and 12-month use of any school and community mental health services among middle and high school youth, 2018 MetroWest Adolescent Health Survey

	Middle school				High school			
	% Any school-based service use	N	% Any community-based service use	N	% Any school-based service use	N	% Any community-based service use	N
Total	17.4	12,619	14.0	12,563	17.4	25,158	17.6	25,072
<i>Sex</i>								
Male	13.3	12,567	11.2	12,511	10.9	24,873	11.4	24,787
Female	21.4		16.7		23.6		23.4	
	$\chi^2_{1,12,567} = 143.9^{***}$		$\chi^2_{1,12,511} = 78.2^{***}$		$\chi^2_{1,24,873} = 697.9^{***}$		$\chi^2_{1,24,787} = 617.8^{***}$	
<i>Race/ethnicity<sup>1</sup></i>								
White	16.9	12,450	14.9	12,394	17.0	24,883	18.7	24,799
Black or African American	19.5		11.0*		15.5		11.9***	
Hispanic or Latinx	19.3		13.8		18.7		14.2***	
Asian	10.3***		6.5***		15.9		10.8***	
Other/multiple	19.8*		14.5		19.9***		18.5	
	$\chi^2_{4,12,450} = 43.6^{***}$		$\chi^2_{4,12,394} = 44.4^{***}$		$\chi^2_{4,24,883} = 24.3^{***}$		$\chi^2_{4,24,799} = 102.6^{***}$	
<i>Internalizing symptoms</i>								
None	10.7	11,984	7.5	11,932	8.5	24,346	7.4	24,273
1 or more	31.5		27.8		29.8		32.1	
	$\chi^2_{1,11,984} = 783.5^{***}$		$\chi^2_{1,11,932} = 883.4^{***}$		$\chi^2_{1,24,346} = 1867.3^{***}$		$\chi^2_{1,24,273} = 2477.2^{***}$	

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>1</sup> For all post hoc Chi-square tests, reference group = white

**Table 3** Barriers to seeking mental health services at school, 2018 MetroWest Adolescent Health Survey

	Middle school		High school	
	% Agree or strongly agree	N	% Agree or strongly agree	N
I don't know who to go to for help at school	18.5	12,435	16.1	24,836
I don't think counseling at school would help	32.1	12,388	32.8	24,778
I wouldn't have time or wouldn't want to miss class to get help	36.6	12,343	45.4	24,680
I should handle problems on my own	33.8	12,334	38.2	24,670
I would be too embarrassed or scared to talk about it	34.3	12,342	33.8	24,641
A school counselor/therapist might not understand me or the challenges I was having	35.6	12,371	34.5	24,688
I wouldn't want other students to know I was meeting with a school counselor/therapist	44.5	12,348	41.3	24,688
I wouldn't want my parent(s)/guardian(s) to know I was meeting with a school counselor/therapist	22.7	12,323	25.1	24,647
Teachers or other school staff might treat me differently or give me fewer opportunities at school	27.4	12,314	23.3	24,634
My parents wouldn't want me to get help at school because they would be worried I might be treated differently or given fewer opportunities	10.3	12,341	10.9	24,657

strongly agree) was “I wouldn't want other students to know I was meeting with a school counselor therapist.” This item had a mean rating of 3.2 (SD = 1.3), indicating that even though this was the most common barrier, most students disagreed. The next most commonly reported barriers were, “I wouldn't have time or wouldn't want to miss a class to get help” (36.6% reported agree or strongly agree) and “A school counselor/therapist might not understand me or the challenges I was having” (35.6% reported agree or strongly agree; Table 3). At the high school level, the most commonly reported barrier (with 45.4% reporting agree or strongly agree) was, “I wouldn't have time or wouldn't want to miss class to get help.” This item also had a mean rating of 2.2 (SD = 1.3), which again indicated that even though this was the most common barrier, most students disagreed. The next most commonly reported barriers were, “I wouldn't want other students to know I was meeting with a school counselor/therapist” (41.3% reported agree or strongly agree) and “I should handle problems on my own” (38.2% reported agree or strongly agree).

