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The Influence of Psychological Symptoms on Mental Health Literacy of College Students

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Abstract

Psychological problems, such as depression and anxiety, are common among college students, but few receive treatment for it. Mental health literacy may partially account for low rates of mental health treatment utilization. We report two studies that investigated mental health literacy among individuals with varying degrees of psychological symptoms, using cross-sectional online survey methodology. Study 1 involved 332 college students, of which 32% were categorized as high depressed using an established measure of depression, and mental health literacy for depression was assessed using a vignette. Logistic regression results showed that high depressed individuals were less likely to recognize depression compared to low depressed individuals, and depression recognition was associated with recommendations to seek help. Study 2 replicated and extended findings of Study 1 using a separate sample of 1,321 college students with varying degrees of psychological distress (32% no/mild distress, 55% moderate distress, and 13% serious distress) and examining mental health literacy for anxiety in addition to depression. Results indicated that compared to those with no/mild distress, those with moderate distress had lower recognition of depression, and those with moderate and serious distress were less likely to recommend help-seeking. In contrast, there were no differences in mental health literacy for anxiety, which was low across all participants. These findings suggest that psychological symptoms can impact certain aspects of mental health literacy, and these results have implications for targeting mental health literacy to increase mental health services utilization among individuals in need of help.

Psychological problems, such as depression and anxiety, are common among college students, but only a minority of students seek help for their problems (Blanco et al., 2008). One study examining over 14,000 students across 26 U.S. college campuses found that nearly a third (32%) had a mental health problem in the past year (e.g., depression, anxiety, suicidal ideation), yet only 36% of these individuals indicated that they had received any treatment during that time (Eisenberg, Hunt, Speer, & Zivin, 2011). Another study found that only about half of college students with past-year suicidal ideation sought and received help (Downs & Eisenberg, 2012). Stigma is not necessarily the predominant barrier to help-seeking for this group (Eisenberg, Speer, & Hunt, 2012; Golberstein, Eisenberg, & Gollust,

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2008), but rather, many students tend not to perceive a need for help (Gianakis & Carey, 2011). Of concern, this is also the case when they are at elevated risk for suicidal behavior (Czyz, Horwitz, Eisenberg, Kramer, & King, 2013). Researchers have pointed to the role of mental health literacy in further understanding why perceptions of need and subsequent utilization rates are low among college students with major psychological symptoms (Gulliver, Griffiths, & Christensen, 2010).

Mental health literacy is defined as "knowledge and beliefs about mental disorders which aid in their recognition, management or prevention" (Jorm et al., 1997, p. 182). Studies of mental health literacy investigate the extent to which people recognize mental disorders, know the causes of these disorders, and have knowledge regarding effective help-seeking avenues and treatments (Burns & Rapee, 2006; Fisher & Goldney, 2003; Goldney, Fisher, & Wilson, 2001; Jorm et al., 1997; Lauber, Falcato, Nordt, & Rössler, 2003; Olsson & Kennedy, 2010). Overall, findings show that mental health literacy among the general public is low, but can vary by demographic factors such as gender, age, and educational levels (Jorm et al., 1997; Jorm, 2012; Klineberg, Biddle, Donovan, & Gunnell, 2011), and can also vary by the type of mental health problems assessed (Coles & Coleman, 2010; Coles, Heimberg, & Weiss, 2013). For example, one study found that only 27.5% of adolescents identified anxiety and 42.4% identified depression as being mental health-related (Olsson & Kennedy, 2010). In contrast, a study with college students found that 41.4% identified general anxiety disorder and 88.2% identified depression when presented with vignettes portraying these disorders (Coles & Coleman, 2010). In general, women, older individuals, and individuals with more education tend to have higher levels of mental health literacy relative to men, younger individuals, and individuals with less education (Coles & Coleman, 2010; Olsson & Kennedy, 2010; Reavley, McCann, & Jorm, 2012). Perhaps not coincidentally, these demographic groups who have been associated with greater mental health literacy also are the ones that are more likely to utilize mental health services (Pescosolido & Boyer, 2010).

There is both theoretical and empirical support for the role of mental health literacy in help-seeking. Recognizing that there is a problem is a critical first step in the process of help-seeking (e.g., Cauce et al., 2002; Saunders, 1993). Moreover, failure to recognize problems has been found to be related to delays in seeking help (Thompson, Issakidis, & Hunt, 2008), whereas correct recognition has been found to be related to help-seeking preferences (i.e., preferring to seek help from formal rather than informal sources; Wright et al., 2012) and help-seeking intentions (Smith & Shochet, 2011; Thomas, Caputi, & Wilson, 2014). To our knowledge, studies establishing causality with longitudinal and/or experimental studies are yet lacking; however, existing evidence from cross-sectional studies strongly suggests that mental health literacy is associated with various aspects of help-seeking.

The purpose of the current study was to examine variations in mental health literacy and help-seeking recommendations among college students experiencing psychological symptoms. We extended the prior research by examining differences in mental health literacy across students with and without current psychological symptoms to better understand the extent to which the lack of mental health literacy potentially acts as a barrier to help-seeking and contributes to low perceptions of need among college students with

mental health problems. We used a two-step approach by first examining the extent to which psychological symptoms influenced the ability to correctly recognize disorders, and then we examined the extent to which correct recognition influenced help-seeking recommendations. In Study 1, we assessed mental health literacy for depression among college students with depressive symptoms. In Study 2, we replicated and extended findings of Study 1 by assessing mental health literacy for depression and anxiety among a different sample of college students with psychological distress.

