Original article

Adolescent Mental Health Literacy: Young People's Knowledge of Depression and Social Anxiety Disorder

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A B S T R A C T

Purpose: Understanding why nearly 80% of youth ages 6–18 years with a mental disorder fail to receive treatment represents an important public health priority. International data suggest that underrecognition of mental illness and the need for treatment are barriers to service utilization. This study extends work to a U.S. sample of 1,104 adolescents.
Methods: High School students were invited to participate in a self-report study assessing knowledge and beliefs regarding mental illness. Participants completed the survey in groups at school and read vignettes portraying peers experiencing major depression, social anxiety disorder, and a situation where the individual has to cope with a common life stressor followed by a series of questions in reference to each vignette.
Results: Adolescents had better recognition of depression than social anxiety disorder and were more likely to recommend seeking help for it. However, <50% of youth recognized depression. Family, friends, and counselors were recommended as sources of help. Differences according to the sex of the respondent and person in the vignette were observed.
Conclusions: These data are among the first to provide information regarding the mental health literacy of American adolescents and suggest potential points for intervention. Pending replication of the findings herein, efforts to help adolescents recognize mental health problems and to increase the likelihood of recommending professional help will be important.
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IMPLICATIONS AND CONTRIBUTION

Poor recognition of mental illness may prevent treatment seeking. In this study involving more than 1,000 adolescents, the majority did not recognize depression or social anxiety disorder. Frequent recommendations for help included approaching family, friends, or counselors. Interventions targeting mental health literacy of adolescents in the United States may facilitate treatment seeking.

Eighty percent of American youth fail to obtain needed mental health services [1]. Increasing mental health literacy (MHL) may increase service utilization [2]. MHL is "knowledge and beliefs about mental disorders which aid their recognition, management, or prevention" [3]. Limited MHL is associated with lower rates of recognition and treatment for mental illness [4,5].

Many youth have poor MHL. Youth from Australia, Sweden, and Portugal have been shown to have difficulty recognizing depression, psychosis, and schizophrenia [6–11]. Recognition of social anxiety disorder is low in the UK (19%) [12] and Australia (3%–16%) [9,13,14]. In the United States, 28% of youth identified social anxiety disorder as mental health problem [15]. However, respondents were only asked to identify if symptoms constituted a disorder and do not tell us what percent can name it. In the U.S. study, recognition of depression was better but not universal, with 42% of youth identifying depression as a disorder. Finally, previous studies suggest potential sex differences in MHL that

could inform future interventions. For example, Australian adolescent females were almost twice as likely to identify depression compared to males [6,8], and in the UK, females were more likely than males to recommend professional help [12].

More data are needed documenting adolescent knowledge and beliefs regarding mental health interventions [3]. Many Australian youth report that they would recommend that someone with depression speak to a counselor (58%) and talk to friends (42%) or with family (41%), whereas few recommend seeking help from a psychologist (6%), psychiatrist (4%), or another type of doctor (1%–2%) [8]. In Sweden, 20% of youth said they would recommend a mental health professional for depression [10]. Finally, youth in England report that they would suggest a psychologist or psychiatrist, followed by family and friends [12].

The present study replicated and extended prior work examining MHL for major depression [8,15] and social anxiety in U.S. adolescents [13,15]. Depression and social anxiety disorder are among the most common forms of mental illness in youth [16,17]. In addition to being among the initial studies of American youth, we included vignettes depicting both disorders and presented both male and female versions of each [8,15]. Based on prior data from youth samples [8,13,15] and our work with adults [18–20], we hypothesized that (1) consistent with international samples and one U.S. sample, identification of disorders would be relatively poor (i.e., <50%); (2) replicating prior studies, females would demonstrate greater accuracy [6,8]; (3) consistent with prior findings, disorder recognition would be higher for female characters [8]; (4) participants would express more concern related to depression versus social anxiety; and (5) participants would predict longer recovery time from depression and social anxiety compared to a control vignette. (6) Based on prior findings [8,15], it was predicted that recommendations to talk with friends, family members, and therapists/counselors would be common, but specific hypotheses regarding proportions were not made. Finally, (7) based on previous work [8], we tested the hypothesis that higher MHL would statistically predict individuals' recommendations for help seeking for both disorders.