### Barriers Scale: Factor Structure and Internal Reliability

Principal components analysis with the middle and high school data indicated the barriers items represented a unidimensional construct, with one eigenvalue greater than 1.0 (middle school eigenvalues = 4.77, 0.94; high school eigenvalues = 4.90, 0.99). For the middle school level, the Cronbach's alpha was 0.88. For the high school level, the Cronbach's alpha was also 0.88. We therefore calculated a total sum score to interpret the barriers scale. Barriers scale scores were calculated for 91.3% of middle school youth and 91.3% of high school youth who had complete data for all 10 items in the scale.

### Known-Groups Validity

For a preliminary investigation of validity, we tested AMHSS known-groups validity by examining whether students with any internalizing symptoms were more likely to report (1) desire for mental health services and (2) actual mental health service use, as compared to those without internalizing symptoms. We also tested whether reports of desire for use of mental health services, mental health service use, and barriers differed by sex and race/ethnicity in ways that were consistent with established demographic patterns.

Desire for use of school mental health services was reported by significantly more students with, than without, internalizing symptoms (depression, anxiety, and/or suicidal ideation) at both the middle school and high school levels. Among those at the middle school level with any internalizing symptoms, 31.0% reported a desire to use mental health services, compared to 5.9% of those without symptoms ( $\chi^2_{2, 11,821} = 1,656.6, p < 0.001$ ; Table 1). Similarly, among those at the high school with any internalizing symptoms, 34.9% reported desire to talk to a provider, compared to 8.3% of those without symptoms ( $\chi^2_{2, 23,922} = 3,087.1, p < 0.001$ ). Among both students with and without internalizing symptoms, females were significantly more likely to indicate a desire to use mental health services than males at both the middle school (19.3% vs. 8.4%;  $\chi^2_{2, 12,397} = 437.2, p < 0.001$ ) and high school levels (27.0% vs. 11.1%;  $\chi^2_{2, 24,419} = 1132.6, p < 0.001$ ). At the middle school level, Black/African American students were most likely to report a desire for using mental health services (16.4%), while Asian students were least likely to report a desire for mental health services (10.0%;  $\chi^2_{8, 12,277} = 36.0, p < 0.01$ ). At the high school level, Hispanic/Latinx students were most likely to report

a desire for using mental health services (22.4%), while Black/African American students were least likely to report a desire for mental health services in high school (16.8%;  $\chi^2_{8, 24,424} = 45.2, p < 0.001$ ).

Use of counseling services in and out of school was reported more often by students with, than without, internalizing symptoms at both the middle and high school levels (Table 2). Among students with internalizing symptoms at the middle school level, 31.5% reported talking to a mental health provider at school at least once in the past year (compared to 10.7% without symptoms;  $\chi^2_{1, 11,984} = 783.5, p < 0.001$ ) and 27.8% reported talking with a mental health provider outside of school at least once in the past year (compared to 7.5% without symptoms;  $\chi^2_{1, 11,932} = 883.4, p < 0.001$ ). Similarly, at the high school level, 29.8% of students with internalizing symptoms reported talking to a mental health provider at school at least once (compared to 8.5% without symptoms;  $\chi^2_{1, 24,364} = 1,867.3, p < 0.001$ ) and 32.1% reported talking with a mental health provider outside of school at least once (compared to 7.4% without symptoms;  $\chi^2_{1, 24,273} = 2477.2, p < 0.001$ ). There were significant sex differences in receipt of counseling services. Among middle school students, females were more likely to report talking to a mental health provider both at school and outside of school (21.4% at school; 16.7% outside of school) than males (13.3% at school;  $\chi^2_{1, 12,567} = 143.9, p < 0.001$ ; 11.2% outside of school;  $\chi^2_{1, 12,511} = 78.2, p < 0.001$ ). The same pattern of results emerged at the high school level, where females were more likely to report talking to a mental health provider at school and outside of school (23.6% at school, 23.4% outside of school) than males (10.9% at school;  $\chi^2_{1, 24,873} = 697.9, p < 0.001$ ; 11.4% outside of school;  $\chi^2_{1, 24,787} = 617.8, p < 0.001$ ). In addition, there were