Study 1: Depression Literacy among College Students with Depressive Symptoms

Method

Participants—Participants were 332 undergraduate students from a large, public university located in the west coast of the U.S. The mean age of the sample was 19.7 years (*SD* = 1.5; 5 participants did not report age), and the gender distribution was 62.2% women and 37.8% men (2 participants did not report gender). The sample was ethnically diverse and generally representative of the overall university student body, with 46.7% Asian Americans, 24.4% White/European Americans, 10.5% Latino/as, 6.3% multiracial individuals, and 10.5% indicating an 'other' category (2 participants did not report race/ethnicity). The majority of the participants indicated that they had not previously taken a course on abnormal psychology (87.0%) or clinical psychology (93.7%). Approximately 7.5% indicated that they had received professional psychological help in the past.

Procedures—The present study was a cross-sectional online survey that was approved by the university Institutional Review Board prior to data collection. Study respondents were recruited from the psychology department participant recruitment pool, which consisted of undergraduate students who were enrolled in general psychology and participated in research studies to fulfill a course requirement. The only eligibility criterion was that participants were 18 or older. A link to the online survey was made available on the participant recruitment website, and participants indicated their interest in the study by clicking the provided link. All respondents electronically provided their informed consent and were made aware of the confidential and voluntary nature of the study prior to participation. The average time to completion was 20-30 minutes, and participants received course credit. No individually identifiable information (e.g., student ID numbers) was collected or stored during this process. Data were collected from March to May 2011.

Measures

Demographic information—A demographic questionnaire asked respondents their age, gender, racial/ethnic background, prior use of mental health services, and any prior coursework in abnormal psychology and clinical psychology.

Current depressive symptoms—An eight-item subset of the Mood and Anxiety Symptom Questionnaire-Anhedonic Depression subscale (MASQ-AD; Clark & Watson, 1991) was used to assess depressive symptoms. The MASQ-AD measures symptoms that are unique to depressive disorders, such as anhedonia and low positive affect, rather than

measuring nonspecific symptoms related to general distress or negative affect (Bredemeier et al., 2010; Watson et al., 1995a). The MASQ-AD consists of 22 items on a scale of 1 (*not at all*) to 5 (*extremely*) assessing depressive symptoms in the past week. Prior factor analytic research (Nitschke, Heller, Imig, McDonald, & Miller, 2001; Watson et al., 1995a; Watson et al., 1995b as cited by Bredemeier et al., 2010) on the MASQ-AD found that the items loaded onto two separate factors via an 8-item subscale that measures depressed mood, anhedonia, and other symptoms of depressive disorders and a 14-item reversed-scored subscale that measures the experience of positive affect. The MASQ-AD outperforms another popular depression instrument, the Center for Epidemiologic Study of Depression Scale (CES-D), in discriminating presence of mood disorders (Buckby, Yung, Cosgrave, & Killackey, 2007). Bredemeier et al. (2010) found the 8-item subscale of the MASQ-AD, though not designed to measure depressive disorders, does predict whether a person may qualify for a current depressive disorder. We utilized the 8-item subscale with the recommended clinical cutoff of 21 to designate "high depressive symptoms" (i.e., scores ≥ 21) and "low depressive symptoms" groups (i.e., scores ≤ 20). Sample items on the 8-item MASQ-AD include "felt like nothing was enjoyable" and "thought about suicide or death." Cronbach's α in the current study was .84.

Mental health literacy for depression—The depression vignette developed by Jorm et al. (1997) was used to assess mental health literacy for depression. This vignette describes an individual with the essential features of major depressive disorder based on DSM-IV criteria, (e.g., depressed mood, sleep difficulties, changes in eating habits, difficulty concentrating) with an emphasis on functional impairment and symptom distress. After reading the vignette, participants responded to the following set of multiple-choice questions (answer choices are displayed in Table 1). To assess recognition, respondents were asked "*What do you think is wrong with [name of person in vignette]? Please fill in the item (choose only one) that you think best describes his/her problem."* To assess attributions, respondents were asked "*What do you think is the primary cause of this problem?"* To assess help-seeking recommendations, respondents were asked *"Do you think that [person in vignette] should seek professional help for this problem?"* with answer choices including yes, no, or undecided. To assess personal help-seeking preferences, respondents were asked *"Imagine yourself in [person in vignette]'s shoes, even if you have never experienced something similar. How do you think you would deal with this experience?"* Lastly, respondents were asked "*Have you ever experienced something similar to that of [person in vignette]?"* This vignette has been used previously with community (Goldney et al., 2001) and college student samples (Coles & Coleman, 2010). Goldney et al. (2001) reported that individuals with major depression were nearly 10 times more likely than individuals without depression to indicate that they had similar problems as the person portrayed in the vignette, providing evidence of validity.

Analyses

We conducted logistic regression analyses to examine factors associated with depression recognition and professional help-seeking recommendations. In both analyses, we included prior use of services (yes vs. no), gender (female vs. male), race (Caucasian/White vs. non-Caucasian/White), and depressive symptoms (high vs. low depressed) as independent

variables. In assessing professional help-seeking recommendations, we included depression recognition as an additional independent variable.