Before testing the primary aims, we briefly examined the psychometric properties of our MHL measure. Based on our conceptualization of MHL and the findings of Reavley, Morgan, and Jorm [21], we hypothesized that being female, being older, and having more years of education would be associated with better MHL than being male, younger, or having less years of education. In addition, we also hypothesized that higher levels of mental health symptom would be associated with better MHL.

Methods

Participants

Totally 1,104 high school students (313 9th graders, 271 10th graders, 251 11th graders, and 268 12th graders) in a public high school in upstate New York participated. Participants were aged 14–19 years (mean, 16.05 years; standard deviation, 1.27) and 51.6% were male. Eighty-five percent of the eligible students participated. Eighty-five percent of participants reported being Caucasian, 4.9% African-American, 2.4% Asian or Asian American, 3.0% Hispanic, 1% Native American, and 4.3% reported another race.

Procedure

All students were invited to participate (N = 1,305) via a letter to parents with a study overview. A copy of the questionnaires was available at the school. Parents could choose to have their child not participate ("opt out"), and students could also decline participation. Students completed the questionnaires in their classroom or the school auditorium during the school day. Students who were absent on testing days participated within 1 week. Two versions of the packet were used to counterbalance the vignette order and include male and female versions of each disorder. The packets were counterbalanced such that 53% of the students were presented with a vignette portraying a depressed male first and a socially anxious female last, whereas 47% of the students completed a vignette portraying a socially anxious male first and a depressed female last. Our University's Human Subjects Research Review Committee, the district superintendent, and the school board all approved all study procedures, and all procedures were in accordance with the ethical standards delineated in the 1964 Declaration of Helsinki and its later amendments.

Measures

Friend in Need Questionnaire–Revised. A modified version of the Friend in Need Questionnaire developed by Burns and Rapee was used [8]. Clinical vignettes, presenting individuals with major depression and social anxiety disorder, were presented in a counterbalanced order (either first or third) and portrayed each sex one-half of the time. The depression vignette was based on the "Tony" vignette used by Burns and Rapee [8], and the social anxiety disorder vignette was drawn from Jorm et al. [13]. The second vignette was based on Burns and Rapee [8] and portrayed an adolescent girl coping with the death of her grandmother. Participants read each vignette and then answered questions assessing their recognition of the disorder ("In five words or less, what do you think is the matter with name?"), their degree of concern for the person portrayed ("If name was your friend, how worried would you be about his/her overall emotional well-being?" Rated from 1 = I would not be at all worried about his/her emotional well-being through 4 = I would be extremely worried about his/her emotional well-being), their perception of the chronicity of symptoms ("How long do you think it will take for name to feel better again?" Rated from 1 = 1–2 days through 4 = longer than a few months), and whether they recommended help seeking ("Do you think name needs help from another person to cope with his/her problems? Yes, no, or do not know) and who from ("who do you think s/he needs help from"). Participants were also asked to identify what parts of the vignette they used to label the disorder. The "cues" were then coded based on the categories in Table 1 and prior work [8,13]. Three coders were trained using exemplars and then by coding a subset of responses that were reviewed for accuracy. Agreement between the coders exceeded 93% for all categories. The vignettes presented symptoms that clearly met Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, criteria [22] and are available on request.

Strengths and Difficulties Questionnaire

The youth self-report Strengths and Difficulties Questionnaire (SDQ) is a 25-item measure of MH symptoms for ages ≥11 years [23]. The SDQ yields a total score and subscale scores (e.g., conduct

Table 1
What cues do adolescents use to identify depression or social anxiety disorder in their peers?