significant racial/ethnic differences in meeting with a mental health provider at least once in the past year at the middle school (at school,  $\chi^2_{4, 12,450} = 43.6, p < 0.001$ ; outside of school,  $\chi^2_{4, 12,394} = 44.4, p < 0.001$ ) and high school levels (at school,  $\chi^2_{4, 24,883} = 24.3, p < 0.001$ ; outside of school,  $\chi^2_{4, 24,779} = 102.6, p < 0.001$ ). At the middle school, white students were significantly more likely to report speaking with a school-based mental health provider (16.9%) or provider outside of school (14.9%) than Asian students (10.3% at school, 6.5% outside of school; both  $p < 0.001$ ); white students were also significantly more likely to report speaking with a mental health provider outside of school (14.9%) compared with Black/African American students (11.0%,  $p < 0.001$ ). In contrast, at the high school, white students were significantly more likely to meet with mental health providers outside of school (18.7%) than Asian (10.8%), Black/African American (11.9%), and Hispanic/Latinx (14.2%) students (all  $p < 0.001$ ).

As indicated by mean scores on the barriers scale, among middle school students, female students reported significantly greater agreement with barriers ( $M = 28.7, SD = 8.4$ ) than male students ( $M = 26.8, SD = 8.6$ ),  $t_{11,752} = 12.2, p < 0.001$  (Table 4). White students reported significantly less agreement with barriers ( $M = 27.4, SD = 8.3$ ) than students who identified as Black/African American, Hispanic/Latinx, or from other racial/ethnic groups ( $M$  ranging from 28.0 to 28.9;  $F_{4, 11,660} = 12.4, p < 0.001$ ). Similarly, among high school students, female students reported significantly greater agreement with barriers ( $M = 28.6, SD = 8.1$ ) than male students ( $M = 27.3, SD = 8.7$ ),  $t_{23,753} = 12.28, p < 0.001$ . White students reported significantly less agreement with barriers ( $M = 27.6, SD = 8.1$ ) than all other racial/ethnic

**Table 4** Demographic characteristics and total score on barriers to seeking mental health services at school among middle and high school youth, 2018 MetroWest Adolescent Health Survey

	Middle school			High school		
	Mean	SD	N	Mean	SD	N
Total	27.8	8.6	11,797	28.0	8.4	24,016
Sex						
Male	26.8	8.6	11,754	27.3	8.7	23,755
Female	28.7	8.4		28.6	8.1	
	$t_{11,752} = 12.2^{***}$			$t_{23,753} = 12.3^{***}$		
Race/ethnicity <sup>1</sup>						
White	27.4	8.3	11,661	27.6	8.1	23,768
Black or African American	28.8*	9.3		28.8*	9.5	
Hispanic or Latinx	28.9*	9.8		28.6*	9.5	
Asian	28.0	8.4		28.9*	8.5	
Other/multiple	28.4*	8.7		29.2*	8.4	
	$F_{4, 11,660} = 12.4^{***}$			$F_{4, 23,767} = 34.4^{***}$		

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>1</sup> For all post hoc tests, reference group = white

groups at the high school level ( $M$  ranging from 28.6 to 29.2;  $F_{4, 23,767} = 34.4, p < 0.001$ ).

## Discussion

The goal of this study was to develop a brief, freely available measure of adolescent mental health service use for school-based surveillance surveys. Our findings provide preliminary support for the use of the AMHSS to assess desire for mental health services, use of mental health services and supports, and barriers to mental health service use in schools. The AMHSS was developed in collaboration with youth and was rated as understandable and relevant by experts in school mental health. Results of the AMHSS administration in a large regional census of adolescents indicate that response patterns are consistent with expectations of differences by mental health services need, gender, and race/ethnicity.

First, the AMHSS includes a measure of desire to use school-based mental health services, which is intended to measure interest in help-seeking. This is an important construct identified in the literature, both because attitudes about help-seeking are associated with actual mental health service use (Eisenberg et al., 2007) and also because, from a practical standpoint, schools can use this question to identify how many students wanted services, but did not access those services. In terms of known-groups validity, desire for mental health services is significantly higher among those with, than without, internalizing symptoms, as we would expect. Desire for use of mental health services is also significantly higher among females than males, consistent with well-established gender differences in mental health help-seeking behaviors (Chandra & Minkovitz, 2006; Rickwood et al., 2005). In addition, Asian students at the middle school level have significantly lower rates of desire for mental health services, consistent with some prior studies that have similarly found Asian youth to be less likely than youth in other racial/ethnic groups to seek out and receive mental health services (Lipson et al., 2018; Yeh et al., 2003). At the high school level, Black/African American students are the least likely to desire school-based mental health services, which is consistent with prior research finding that Black youth with mood disorders have greater unmet need for mental health services than white youth (Merikangas et al., 2011), may encounter more systemic barriers to service access, and may have negative expectancies related to seeking mental health services (Lindsey et al., 2013).