Results and Discussion

Of the 332 respondents, 32.8% (*n* = 109) were considered high depressed using a cutoff score of 21+ on the 8-item MASQ-AD (Bredemeier et al., 2010). The remaining 67.2% (*n* = 223) were considered to be low depressed. The mean MASQ-AD score was 25.27 for the high depressed group (*SD* = 3.75; range = 21-40) and 15.01 for the low depressed group (*SD* = 3.08; range = 8-20). The high and low depressed groups did not significantly differ on mean age, gender distribution, race, and prior coursework in abnormal or clinical psychology. For prior use of mental health services, a significantly greater proportion of high depressed individuals reported prior use in comparison to low depressed individuals (13.9% and 4.5% respectively), χ^2 (1) = 9.14, p = .003, Cramer's V = .17.

Table 1 shows the responses to the depression vignette for high and low depressed respondents. In total, 86.4% correctly recognized depression. Stress was the most common causal attribution endorsed (30.9%), followed by environmental factors (22.3%) and mental illness (17.7%). One in ten individuals (10.1%) attributed personal weakness as the cause of depression. The majority of the participants (88.3%) indicated that the individual in the vignette should seek professional help.

Table 2 summarizes results of the logistic regression analyses examining factors associated with depression recognition and help-seeking recommendations. High depressed individuals were about half as likely to recognize depression relative to low depressed individuals (odds ratio [OR] = .41). Moreover, women were twice as likely than men (OR = 2.52), and White individuals were four times more likely than non-White individuals (OR = 4.60) to recognize depression in the vignette. Prior use of services was not significantly related to depression recognition. In assessing help-seeking recommendations, individuals who correctly recognized depression in the vignette were five times more likely to recommend professional help-seeking (OR = 5.15) compared to those who did not correctly recognize depression. No other variables were significant in this model.

When participants were asked to imagine themselves as the person in the vignette and indicate how they would respond by selecting as many choices that applied (answer choices are displayed in Table 1), talking with a friend (63.3%), a family member (59.9%), and a psychiatrist (45.8%) were the most common responses across all participants. When asked whether respondents had ever experienced something similar to that of the person in the vignette, 28.4% of low depressed individuals and 50.5% of high depressed individuals indicated that they have had a similar experience, χ^2 (1) = 15.37, p < .001, Cramer's V = .22. Results of an exploratory logistic regression analysis showed that high depressed individuals were twice as likely to report that they have had similar experiences as the individual portrayed in the vignette, B (SE) = .87 (.26), OR = 2.39, 95% CI [1.43, 4.01], p = .001. Moreover, prior use of services was also associated with a twofold increase in the likelihood of reporting similar experiences, B (SE) = 2.12 (.58), OR = 8.35, 95% CI [2.66, 26.19], p < .001. In sum, results from Study 1 showed that although the majority of individuals recognized depression and recommended professional help-seeking, high depressed

individuals, relative to low depressed individuals, had lower recognition of depression. Importantly, depression recognition was significantly associated with professional help-seeking recommendations. These results suggest that variations in mental health literacy may be important in understanding help-seeking behaviors of college students with psychological symptoms.

This was an initial investigation of mental health literacy among college students with high and low depressive symptoms, and there are a few points worthy of further discussion. Over 30% of respondents were screened as high depressed. This rate may initially appear to be high, but it is worth noting that the MASQ-AD assesses past-week depressive symptoms rather than assessing diagnostic criteria for depression. Reported rates of depression among college students do tend to vary according to the measure being used. For instance, Hunt and Eisenberg (2010) reported that 17% of college students had depression using the Patient Health Questionnaire-9, which is a commonly used measure of depression, whereas Herman et al. (2011) reported that 38% of college students had mild/moderate depression according to the CES-D. Given these rates, it is not inconceivable that 32% of college students in the current sample reported depressive symptoms in reference to the past week.

About half of high depressed individuals indicated that they had experienced something similar to that of the person in the vignette. It is possible that high depressed individuals may also be experiencing a broader range of psychological symptoms that is not specific to depressive symptoms (e.g., psychological distress), and it would be important to understand mental health literacy with respect to other types of symptoms. In terms of the depression vignette, respondents were asked to indicate how they would deal with the experiences portrayed in the vignette in hypothetical terms. However, it would be informative to assess how participants actually dealt with these experiences, to examine whether the general pattern of help-seeking preferences are congruent between hypothetical and actual situations. Thus, Study 2 sought to replicate and extend the patterns of findings from Study 1 while addressing these issues.

Study 2: Depression and Anxiety Literacy among College Students with Psychological Distress

In addition to depression, anxiety is another common problem for which college students tend to underutilize mental health services (Eisenberg et al., 2012). In Study 2, we examined mental health literacy for both depression and anxiety, and assessed a wider range of psychological symptoms commonly found among college students (i.e., symptoms of psychological distress; Stallman, 2010). Similar to Study 1, we assessed recognition, causal attributions, professional help-seeking recommendations, and personal experiences. For those who indicated that they have had similar personal experiences, Study 2 assessed what respondents *actually* did to deal with the experience, rather than what they *would* hypothetically do. Moreover, individuals were allowed to select more than one response for causal attributions to better capture the perceived role of multiple factors.

Participants and Procedure

Participants were 1,321 undergraduate students recruited from the same university as Study 1. The mean age of the sample was 20.0 years (*SD* = 2.2; 7 participants did not report age), and the gender distribution was 71.3% women and 28.5% men. The racial/ethnic diversity of the sample was similar to Study 1, with 43.3% Asian Americans, 33.0% Whites, 9.6% Latino/as, 6.8% multiracial individuals, and 7.2% indicating an 'other' category (2 participants did not report race). Approximately 14.4% indicated that they had received professional psychological help in the past. Procedures and inclusion criteria were identical to Study 1. The university Institutional Review Board approved the study, and data were collected between May 2013 and March 2014.