	Depression vignette				Social anxiety disorder vignette		
	Full	Males	Females		Full	Males	Females
Fatigue/loss of energy	35.9	27.2	44.7	Fear of social/performance situation	50.1	40.0	60.6
Insomnia	36.6	29.9	47.5	Being in situation provokes anxiety/physical symptoms	53.6	46.7	60.9
Weight loss/decrease appetite	45.8	35.2	56.6	Recognizes fear is excessive	3.6	3.3	3.9
Decreased ability to sustain attention	33.6	23.8	43.6	Avoidance	43.7	37.6	50.1
Decreased interest in activities	45.6	37.9	53.5	Shy	22.5	19.8	25.2
Parents separated after fighting	16.8	16.4	17.2	Only has one friend	15.8	12.0	19.8
Grades got worse	38.2	29.9	46.7	Would like to make more friends	2.8	3.3	2.3
Duration of symptoms	3.1	3.6	2.7	Ok grades in school	6.5	5.4	7.6
Late for school frequently	25.5	18.9	32.1	Really bugs her	12.2	8.9	15.
Hard to get up in the morning	7.6	7.0	8.3	Other reason or the whole vignette overall	7.7	9.3	6.3
Other reason or the whole vignette	11.8	13.1	10.4				

Full = full sample; Males = male participants; Females = female participants.

problems, hyperactivity, and emotional problems such as depression, worry, and anxiety). The SDQ has been shown to have good retest reliability, internal consistency, and validity [24,25].

Analytic plan

Validating the measure of mental health literacy. Before testing our primary hypotheses, we evaluated the psychometric properties of our measure of MHL (cf.[25]). To provide an estimate of levels of MHL for depression and social anxiety disorder, we calculated scaled scores by assigning 1 point each for correct recognition of the disorder, endorsing being either quite worried or extremely worried about the person in the vignette and recognition that help would be beneficial.

The chi-square tests of independence were used to compare proportions for categorical data (e.g., sex, vignette type). Analyses of variance (ANOVAs) were used to test for differences on continuous variables, with significant results followed by the Student-Newman-Keuls post hoc tests. Finally, binary logistic regressions were conducted to test whether recommendations to seek help could be predicted from several indicators of MHL (recognition, degree of concern, and estimated duration of the condition). To balance the risk of *Type I* and *Type II* errors, we

Table 2
Recognition, concern, and perceptions of duration by vignette type, participant sex, and vignette sex

	Total sample	Males	Females	Male vignette	Female vignette
Correct recognition					
Depression vignette	40%	34%	46%	45%	35%
Social anxiety disorder vignette	1%	1%	1%	2%	1%
Degree of worry about					
Depression vignette	2.97 (.82)	2.76 (.84)	3.19 (.74)	2.98 (.80)	2.53 (.77)
Social anxiety disorder vignette	2.43 (.81)	2.30 (.80)	2.56 (.78)	2.95 (.85)	2.33 (.83)
Control vignette	2.23 (.88)	2.15 (.89)	2.31 (.86)	NA	NA
Time until better					
Depression vignette	3.3 (.82)	3.14 (.69)	3.52 (.69)	3.38 (.81)	3.32 (.83)
Social anxiety disorder vignette	3.12 (.91)	3.00 (1.27)	3.29 (.79)	3.15 (.85)	3.10 (.97)
Control vignette	2.50 (.90)	2.46 (.96)	2.55 (.84)	NA	NA

Worry was rated from 1 (I would not be at all worried about his/her emotional well-being) through 4 (I would be extremely worried about his/her emotional well-being). *Time until better* was rated as follows: 1 = 1–2 days, 2 = 1–2 weeks, 3 = 1–2 months, and 4 = longer than a few months. Counterbalancing of vignette sex resulted in slightly different sample sizes by participant sex. Specifically, 533 participants responded to the male depression vignette and 458 responded to the male social anxiety disorder vignette; 439 responded to the female depression vignette and 481 responded to the female social anxiety disorder vignette. NA = not applicable.

conducted a Bonferroni correction for the number of families of tests (n = 7) rather than the number of overall tests, yielding a critical level of .007 (.05/7). Effect sizes reported throughout represent $r_{\text{effect size}}$ developed by Rosenthal, Rosnow, and Rubin [26]. Guidelines for interpreting $r_{\text{effect size}}$ are .10 = small; .30 = medium; and .50 = large [27].

Results

Results using the MHL-scaled scores generally supported the use of our measure. First, girls had higher MHL than boys for the depression and social phobia vignettes [$t(1,024) = 7.41$, $p < .001$ and $t(1,037) = 5.30$, $p < .001$, respectively]. Correlations between MHL-scaled scores and age and grade were small, but in the expected direction. Grade level was significantly correlated with MHL for the depression vignette ($r = .07$, $p = .02$). Increased mental health symptoms were significantly associated with depression scaled scores, $r(1,031) = .09$, $p = .003$, but not social anxiety $t(1,039) = .01$, $p = .77$. Scaled scores for depression were also significantly correlated with conduct and hyperactivity symptoms, whereas social anxiety scores were significantly correlated with emotional symptoms (depressive and anxious symptoms) $r(1,038) = .09$, $p = .004$.