Second, the AMHSS is designed to assess rates of use of formal mental health services at school (i.e., meeting with a school counselor, school therapist, school psychologist) and outside of school (i.e., meeting with a therapist, psychologist, or other mental health professional outside of school). Our known-groups validity analysis indicated that results are

consistent with expectations, in that mental health service use in both settings is significantly higher among youth with, than without, internalizing symptoms. However, it is also notable that only about one-third of youth with internalizing symptoms report receiving any in-school or out-of-school mental health services. This result is consistent with national rates of mental health service use among youth with anxiety and depression (Merikangas et al., 2011), suggesting that our measure is consistent with expectations in terms of the prevalence of mental health service use. Also consistent with expectations, and supporting the validity of the AMHSS, we find that white youth are more likely to access community-based mental health services than their non-white peers, but that these racial/ethnic disparities attenuate in school settings (Costello et al., 2014). However, across all settings, Asian students are the least likely to access mental health services, a finding that is again consistent with research finding lower rates of mental health service use in this population (Lipson et al., 2018; Yeh et al., 2003).

In contrast to expectations, females report higher rates of service use both in and out of school than males on the AMHSS. This finding diverges from other studies that have found higher rates of mental health services use among males in schools, generally (Costello et al., 2014; Merikangas et al., 2010). However, it is consistent with prior studies that have found females to have higher rates of mental health services use for internalizing disorders (Lewinsohn et al., 1998; Merikangas et al., 2011), and internalizing disorders are the focus of the current study.

The measure of barriers to mental health service use has both theoretical and practical implications. Results contribute to the theoretical understanding of barriers to school-based mental health service use from the student's point of view. Whereas prior studies have focused on parent perspectives on barriers (Owens et al., 2002; Yeh et al., 2003), and youth perspectives on mental health service use in the community (Gulliver et al., 2010), the current study adds new information about how adolescents conceptualize barriers to service use, specifically within the context of schools. Several of the most commonly reported barriers were factors related to stigma (e.g., not wanting others to know about mental health challenges or service use), which is consistent with the results of prior studies of youth mental health help-seeking (Gulliver et al., 2010). Students also reported concern that they would not have time during the school day for mental health services, or would not want to miss class, findings that are specific to youth receipt of school-based services. This result is consistent with recent research examining barriers to session attendance for children accessing school-based mental health care for anxiety (Pella et al., 2018).

Although some prior research found no gender differences in barriers to school-based mental health services

(Chandra & Minkovitz, 2006; Pella et al., 2018), our study found significant gender differences in the likelihood of reporting barriers to school-based mental health service use, suggesting that the barriers assessed in the current study might be particularly pronounced for female students. This

finding is consistent with research indicating that males are more likely to access school-based mental health services than females (Costello et al., 2014). Furthermore, white youth in our sample reported fewer barriers to school-based service use than youth of color. This result is consistent with

**These questions are about emotional challenges or problems. Emotional challenges include things that make you feel sad, angry, stressed, or anxious, or that may make you have thoughts of hurting yourself.**

1. During the past 12 months, did you want to talk to a school counselor, school therapist or school psychologist about emotional challenges or problems? (*Do not include talking about class scheduling or college or career preparation.*)
  - ☐ Yes
  - ☐ No
  - ☐ Not sure
  
2. During the past 12 months, how many times did you talk with any of the following for help with emotional challenges or problems?

	0 times	1 time	2 or 3 times	4 or more times
a. School counselor, school therapist, or school psychologist ( <i>Do <u>not</u> include talking about class scheduling or college or career preparation.</i> )	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. School nurse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Another adult <b><u>at school</u></b> , like a teacher or other school staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Therapist, psychologist, or other mental health professional <b><u>outside of school</u></b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Parent, relative, or other adult <b><u>outside of school</u></b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Friend around the same age as you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Coach or club advisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Religious or faith leader, including a religious youth group leader or mentor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Crisis hotline/text line	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Person or group on social media (e.g. Instagram, Facebook, snapchat)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