Measures

Psychological distress—Study 2 assessed psychological distress through the 6-item Kessler Psychological Distress Scale (K6; Kessler et al., 2002). The K6 assesses nonspecific depressive and anxiety symptoms in the past 30 days on a scale of 0 (*none of the time*) to 4 (*all of the time*), with a sample item being "During the last 30 days, about how often did you feel hopeless?" Scores range from 0 to 24, with scores of 13+ indicating probable serious mental illness (Kessler et al., 2002). We utilized guidelines by Prochaska, Sung, Max, Shi, and Ong (2012), with scores between 0-4 constituting no/mild distress, scores between 5-12 constituting moderate distress, and scores of 13+ constituting serious distress. These cutoff scores have been found to be valid indicators of psychological distress levels in the general population (Prochaska et al., 2012). Similar cutoff scores have been used with college student populations using longer version of this scale (i.e., the 10-item scale; Stallman, 2010).

Mental health literacy—The same depression vignette from Study 1 was used to assess mental health literacy for depression. Mental health literacy for anxiety was assessed using a vignette from the Mental Health Literacy Questionnaire for Anxiety Disorders (Coles and Coleman, 2010), describing an individual with general anxiety disorder (GAD) according to DSM-IV criteria (e.g., symptoms such as constant worrying, difficulty making decisions, fatigue, and irritability). The series of multiple-choice questions that followed both vignettes were similar to Study 1 with two modifications. First, respondents were allowed to select multiple responses for causal attributions. Second, if respondents indicated they had ever experienced something similar to that of the person in the vignette, they were further queried on *what they actually did* to deal with the experience (e.g., dealt with it alone, talked to a friend), rather than what they would hypothetically do.

Results and Discussion

Approximately 32.1% (*n* = 424) of respondents were considered to have no/mild distress, 55.2% (*n* = 728) were considered to have moderate distress, and 12.7% (*n* = 168) were considered to have serious distress. The mean K6 scores were 2.72 (*SD* = 1.20) for those with no/mild distress, 8.03 (*SD* = 2.36) for moderate distress, and 15.29 (*SD* = 2.18) for those with serious distress. There were no significant group differences in terms of age and gender distribution. There were, however, significant differences in terms of prior use of

services, with 8.5% of individuals with no/mild distress, 14.4% with moderate distress, and 29.8% with serious distress indicating that they had used professional mental health services in the past, χ^2 (2) = 43.88, $p < .001$, Cramer's V = .18.

Mental health literacy for depression—As shown on Table 3, 85.0% of individuals recognized depression in the vignette, which is similar to recognition rates found in Study 1. The most common attributions across all participants were stress (75.5%), environmental factors (61.1%), biological factors (36.7%), and mental illness (31.7%). This pattern is also similar to findings from Study 1, although responses were limited to one selection in Study 1. Notably, over one in four respondents (26.0%) selected personal weakness as a cause of depression. The majority of the participants (84.6%) recommended that the person in the depression vignette should seek professional help.

Table 4 displays results of two logistic regression analyses examining factors associated with depression recognition and help-seeking recommendations. Individuals with moderate psychological distress were about half as likely to recognize depression compared to those with no/mild distress (OR = .56). Serious distress, relative to no/mild distress, was not significantly related to depression recognition. Moreover, women were more likely than men (OR = 1.72), White individuals were more likely than non-White individuals (OR = 1.58), and those with prior help-seeking experiences were more likely than those without prior experiences (OR = 2.32) to recognize depression in the vignette. In terms of help-seeking recommendations, correct recognition was associated with a threefold increase in endorsing professional help-seeking for depression (OR = 3.98). Individuals with serious and moderate distress were about half as likely to endorse help-seeking (OR = .51 and .66, respectively), relative to individuals with no/mild distress.

Approximately 40.0% indicated that they had ever experienced something similar to that of the person in the vignette. Relative to those with no/mild distress (22.2%), a significantly greater proportion of individuals with moderate (43.3%), χ^2 (1) = 51.85, $p < .001$, Cramer's V = .21, and serious distress (72.0%), χ^2 (1) = 129.31 $p < .001$, Cramer's V = .47, endorsed that they had ever experienced something similar. When asked to indicate how they actually dealt with the experience, the most common responses were having dealt with it on their own (29.3%), talked to a friend (24.1%), and talked to a family member (18.3%; sample sizes are shown on Table 3). This is in contrast to Study 1 which assessed hypothetical help-seeking, for which 63.3% said they would talk to a friend, 59.9% said they would talk to a family member, 45.8% said they would talk to a psychiatrist. Only 8.2% indicated that they talked to a psychologist, 7.6% to a counselor, and 5.7% to a psychiatrist, and rates of help-seeking from other professionals (e.g., social worker) were even lower.

Mental health literacy for generalized anxiety—As shown in Table 5, less than half of respondents (40.3%) recognized GAD in the vignette. A sizable percentage of participants misrecognized GAD as general life stress (38.8%). Most participants attributed GAD as being caused by stress (85.5%) and environmental factors (53.5%). Over a quarter of the participants attributed personal weakness as the cause (25.5%), and less than a fifth included mental illness as a cause (17.0%). In terms of professional help-seeking

recommendations, only 59.9% indicated that the person in the vignette should seek professional help, with 19.2% indicating that they were undecided.