Hypotheses 1: recognition of depression and social anxiety disorder

Of the respondents, 40% correctly labeled the depression vignette as "depressed" or "depression" (see Table 2) compared

to 1% who correctly labeled the social anxiety disorder vignette as "social phobia" or "social anxiety disorder." A χ^2 analysis failed to reveal differences in the proportions recognizing the two disorders, but findings were in the expected direction χ^2 (1, N = 887) = 6.20, p <.08, $r_{effect\ size}$ = .08. Common mislabels for the social anxiety vignette included "shy" or "quiet" (33%); "low self-esteem" or "low confidence" (24%); "anxious," "anxiety," or "afraid" (15%); and depression (1%).

Next, we explored what symptoms adolescents used to identify the disorders. For depression, weight loss/decreased appetite, decreased interest/pleasure in activities, a decline in grades, and insomnia were most commonly noted for the full sample and both male and female subsamples (Table 1). For social anxiety disorder, experiencing anxiety/physical symptoms, being afraid of social and performance situations, and avoiding social situations were the most commonly reported cues for the full sample and for both sexes (Table 1).

Hypothesis 2: gender differences in recognition

Girls were significantly more likely than boys to correctly label depression, χ^2 (1, N = 967) = 14.15, p <.001, $r_{effect\ size}$ = .12, but sex differences were not found for the social anxiety disorder vignette, χ^2 (1, N = 934) = .008, p = .93, $r_{effect\ size}$ = .003 (Table 2).

Hypothesis 3: gender of character and recognition

Recognition of the male (45%) depression vignette was significantly higher than for the female version (35%), χ^2 (1, N = 972) = 10.45, p ≤.001, $r_{effect\ size}$ = .10. Differences according to sex of the character were not found for social anxiety disorder, χ^2 (1, N = 939) = .44, p = .51, $r_{effect\ size}$ = .02 (Table 2).

Hypothesis 4: concern for individuals with depression or social anxiety disorder

A 2 (participant sex: male, female) × 3 (vignette type: depression, control, social anxiety disorder) ANOVA revealed a significant main effect of vignette type for worry $F(2, 2000)$ = 212.47, p <.001, η_p^2 = .18. Post hoc comparisons showed that participants reported more concern, in response to the depression vignette versus the social anxiety disorder, $t(1,007)$ = 17.63, p <.001, $r_{effect\ size}$ = .49; coping, $t(1,032)$ = 16.49, p <.001, $r_{effect\ size}$ = .45 vignettes; and for the social anxiety versus the coping vignette, $t(1,041)$ = −6.79, p <.001,

$r_{effect\ size}$ = .21. Furthermore, females reported significantly more worry than males, $F(1, 1000)$ = 55.59, p <.001, η_p^2 = .05 (Table 2). However, there was not a significant interaction of sex of participant by vignette type using our corrected α level of .008, $F(2, 2000)$ = 3.91, p = .02, η_p^2 = .01.

Hypothesis 5: perceived course of individuals depression and social anxiety disorder

A 2 (sex of participant: male, female) × 3 (vignette type: depression, coping, social anxiety disorder) ANOVA revealed significant main effects of vignette type, $F(2, 1948)$ = 222.20, p <.001, η_p^2 = .19 and participant sex, $F(1, 974)$ = 14.69, p < .001, η_p^2 = .02 on "time until better" scores. However, the participant sex × vignette type interaction was not significant, $F(2, 1948)$ = 7.82, p = .15, η_p^2 = .01. Regarding the main effect of vignette type, paired samples t tests showed that participants perceived that depression and social anxiety would last longer than the coping situation, $t(1,100)$ = 8.66, p <.001, $r_{effect\ size}$ = .25 and $t(1,100)$ = 6.73, p <.001, $r_{effect\ size}$ = .20, respectively. A significant difference was not found between the two clinical vignettes, $t(1,100)$ = 1.55, p = .12, $r_{effect\ size}$ = .05. Turning to participant sex, estimates of the time needed to recover were significantly longer for girls than boys for all three vignette types, depression: $t(1,008)$ = 6.35, p <.001, $r_{effect\ size}$ = .20; coping: $t(1,091)$ = 2.68, p <.01, $r_{effect\ size}$ = .08; and social anxiety disorder: $t(1,041)$ = 5.67, p <.001, $r_{effect\ size}$ = .17.