3. These statements are about seeking help for emotional challenges or problems from a counselor, therapist, or psychologist at school. How much do you agree or disagree with each statement about getting help at school?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. I don't know who to go to for help at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I don't think counseling at school would help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. I wouldn't have time or wouldn't want to miss class to get help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I should handle problems on my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I would be too embarrassed or scared to talk about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. A school counselor/therapist might not understand me or the challenges I was having.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. I wouldn't want other students to know I was meeting with a school counselor/therapist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I wouldn't want my parent(s)/guardian(s) to know I was meeting with a school counselor/therapist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Teachers or other school staff might treat me differently or give me fewer opportunities at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. My parents wouldn't want me to get help at school because they would be worried I might be treated differently or given fewer opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

another recent study that found higher reports of barriers to school-based mental health treatment among students of color (Pella et al., 2018) and consistent with findings from this and US national studies that have indicated lower rates of mental health service access among students of color than white students (Costello et al., 2014).

There are several limitations of this study. First, we had no additional measures of mental health service use with which to validate the section of the AMHSS measuring service utilization. Because the AMHSS was administered as part of an anonymous surveillance survey, we did not have access to youth healthcare records, school records of service receipt, or parent reports of service use. Future research could collect such data, using methods like those used to validate the commonly used mental health services interview, the Services Assessment for Children and Adolescents (SACA), with healthcare records (Hoagwood et al., 2000). A challenge, however, is that school staff often do not keep centralized records on service use, unless there is formal documentation through an educational plan (e.g., a 504 plan or Individualized Education Program). In particular, the type

of school counseling service use captured in the AMHSS can include unscheduled or drop-in meetings with school counselors to provide supports. Further, for the questions measuring desire for use of mental health services and barriers to school-based mental health service use, there are no relevant records or reports that could be obtained from sources other than the adolescent directly. A second main limitation of the study is the use of a geographically restricted sample of adolescents living in middle- to upper-middle class communities in the MetroWest Boston region of Massachusetts. The population of schools included in this study are less racially/ethnically diverse than the US national population of adolescents (in the MWAHS 69.3% of high school students identify as white, compared to 53.5% of the general population of high school students; CDC, 2019). In addition, a lower percent of high school students report depressive symptoms (19.5%) and suicidal ideation (12.8%) in the current study than the general US population completing the YRBS (31.5% and 17.2% reporting depressive symptoms and suicidal ideation, respectively; CDC, 2019).

In addition, by taking the sum of the barriers items, we used a general measure of the extent to which students agree or disagree with the presence of barriers that we assessed. It is possible that students could agree very strongly with only a few barriers, or slightly agree with many barriers, and achieve the same total score on the barriers scale. As such, it may be important for schools to consider both the total score, which indicates the general extent to which youth perceive there to be barriers to service access, and also the percent of students who report each specific barrier, as we do here.

Despite these limitations, we propose the AMHSS as a promising new instrument that has the potential to inform school-based efforts to deliver mental health services and reduce disparities in service use. Further, it is our hope that information about barriers to mental health service use can inform interventions designed to reduce those barriers, for example by reducing stigma related to service use, or supporting schools in developing policies designed to mitigate the challenges of missing class to receive mental health services. Although the AMHSS currently focuses on mental health service use and barriers to service use, future measures would benefit the field by also asking about factors that facilitate mental health service access and solutions to addressing common barriers. Research on solutions to barriers has the potential to guide the future of mental health services in schools and increase the likelihood that students access mental health services.

The need for school staff to collect data on mental health service use among their students is critical to evaluating the functioning of outreach, prevention, and intervention efforts, and also to decreasing notable disparities in mental health service access. Without such data, school staff are making decisions about hiring, programming, and resource allocation without the benefit of information to inform those decisions. Our hope is that the AMHSS will be a tool that school-based practitioners can use in the future to make data-informed decisions about mental health service provision, to advocate for needed resources, and to work toward reducing barriers that keep students from accessing needed services.