Table 6 displays results of the logistic regression analyses examining factors associated with recognition and professional help-seeking recommendations for GAD. Unlike the depression vignette, psychological distress was not associated with GAD recognition. Women were more likely than men (OR = 1.86), White individuals were more likely than non-White individuals (OR = 2.02), and those who had used services in the past were more likely than those who had not used services in the past (OR = 2.20) to recognize GAD in the vignette. Correct recognition of GAD was significantly associated with recommending professional help-seeking (OR = 2.60).

In terms of similar personal experiences, 47.3% indicated that they had experienced something similar to that of the person in the vignette, with significant differences by level of distress. Compared to those with no/mild distress (32.1%), a greater proportion of those with moderate distress (53.2%), χ^2 (1) = 47.75, $p < .001$, Cramer's V = .20, and serious distress (61.9%), χ^2 (1) = 44.42, $p < .001$, Cramer's V = .27, indicated that they had experienced something similar. When asked about how they dealt with the issue, individuals most commonly dealt with it on their own (35.5%), talked to a friend (28.1%), and talked to a family member (24.4%). Only 5.8% indicated that they talked to a psychologist, 5.3% to a counselor, and 4.1% to a psychiatrist, with rates of help-seeking from other help-seeking professionals (e.g., social worker) even lower.

Study 2 replicated and extended findings from Study 1 by demonstrating that psychological distress influenced mental health literacy for depression. Relative to no/mild distress, moderate distress was associated with lower likelihood of depression recognition. Depression recognition was associated with increased likelihood of recommending professional help-seeking. In contrast, distress was not associated with mental health literacy for GAD. Although recognition of GAD was generally low across all participants, recognition was significantly associated with help-seeking recommendations.

General Discussion

The current investigation examined variations in mental health literacy for depression and anxiety among college students with psychological symptoms. Despite high rates of recognition and help-seeking recommendations for depression, we found that mental health literacy for depression varied by presence of psychological symptoms. In Study 1, high depressed individuals had significantly lower rates of depression recognition and lower professional help-seeking recommendations compared to low depressed individuals. In Study 2, individuals with moderate distress had lower depression recognition compared to those with no/mild distress. Furthermore, those with moderate and serious distress had lower professional help-seeking recommendations for depression than those with no/mild distress. Study 2 also showed that unlike depression recognition, anxiety recognition was relatively low across all participants regardless of psychological symptoms.

Why might mental health literacy for depression vary by psychological symptom severity? Of note, our findings are in contrast to a previous investigation with a non-college student

sample, which found that mental health literacy did not vary depending on whether individuals had major depression (Goldney et al., 2001). One possibility is related to the general age group of college students. A characteristic of major depression is recurrent depressive episodes, and the "kindling" hypothesis posits that the first depressive episode, more so than subsequent episodes, is associated with life stress (Monroe & Harkness, 2005). Similar to a majority of mental illnesses, depression is most likely to have an onset before an individual reaches his/her mid-twenties (Kessler et al., 2005). Thus life stress and depressive disorders are likely to be highly associated with one another for many college students. Misrecognition or underestimation of depressive symptoms as normal life stress may account for impairments in mental health literacy, and because of this, individuals may be less inclined to label symptoms as a depression diagnosis. Our finding that stress was the most common causal attribution of depression across both Studies 1 and 2 also supports this possibility.

Another potential explanation is that specific symptoms of depression may interfere with problem recognition, which can then result in lower mental health literacy. For example, the major cognitive symptoms of depression include concentration difficulties and problems with decision-making (American Psychiatric Association, 2013). A large body of research has examined these cognitive deficits associated with depression, and it is possible that these types of symptoms may also interfere with problem recognition because they can be cognitively distracting and individuals are unable to pay attention to relevant information (Bredemeier et al., 2012). It is also possible that stigma may contribute to lower depression recognition among individuals with psychological symptoms. A qualitative investigation found that individuals with depressive symptoms avoided using the term depression due to concerns about stigmatization by others (Epstein et al., 2010). Individuals in the current study may have experienced similar concerns about stigma, influencing their willingness to "label" symptoms as depression. Further work is needed to build upon our initial findings and test these possible explanations.

Through a visual inspection of data, we found inconsistencies in terms of formal and informal help-seeking preferences for depression when assessed hypothetically versus when assessed retrospectively. That is, individuals in Study 1 were asked to indicate how they thought they *would* deal with the experiences of the person in the vignette, whereas individuals in Study 2 were asked to indicate what they *actually* did to deal with these problems, for those who said they experienced something similar. In hypothetical terms, respondents most commonly said that they would talk to a friend or a family member, with a sizable proportion also indicating that they would seek professional help. In retrospective terms, most participants who indicated that they had dealt with something similar responded that they actually dealt with the problems on their own, and less than a quarter said they talked to a friend. These findings are preliminary, but draw attention to the discrepancy in terms of what people believe they would do and what they actually do. As many individuals said they would seek informal help from family and friends, these findings are important in raising awareness of mental health first aid and strategies to provide effective informal support to others (Loureiro et al., 2013).