Hypothesis 6: recommendations for seeking help for depression and social anxiety disorder

Of the participants, 68.8% (57.6% of males and 80.6% of females) recommended treatment seeking for depression compared to 59.2% (51.5% of males and 66.9% of females) for social anxiety. Females were significantly more likely than males to endorse that the depressed person (χ^2 [1, N = 1,021] = 70.78, p <.001, $r_{effect\ size}$ = .26) and anxious person (χ^2 [1, N = 1,033] = 28.29, p <.001, $r_{effect\ size}$ = .17) seek treatment. We did not find significant differences in recommendations to seek help for depression according to sex of the person in the vignette, χ^2 (1, N =1,028) = 2.52, p = .28, $r_{effect\ size}$ = .05, but did find significant differences for the social anxiety disorder vignette, χ^2 (1, N = 1,039) = 40.93, p <.001, $r_{effect\ size}$ = .20. Specifically, 56% recommended help seeking for a female with social anxiety versus 63% for a male.

Table 3
Recommended sources of help for depression or social anxiety disorder by participant sex

	Depression vignette				Social anxiety disorder vignette			
	Total %	Male participant %	Female participant %	χ^2	Total %	Male participant %	Female participant %	χ^2
Counselor	17.1	10.5	23.8	<.001	8.8	4.7	12.9	<.001
Friend	24.0	17.8	30.4	<.001	32.3	26.1	38.5	<.001
Family	26.6	18.6	34.8	<.001	16.4	11.6	21.2	<.001
Professional	1.4	1.0	1.8	NS	1.2	1.4	1.0	NS
Psychologist	4.1	2.9	5.2	NS	1.4	1.0	1.8	NS
Psychiatrist	2.8	2.1	3.4	NS	1.5	1.6	1.4	NS
Teacher	4.2	3.3	5.0	NS	3.1	2.9	2.2	NS
Someone with the same experience	1.0	1.2	.8	NS	.5	.4	.6	NS
Doctor	2.5	2.0	3.0	NS	1.0	.4	1.6	NS
Therapist	5.3	2.9	7.8	<.001	2.3	1.8	2.8	NS
Other	8.6	8.4	8.8	NS	8.5	9.0	7.9	NS

For both vignettes, respondents frequently recommended help from family members, friends, and a counselor (Table 3). Although both males and females made these recommendations, females were more likely to recommend them (Table 3). Specifically, (1) recommendations to talk with a friend for social anxiety were more common for the male vignette versus the female vignette (37.9%, 27.2%), χ^2 (1, N = 1,019) = 13.44, p <.001, $r_{effect\ size}$ = .11; and (2) recommendations to see a doctor were more common for the female versus male depression vignette (4.2%, .9%), χ^2 (1, N = 1,019) = 11.48, $p \leq$.001, $r_{effect\ size}$ = .11. Recommendations to talk with a friend about depression were not found to differ significantly in response to the male versus female vignette (27.4%, 20.2%), χ^2 (1, N = 1,019) = 7.16, p <.08, $r_{effect\ size}$ = .08.

Hypothesis 7: higher mental health literacy and help-seeking recommendations

Two binary logistic regressions were conducted predicting help-seeking recommendations based on recognition, concern, and estimation of duration. For the depression vignette, recognition, Wald = 9.94, p <.01, odds ratio (OR) = 1.71; concern, Wald = 62.04, p <.001, OR = 2.35; and perceived duration, Wald = 30.55, p < .001, OR = 1.73, all significantly and uniquely predicted help-seeking recommendations. Results were similar for social anxiety, with concern, Wald = 47.11, p < .001, OR = 1.98, and perceived duration, Wald = 33.69, p <.001, OR = 1.63, both significantly predicting help-seeking recommendations. Recognition of social anxiety disorder did not significantly predict recommendations, Wald = .02, p = .90, OR = .92.