## Appendix A: Adolescent Mental Health Support Scale (AMHSS)

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## References

- Alegría, M., Canino, G., Lai, S., Ramirez, R., Chavez, L., Rusch, D., & Shrout, P. E. (2004). Understanding caregivers' help-seeking for Latino children's mental health care use. *Medical Care*, 42, 447–455.
- Amaral, G., Geierstanger, S., Soleimanpour, S., & Brindis, C. (2011). Mental health characteristics and health-seeking behaviors of adolescent school-based health center users and nonusers. *Journal of School Health*, 81, 138–145.
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36, 1–10.
- Andrade, L. H., Alonso, J., Mneimneh, Z., Wells, J. E., Al-Hamzawi, A., Borges, G., Bromet, E., Bruffaerts, R., de Girolamo, G., de Graaf, R., Florescu, S., Gureje, O., Hinkov, H. R., Hu, C., Huang, Y., Hwang, I., Jin, R., Karam, E. G., Kovess-Masfety, V., et al. (2014). Barriers to mental health treatment: Results from the WHO World Mental Health (WMH) Surveys. *Psychological Medicine*, 44(6), 1303–1317.
- Angold, A., Erkanli, A., Farmer, E. M. Z., Fairbank, J. A., Burns, B. J., Keeler, G., & Costello, E. J. (2002). Psychiatric disorder, impairment, and service use in rural African American and white youth. *Archives of General Psychiatry*, 59, 893–901.
- Artino, A. R., Jr., La Rochelle, J. S., Dezee, K. J., & Gehlbach, H. (2014). Developing questionnaires for educational research: AMEE Guide No. 87. *Medical Teacher*, 36(6), 463–474.
- Ascher, B. H., Farmer, E. M. Z., Burns, B. J., & Angold, A. (1996). The Child and Adolescent Services Assessment (CASA) description and psychometrics. *Journal of Emotional and Behavioral Disorders*, 4(1), 12–20.
- Bettis, A. H., & Liu, R. T. (2019). Population-based analysis of temporal trends in the prevalence of depressed mood among sexual minority and heterosexual youths from 1999 through 2017. *JAMA Pediatrics*, 173(12), 1201–1203.
- Bjørnsen, H. N., Ringdal, R., Espnes, G. A., & Moksnes, U. K. (2017). Positive mental health literacy: Development and validation of a measure among Norwegian adolescents. *BMC Public Health*, 17(1), 717–727.
- Brener, N. D., Kann, L., McManus, T., Kinchen, S. A., Sundberg, E. C., & Ross, J. G. (2002). Reliability of the 1999 youth risk behavior survey questionnaire. *Journal of Adolescent Health*, 31(4), 336–342.
- Centers for Disease Control and Prevention. (2019). *Youth Risk Behavior Survey (YRBS)*. Centers of Disease Control and Prevention.
- Chandra, A., & Minkovitz, C. S. (2006). Stigma starts early: Gender differences in teen willingness to use mental health services. *Journal of Adolescent Health*, 38(6), 754-e1-754-e8.
- Colognori, D., Esseling, P., Stewart, C., Reiss, P., Lu, F., Case, B., & Warner, C. M. (2012). Self-disclosure and mental health service use in socially anxious adolescents. *School Mental Health*, 4, 219–230.
- Costello, E. J., He, J. P., Sampson, N. A., Kessler, R. C., & Merikangas, K. R. (2014). Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey-Adolescent. *Psychiatric Services*, 65(3), 359–366.
- Cummings, J. R., Ponce, N. A., & Mays, V. M. (2010). Comparing racial/ethnic differences in mental health service use among high-need subpopulations across clinical and school-based settings. *Journal of Adolescent Health*, 46, 603–606.
- Duong, M. T., Bruns, E. J., Lee, K., Cox, S., Coifman, J., Mayworm, A., & Lyon, A. R. (2020). Rates of mental health service utilization by children and adolescents in schools and other common service settings: A systematic review and meta-analysis.