Although symptoms of generalized anxiety, such as the tendency to worry, are common among college students (Saw, Berenbaum, & Okazaki, 2013), we found that mental health literacy for anxiety was generally low among college students. Less than half (40.3%) correctly recognized GAD in a vignette, even when using a multiple choice format, and only 59.9% thought that the person in the vignette should seek professional help. Rates found in the current study are similar to those found in a previous study, in which 41.4% of college students recognized anxiety, and 51.8% recommended professional help-seeking (Coles & Coleman, 2010). Unlike mental health literacy for depression, neither recognition nor help-seeking recommendations varied across levels of psychological distress. Rather, most participants who misrecognized GAD indicated that the person in the vignette was experiencing general life stress. In one study, 8.7% of a college student sample said that they would be “very likely” to seek help for anxiety, in contrast to 15.5% who said that they would be very likely to seek help for depression (Joyce, Ross, Vander Wal, & Austin, 2009). Poorer recognition and perceived importance of help-seeking for GAD compared to depression may be due to GAD receiving less attention in public discourse relative to depression (Coles & Coleman, 2010). Our findings show the clear need for improvement in knowledge and illness perceptions of GAD. This is especially important in light of previous findings that have shown that symptoms of anxiety, which are common among college students, tend to persist over time without treatment (Zivin, Eisenberg, Gollust, & Golberstein, 2009).

Our study also adds to the evidence on demographic differences in mental health literacy, in terms of gender and race/ethnicity. In both studies, women and White individuals were more likely to correctly recognize disorders, in comparison to men and non-White individuals, respectively. Problem recognition is an important first step of the help-seeking process (Cauce et al., 2002), which might partially explain why women tend to use mental health services at higher rates than men. Our findings are relatively consistent with prior research on gender variations in mental health literacy and attitudes toward help-seeking (e.g., Klineberg et al., 2011). A sizable portion of our non-White participants identified as Asian or Latino/a American. As discussed by Jorm (2012), mental health literacy adopts a Western conceptualization, which may not necessarily be congruent to illness beliefs and help-seeking preferences of people from diverse cultural backgrounds. The lack of mental health literacy has nonetheless been identified as an important barrier to services use among culturally diverse groups (Jorm, 2012), and this reflects an important area of future research.

We acknowledge limitations of this work and suggest other areas of future research. Participants in the current study represented a highly educated sample, with personal interest in studying psychology as they were recruited on the basis of enrollment in psychology courses. We might expect that mental health literacy is higher in this group than other samples, or rather, that mental health literacy is even lower in other groups for disorders such as GAD. As Coles and Coleman (2010) have suggested, mental health literacy among college students may serve as a benchmark for future investigations on mental health literacy. Thus these findings may not generalize to all college students, or even similar aged counterparts who are not attending college.

In terms of the specific vignettes used, we assessed causal attributions by allowing participants to select from a list, as done in prior studies (e.g., Coles & Coleman, 2010). We acknowledge the limitations of this format, as it may inadvertently suggest that mental illness is independent of factors such as stress or biological factors. Nonetheless, this assessment of causal attributions may indirectly reveal the stigma associated with psychological problems. Thus it is of great concern that over a quarter of participants in Study 2 included personal weakness as a cause of depression and GAD. It might be expected that these gross misattributions are even more common in other samples, and this raises awareness about particular areas in which there should be greater attention to addressing deficits in mental health literacy.

The cross-sectional nature of this study cannot draw conclusions about mental health literacy affecting actual future help-seeking behavior. However, knowledge has influences on attitudes, which in turn, have influences on behaviors (Ajzen, Joyce, Sheikh, & Cote, 2011). Thus, increases in mental health literacy may contribute to attitudinal changes or willingness to help others, which will likely have positive impacts on behavior. It is also possible that mental health literacy will increase the future likelihood that a person will use mental health services. For example, there may be a latent effect of mental health literacy, such that increases in mental health literacy will increase willingness and openness to use mental health services when encountering psychological problems in the future. Furthermore, mental health literacy may interact with other contextual factors, such that its effects on help-seeking may depend on factors such as social support, the mental health literacy of others, and one's perceptions of severity of psychological problems (e.g., negative impacts on daily functioning). These areas reflect important directions in future research. There is also a clear need to test the effectiveness of interventions that are aimed at increasing mental health literacy (e.g., the *Transitions* mental health literacy program discussed in Potvin-Boucher, Szumilas, Sheikh, & Kutcher, 2010).

Underutilization of mental health services among college students is an especially important area of social and behavioral research because structural barriers, such as access and availability, do not account for why college students do not engage with the mental health services system. That is, most colleges and universities offer on-campus counseling services to their students free of charge. It is unfortunate that most college students do not seek professional mental health services despite experiencing major psychological symptoms, such as depression, anxiety, and suicidal thoughts. Given the significant associations found between disorder recognition and professional help-seeking recommendations, findings from this study suggest that mental health literacy plays a role in underutilization of services by college students. These findings point to important future directions in research in the area of mental health literacy, and suggest potential benefits of increasing aspects of mental health literacy among college students, particularly those who are at risk for mental health problems.

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Table 1
Responses to Depression Vignette by Current Depressive Status