Discussion

Findings from our U.S. high school students supported the use our measure of MHL. Girls tended to have higher MHL than boys, and MHL was associated with symptoms of mental illness [21]. Age and level of education (grade) were not significantly associated with MHL as found in a prior study [21]. However, this may reflect our restricted age range.

The rates of recognition and treatment recommendations found herein are similar to other industrialized countries [7,8,13,14]. Studies around the globe suggest that approximately half of adolescents can recognize depression, whereas far fewer recognize social anxiety disorder (<2%) [9]. This low recognition of social anxiety is consistent with findings that only 28% of previously sampled youth were able to recognize social anxiety symptoms as a mental health concern [15]. The low recognition is discouraging, as recognition is believed to be important for treatment seeking. However, over 50% of adolescents studied herein recommended help seeking for both social anxiety disorder and depression. Future research can examine what indicators led to help-seeking recommendations in the absence of naming. Results of this study suggest that educating the public regarding the impact and chronicity of disorders may increase treatment seeking.

We also examined potential sex differences in mental health literacy in adolescents. In this study, adolescents showed better recognition of depression for the male vignette but similar recognition of social anxiety disorder across sex. Females were more likely to recognize depression, estimated longer recovery times, and were more likely than males to recommend seeking help. Our findings that adolescents are better able to identify depression in males than females when both portray the same symptoms extends previous findings [8]. In prior research, the female vignette portrayed a character contemplating suicide but the male vignette did not. Sex differences found in the present study suggest that targeted MHL approaches may be warranted. For example, future studies may examine the utility of educating males on symptoms of depression and the benefits of recommending help seeking.

Programs to increase MHL will likely benefit from capitalizing on school settings. A recent review revealed initial support for the efficacy of MHL programs in U.S. high schools, with data showing a 67% increase in knowledge and a 71% rate of positive change in attitudes [28]. Incorporating technology may be beneficial [29]. Adolescents and adults alike gather information via smartphones [30]. Those worried about potential stigma may be more comfortable learning on their own. Furthermore, 24-hour availability may be particularly useful for individuals experiencing mood disturbance or anxiety during the night when others are asleep.

Approximately, one-third of adolescents failed to recommend that a peer with depression or social anxiety disorder seek help. We did not examine the role of broad issues regarding mental health (e.g., stigma, availability of appropriate services) as others have [31–33]. Ultimately, it is important to consider the relative merit of the broad approaches. Without knowledge of the help available, adolescents are unlikely to seek services. People may also be unwilling to seek or recommend help for fear of stigmatization. Future research may benefit from exploring broad factors associated with the decision not to recommend seeking help.

Limitations of the present study and future directions are worth considering. In future projects, increased diversity would be welcomed. Over three-quarters of our participants were Caucasian, and the data were all collected within one school. Another limitation is that the tightly controlled vignettes may have sacrificed some external validity. Future work can study more "real-world" presentations of disorders (e.g., role plays) or more complex scenarios. Third, future studies can explore how adolescents use the Internet to gather mental health information and how the information impacts their behavior. Fourth, this study did not address how individuals would actually behave if they suspected anxiety or depression in a friend. Future studies may benefit from looking at how likely adolescents would be to accept recommendations for help from a peer. Finally, we used strict definitions for "correct recognition." For example, for the social anxiety vignette, the terms "anxious" or "anxiety" alone were not coded as correct. As previously mentioned, recognition of the precise disorders may not be essential and future research should seek to clarify how understanding symptoms promotes help seeking. Similarly, we chose to examine levels of concern (worry) and recommendations for all participants independent of whether they correctly recognized the disorder. Additional thought should be given to the importance of correct recognition. For example, if members of the community incorrectly label their condition, *but* their understanding facilitates discussing the symptoms with their doctor, does it ultimately matter that they had originally misclassified their symptoms? By addressing these limitations and future directions, we will extend the line of research on MHL, allowing the field to progress toward having a fuller understanding of why so few adolescents in need of help present for mental health services.

Acknowledgments

Supplementary Data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jadohealth.2015.09.017.

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