- Administration and Policy in Mental Health and Mental Health Services Research*, 48, 420–439.
- Dowdy, E., Ritchey, K., & Kamphaus, R. W. (2010). School-based screening: A population-based approach to inform and monitor children's mental health needs. *School Mental Health*, 2(4), 166–176.
- Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care*, 45, 594–601.
- Fong, H. F., Alegría, M., Bair-Merritt, M. H., & Beardslee, W. (2018). Factors associated with mental health services referrals for children investigated by child welfare. *Child Abuse & Neglect*, 79, 401–412.
- Fowler, F. J., Jr. (2013). *Survey research methods*. Sage publications.
- Gehlbach, H., & Brinkworth, M. E. (2011). Measure twice, cut down error: A process for enhancing the validity of survey scales. *Review of General Psychology*, 15(4), 380–387.
- Graeff-Martins, A. S., Hoven, C. W., Wu, P., Bin, F., & Duarte, C. S. (2014). Use of mental health services by children and adolescents six months after the World Trade Center attack. *Psychiatric Services*, 65, 263–265.
- Green, J. G., Guzmán, J., Didaskalou, E., Harbaugh, A. G., Segal, N., & LaBillois, J. (2018). Teacher identification of student emotional and behavioral problems and provision of early supports: A vignette-based study. *Journal of Emotional and Behavioral Disorders*, 26(4), 225–242.
- Green, J. G., McLaughlin, K. A., Alegría, M., Costello, E. J., Gruber, M. J., Hoagwood, K., Leaf, P., Olin, S., Sampson, S., & Kessler, R. C. (2013). School mental health resources and adolescent mental health service use. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(5), 501–510.
- Green, J. G., McLaughlin, K. A., Fillbrunn, M., Fukuda, M., Jackson, J. S., Kessler, R. C., Sadikova, E., Sampson, N. A., Vilsaint, C., Williams, D. R., Cruz-Gonzalez, M., & Alegría, M. (2020). Barriers to mental health service use and predictors of treatment drop out: Racial/ethnic variation in a population-based study. *Administration and Policy in Mental Health and Mental Health Services Research*, 47, 606–616.
- Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: A systematic review. *BMC Psychiatry*, 10(1), 113.
- Hattie, J., & Cooksey, R. W. (1984). Procedures for assessing the validities of tests using the "known-groups" method. *Applied Psychological Measurement*, 8(3), 295–305.
- Heidi, B., Miller, A. B., Baldwin, H., & Abdi, S. (2011). New directions in refugee youth mental health services: Overcoming barriers to engagement. *Journal of Child & Adolescent Trauma*, 4(1), 69–85.
- Hoagwood, K., Horwitz, S., Stiffman, A., Weisz, J., Bean, D., Rae, D., Compton, W., Cottler, L., Bickman, L., & Leaf, P. (2000). Concordance between parent reports of children's mental health services and service records: The Services Assessment for Children and Adolescents (SACA). *Journal of Child and Family Studies*, 9(3), 315–331.
- Johnston, L. D., Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., & Miech, R. A. (2015). Monitoring the future: A continuing study of American youth (12th-grade survey). Inter-university Consortium for Political and Social Research. <https://doi.org/10.3886/ICPSR36408.v1>
- Kessler, R. C., Avenevoli, S., Costello, E. J., Green, J. G., Gruber, M. J., Heeringa, S., Merikangas, K. R., Pennell, B. E., Sampson, N. A., & Zaslavsky, A. M. (2009). Design and field procedures in the US National Comorbidity Survey Replication Adolescent Supplement (NCS-A). *International Journal of Methods in Psychiatric Research*, 18(2), 69–83.
- Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, 146(5), 317–325.
- Langer, D. A., Wood, J. J., Wood, P. A., Garland, A. F., Landsverk, J., & Hough, R. L. (2015). Mental health service use in schools and non-school-based outpatient settings: Comparing predictors of service use. *School Mental Health*, 7(3), 161–173.
- Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). Treatment of adolescent depression: Frequency of services and impact on functioning in young adulthood. *Depression and Anxiety*, 7(1), 47–52.
- Lindsey, M. A., Barksdale, C. L., Lambert, S. F., et al. (2010). Social network influences on service use among urban, African American youth with mental health problems. *Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 47, 367–373.
- Lindsey, M. A., Chambers, K., Pohle, C., Beall, P., & Lucksted, A. (2013). Understanding the behavioral determinants of mental health service use by urban, under-resourced Black youth: Adolescent and caregiver perspectives. *Journal of Child and Family Studies*, 22(1), 107–121.
- Lipson, S. K., Kern, A., Eisenberg, D., & Breland-Noble, A. M. (2018). Mental health disparities among college students of color. *Journal of Adolescent Health*, 63(3), 348–356.
- Marrast, L., Himmelstein, D. U., & Woolhandler, S. (2016). Racial and ethnic disparities in mental health care for children and young adults: A national study. *International Journal of Health Services*, 46(4), 810–824.
- May, A., & Klonsky, E. D. (2011). Validity of suicidality items from the Youth Risk Behavior Survey in a high school sample. *Assessment*, 18(3), 379–381.
- McLeod, J. D., & Uemura, R. (2012). Substance use, distress, and adolescent school networks. *Journal of Research on Adolescence*, 22(3), 438–452.
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980–989.
- Merikangas, K. R., He, J. P., Burstein, M., Swendsen, J., Avenevoli, S., Case, B., Georgiades, K., Heaton, L., Swanson, S., & Olfson, M. (2011). Service utilization for lifetime mental disorders in US adolescents: Results of the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 50(1), 32–45.
- Mojtabai, R., Olfson, M., & Han, B. (2016). National trends in the prevalence and treatment of depression in adolescents and young adults. *Pediatrics*, 138(6), e20161878.
- Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., Wells, K. B., Pincus, H. A., & Kessler, R. C. (2011). Barriers to mental health treatment: Results from the National Comorbidity Survey Replication (NCS-R). *Psychological Medicine*, 41(8), 1751–1761.
- Mukolo, A., Heflinger, C. A., & Wallston, K. A. (2010). The stigma of childhood mental disorders: A conceptual framework. *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(2), 92–103.
- NIMH (2020). Goal 4: Strengthen the public health impact of NIMH-supported research. <https://www.nimh.nih.gov/about/strategic-planning-reports/goal-4-strengthen-the-public-health-impact-of-nimh-supported-research.shtml>.
- Olfson, M., Druss, B. G., & Marcus, S. C. (2015). Trends in mental health care among children and adolescents. *New England Journal of Medicine*, 372(21), 2029–2038.