Responses to vignette	Low depressed % (*n* = 223)	High depressed % (*n* = 109)	Total % (*N* = 332)
Recognition: *"What do you think is wrong with [person in vignette]? (choose only one)"*			
General life stress	4.0	8.3	5.4
Depression	90.6	78.0	86.4
Schizophrenia	0.4	1.8	0.9
Social phobia	0	0	0
General anxiety disorder	1.8	2.8	2.1
Other anxiety disorder	2.2	4.6	3.0
Personality disorder	0	0.9	0.3
Medical problem	.9	3.7	1.8
Other	0	0	0
Causal Attribution: *"What do you think is the primary cause of this problem? (choose only one)"*			
Biological factors	17.8	11.1	15.6
Environmental factors	21.0	25.0	22.3
Mental illness	19.2	14.8	17.7
Personal weakness	11.0	8.3	10.1
Stress	28.3	36.1	30.9
Other	2.7	4.6	3.4
Help-Seeking Recommendation: *"Do you think that [person in vignette] should seek professional help for this problem?"*			
Yes	91.5	81.7	88.3
No	5.4	7.3	6.0
Undecided	3.4	11.0	5.7
Hypothetical Help-Seeking: *"How do you think you would deal with this experience? (select all that apply)"*			
Deal with it myself	31.4	43.1	35.2
Talk to a family member	62.3	55.0	59.9
Talk to a friend	64.6	60.6	63.3
Talk to a psychiatrist	48.4	40.0	45.8
Talk to a family doctor	24.2	14.7	21.1
Talk to another medical doctor	8.1	11.0	9.0
Talk to a psychologist	44.4	33.0	40.7
Talk to a social worker	7.6	4.6	6.6
Talk to a counselor	35.9	33.9	35.2
Talk to any other mental health provider	9.0	11.0	9.6
Talk to a religious or spiritual leader	16.6	12.8	15.4
Talk to any other healer	1.3	3.7	2.1
Other	1.8	1.8	1.8
Similar Experience: *"Have you ever experienced something similar to that of [person in vignette]?"*			

Responses to vignette	**Low depressed % (*n* = 223)**	**High depressed % (*n* = 109)**	**Total % (*N* = 332)**
Yes	28.4	50.5	35.6
No	71.6	49.5	64.4

Table 2

Summary of Logistic Regression Results of Factors Influencing Depression Recognition and Help-Seeking Recommendations

	Depression recognition				Recommendation of professional help-seeking for depression			
Variable	**B (SE)**	**OR**	**95% CI**	***p***	**B (SE)**	**OR**	**95% CI**	***p***
Female (ref: male)	.92 (.34)	2.52	[1.29, 4.90]	.007	.45 (.37)	1.57	[.76, 3.27]	.223
White (ref: non-White)	1.53 (.63)	4.60	[1.34, 15.83]	.015	.48 (.54)	1.62	[.57, 4.65]	.368
Prior use of services (ref: no prior use)	1.03 (1.08)	2.79	[.34, 23.01]	.341	-.01 (.81)	.99	[.21, 4.86]	.999
High depressed (ref: low depressed)	-.89 (.34)	.41	[.21, .80]	.009	-.54 (.38)	.58	[.28, 1.21]	.149
Depression recognition (ref: incorrect)	-	-	-	-	1.64 (.41)	5.15	[2.32, 11.43]	< .001

Notes. ref = reference group; OR = odds ratio; CI = confidence interval

Table 3
Responses to Depression Vignette by Level of Distress

Responses to vignette	No/Mild distress % (*n* = 424)	Moderate distress % (*n* = 728)	Serious distress % (*n* = 168)	Total % (*N* = 1,321)
Recognition: *"What do you think is wrong with [person in vignette]? (choose only one)"*				
General life stress	6.1	9.2	7.7	8.1
Depression	89.2	82.8	85.1	85.0
Schizophrenia	0	.8	0	0.5
Social phobia	0	1.0	0.6	0.6
General anxiety disorder	2.1	2.7	2.4	2.5
Other anxiety disorder	.5	1.5	1.8	1.3
Personality disorder	.5	.7	1.2	0.7
Medical problem	.7	.8	0.6	0.8
Other	.9	.4	.6	0.7
Causal Attribution: *"What do you think is the primary cause of this problem? (select all that apply)"*				
Biological factors	38.4	36.6	33.9	36.7
Environmental factors	61.8	60.1	65.5	61.1
Mental illness	29.0	32.8	34.5	31.7
Personal weakness	23.8	26.5	30.4	26.0
Stress	75.5	74.8	81.5	75.5
Other	1.9	2.6	1.8	2.3
Help-Seeking Recommendation: *"Do you think that [person in vignette] should seek professional help for this problem?"*				
Yes	88.7	82.9	82.1	84.6
No	4.7	6.2	5.4	5.6
Undecided	6.6	11.0	12.5	9.8
Similar Experience: *"Have you ever experienced something similar to that of [person in vignette]?"*				
Yes	22.2	43.3	72.0	40.0
No	77.8	56.7	28.0	60.0
Personal Help-Seeking: *"If so, what did you do to deal with the experience? (select all that apply)"*	(*n* = 94)	(*n* = 315)	(*n* = 121)	(*N* = 424)
Dealt with it myself	15.1	31.6	56.5	29.3
Talked to a family member	10.8	21.3	25.0	18.3
Talked to a friend	14.2	26.5	39.3	24.1
Talked to a psychiatrist	2.8	5.6	13.1	5.7
Talked to a family doctor	1.9	3.7	6.5	3.5
Talked to another medical doctor	0	0.4	1.2	0.4
Talked to a psychologist	2.6	8.0	23.8	8.2
Talked to a social worker	0.7	1.1	1.2	1.0
Talked to a counselor	4.0	7.4	17.9	7.6
Talked to any other mental health provider	0.7	0.4	0	0.5

Responses to vignette	No/Mild distress % (*n* = 424)	Moderate distress % (*n* = 728)	Serious distress % (*n* = 168)	Total % (*N* = 1,321)
Talked to a religious or spiritual leader	1.4	1.8	4.8	2.0
Talked to any other healer	0	0.4	0.6	0.3
Other	0.7	1.1	1.8	1.1

Table 4

Summary of Logistic Regression Results of Factors Influencing Depression Recognition and Help-Seeking Recommendations (Study 2)

	Depression recognition				Recommendation of professional help-seeking for depression			
Variable	**B (SE)**	**OR**	**95% CI**	***p***	**B (SE)**	**OR**	**95% CI**	***p***
Female (ref: male)	.54 (.17)	1.72	[1.25, 2.38]	.001	.34 (.17)	1.40	[1.01, 1.96]	.046
White (ref: non-White)	.46 (.18)	1.58	[1.10, 2.27]	.012	.06 (.18)	1.06	[.75, 1.51]	.751
Prior use of services (ref: no prior use)	.84 (.30)	2.32	[1.30, 4.15]	.004	1.13 (.33)	3.11	[1.62, 5.95]	.001
Moderate distress (ref: no/mild distress)	-.58 (.19)	.56	[.39, .81]	.002	-.41 (.19)	.66	[.46, .96]	.030
Serious distress (ref: no/mild distress)	-.48 (.28)	.62	[.36, 1.07]	.080	-.67 (.27)	.51	[.30, .87]	.013
Depression recognition (ref: incorrect)	-	-	-	-	1.38 (.18)	3.98	[2.80, 5.67]	< .001

Notes. ref = reference group; OR = odds ratio; CI = confidence interval

Table 5
Responses to Anxiety Vignette by Level of Distress

Responses to vignette	No/Mild distress % (*n* = 424)	Moderate distress % (*n* = 728)	Serious distress % (*n* = 168)	Total % (*N* = 1,321)
Recognition: *"What do you think is wrong with [person in vignette]? (choose only one)"*				
General life stress	40.6	37.8	39.3	38.8
Depression	1.9	4.4	7.7	4.1
Schizophrenia	0	0.3	0	0.2
Social phobia	2.4	3.4	2.4	3.0
General anxiety disorder	39.6	41.2	38.1	40.3
Other anxiety disorder	14.1	10.3	9.0	11.3
Personality disorder	0.7	1.2	2.4	1.2
Medical problem	0.2	0.4	0	0.3
Other	0.5	1.0	1.2	0.8
Causal Attribution*: "What do you think is the primary cause of this problem? (select all that apply)"*				
Biological factors	30.0	31.7	26.2	30.4
Environmental factors	53.3	53.9	53.6	53.5
Mental illness	14.2	18.8	16.7	17.0
Personal weakness	22.9	25.9	30.4	25.5
Stress	86.1	85.7	85.1	85.5
Other	0.5	2.1	0.6	1.4
Help-Seeking Recommendations:*Do you think that [person in vignette] should seek professional help for this problem?*				
Yes	59.1	59.6	64.3	59.9
No	21.3	21.5	17.9	20.9
Undecided	19.6	19.0	17.9	19.2
Similar Experience:*Have you ever experienced something similar to that of [person in vignette]?*				
Yes	32.1	53.2	61.9	47.3
No	67.9	46.8	38.1	52.7
Personal Help-Seeking: *If so, what did you do to deal with the experience? (select all that apply)*	(*n* = 136)	(*n* = 387)	(*n*= 104)	(*N* = 627)
Dealt with it myself	25.2	39.4	45.8	35.5
Talked to a family member	18.6	27.6	24.4	24.2
Talked to a friend	19.1	32.4	32.7	28.1
Talked to a psychiatrist	1.7	4.7	8.3	4.1
Talked to a family doctor	0.7	2.9	6.5	2.6
Talked to another medical doctor	0.2	0.1	0	0.2
Talked to a psychologist	1.9	6.0	14.9	5.8
Talked to a social worker	0.7	1.5	1.2	1.2
Talked to a counselor	1.9	6.7	7.7	5.3
Talked to any other mental health provider	0.2	0.5	0	0.4

Responses to vignette	No/Mild distress % (*n* = 424)	Moderate distress % (*n* = 728)	Serious distress % (*n* = 168)	Total % (*N* = 1,321)
Talked to a religious or spiritual leader	1.7	3.0	3.6	2.6
Talked to any other healer	0.5	0.5	0	0.5
Other	0.7	1.5	1.2	1.2

Table 6

Summary of Logistic Regression Results of Factors Influencing Anxiety Recognition and Help-Seeking Recommendations (Study 2)

	Anxiety recognition				Recommendation of professional help-seeking for anxiety			
Variable	**B (SE)**	**OR**	**95% CI**	***p***	**B (SE)**	**OR**	**95% CI**	***p***
Female (ref: male)	.62 (.13)	1.86	[1.43, 2.42]	< .001	.24 (.13)	1.27	[.99, 1.64]	.060
White (ref: non-White)	.70 (.12)	2.02	[1.58, 2.57]	< .001	-.01 (.13)	.99	[.77, 1.28]	.965
Prior use of services (ref: no prior use)	.79 (.17)	2.20	[1.58, 3.06]	< .001	.53 (.19)	1.69	[1.18, 2.44]	.005
Moderate distress (ref: no/mild distress)	.05 (.13)	1.05	[.81, 1.35]	.718	-.03 (.13)	.97	[.75, 1.25]	.811
Serious distress (ref: no/mild distress)	-.17 (.20)	.41	[.57, 1.26]	.409	.13 (.20)	1.14	[.77, 1.69]	.508
Anxiety recognition (ref: incorrect)	-	-	-	-	.96 (.13)	2.60	[2.03, 3.33]	< .001

Notes. ref = reference group; OR = odds ratio; CI = confidence interval