- Owens, P. L., Hoagwood, K., Horwitz, S. M., Leaf, P. J., Poduska, J. M., Kellam, S. G., & Ialongo, N. S. (2002). Barriers to children's mental health services. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(6), 731–738.
- Pella, J. E., Ginsburg, G. S., Casline, E., Pikulski, P. J., & Drake, K. L. (2018). Children's perceptions of barriers to session attendance in school-based treatment for anxiety. *School Mental Health*, 10(4), 417–427.
- Pescosolido, B. A., Jensen, P. S., Martin, J. K., Perry, B. L., Olafsdottir, S., & Fettes, D. (2008). Public knowledge and assessment of child mental health problems: Findings from the National Stigma Study-Children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(3), 339–349.
- Planey, A. M., Smith, S. M., Moore, S., & Walker, T. D. (2019). Barriers and facilitators to mental health help-seeking among African American youth and their families: A systematic review study. *Children and Youth Services Review*, 101, 190–200.
- Rickwood, D., Deane, F. P., Wilson, C. J., & Ciarrochi, J. (2005). Young people's help-seeking for mental health problems. *Australian e-Journal for the Advancement of Mental Health*, 4(3), 218–251.
- Ringeisen, H., Miller, S., Munoz, B., Rohloff, H., Hedden, S. L., & Colpe, L. J. (2016). Mental health service use in adolescence: Findings from the National Survey on Drug Use and Health. *Psychiatric Services*, 67, 787–789.
- Splett, J. W., Garzona, M., Gibson, N., Wojtalewicz, D., Raborn, A., & Reinke, W. M. (2019). Teacher recognition, concern, and referral of children's internalizing and externalizing behavior problems. *School Mental Health*, 11(2), 228–239.
- Stiffman, A. R., Horwitz, S. M., Hoagwood, K., Compton, W., Cottler, L., Bean, D. L., Narrow, W. E., & Weisz, J. R. (2000). The Service Assessment for Children and Adolescents (SACA): Adult and child reports. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(8), 1032–1039.
- Stiffman, A. R., Pescosolido, B., & Cabassa, L. J. (2004). Building a model to understand youth service access: The gateway provider model. *Mental Health Services Research*, 6(4), 189–198.
- Vogt, D. S., King, D. W., & King, L. A. (2004). Focus groups in psychological assessment: Enhancing content validity by consulting members of the target population. *Psychological Assessment*, 16(3), 231–243.
- Yeh, M., McCabe, K., Hough, R. L., Dupuis, D., & Hazen, A. (2003). Racial/ethnic differences in parental endorsement of barriers to mental health services for youth. *Mental Health Services Research*, 5(2), 65–77.

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