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Mental Health Literacy for Anxiety Disorders: How perceptions of symptom severity might relate to recognition of psychological distress

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Abstract

Purpose—Improving mental health literacy is an important consideration when promoting expedient and effective treatment seeking for psychological disorders. Low recognition serves as a barrier to treatment (Coles and Coleman, 2010), and this article examines recognition by lay individuals of severity for three psychological disorders: social anxiety, generalized anxiety, and major depression using a dimensional approach.

Design—Vignettes of mild/subclinical, moderate, and severe cases of each disorder were rated for severity by a team of expert assessors and 270 participants (mean age = 26.8; 76.7% women).

Findings—Difference ratings were calculated comparing participants' responses to scores from the assessors. A within-groups factorial ANOVA with LSD follow-up was performed to examine the effects of Diagnosis and Severity on difference ratings. Both main effects [Diagnosis, $F(2, 536)=35.26$, $Mse=1.24$; Severity, $F(2, 536)=9.44$, $Mse=1.93$] and the interaction were significant [$F(4, 1072)=13.70$, $Mse=1.13$] all $p's < 0.001$. Social anxiety cases were underrated in the mild/subclinical and moderate cases, generalized anxiety cases were underrated at all three severities, and major depression cases were overrated at all three severities.

Social implications—Judgments of severity may underlie the low recognition rates for social anxiety disorder and generalized anxiety disorder. Future efforts should focus on improved recognition and education regarding anxiety disorders in the population, particularly before they become severe.

Value—This project demonstrates the importance of considering judgments of symptom severity on a continuum, and in a range of cases, rather than just the ability to correctly label symptoms, when determining whether or not people recognize psychological disorders.

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Keywords

Mental Health Literacy; Anxiety Disorders; Mental Health; Awareness; Recognition; Health Knowledge; Attitudes; Practice

Anxiety disorders are the most widespread class of psychological disorders (Kessler et al., 2005a; Kessler et al., 2005b). Anxiety disorders cost the United States more than $42 billion annually (Greenberg et al., 1999). The actual pervasiveness of anxiety disorders may be understated, due, in part, to ”normalization.” Here, normalization refers to a process through which people perceive symptoms as being less problematic, in an attempt to understand the symptoms in the context of life events (e.g. Kim et al., 2012). Normalizing symptoms of anxiety can be comforting, helping people realize that their experiences are within the natural range of emotions and biologically adaptive (Horwitz and Wakefield, 2012). Moreover, normalizing anxiety is a productive therapeutic approach (Beck et al., 2005). However, while normalization of anxiety behaviors may have ameliorative effects, there may also be drawbacks in specific contexts, such as becoming a barrier to help seeking. For example, people might forget instances of distress, or normalize symptoms, leading to such cases not being reported (Wang et al., 2005).

The ability to recognize distress as treatment-worthy is part of a larger concept known as mental health literacy, or the “knowledge and beliefs about mental disorders which aid their recognition, management, or prevention” (Jorm et al, 1997). Poor mental health literacy is associated with delays or failure to seek treatment (Meltzer et al., 2000; Wells et al., 1994). Such delays have been linked to poorer outcome upon treatment completion (Altamura et al, 2008; de Diego-Adelino et al., 2010; Dell’Osso et al., 2013).

Individuals with anxiety disorders often experience lengthy delays in seeking treatment (Oakley-Browne et al., 2006; Thompson et al., 2008; Wang et al., 2005) and we propose that inadequate mental health literacy could factor into this delay. For Social Anxiety Disorder (SoAD), estimates of the median delay from symptom onset to treatment-seeking range from 9 to 28 years (Oakley-Browne et al., 2006; Thompson et al., 2008; Wang et al., 2005) with only 50.1% *ever* seeking treatment (Wang et al., 2005). Moreover, SoAD has the lowest proportion of met need for treatment (7.9%) among all psychological disorders (Messias et al., 2007). It is possible that a lack of willingness to engage in therapy might also contribute to these delays.

Generalized Anxiety Disorder (GAD), too, is associated with extensive delays in seeking treatment. While 86.1% of people with GAD are estimated to seek treatment at some point during their lives, only 33.3% do so in the first year of onset (Wang et al., 2005). Estimates of the median delay from symptom onset to treatment-seeking is 6-10 years (Oakley-Browne et al., 2006; Thompson et al., 2008; Wang et al., 2005). While this appears to be less significant, relative to the findings for SoAD, improved mental health literacy could perhaps shorten this delay.

Additionally, stigma of psychological disorders has been shown to be a major impediment to help seeking (Corrigan, 2004). The perceived negative judgment of others serves as barrier

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to treatment, which may be even more pertinent for SoAD, given it is centered on fears of negative evaluation (Turner et al., 1992) from others. Olfson et al. (2000) reported that individuals with SoAD frequently indicated concerns about what others might think or say about them as reasons for not seeking treatment. Coupled with normalization, stigma can possibly complicate problems for individuals with SoAD. If SoAD symptoms are perceived as less severe than they really are, it may seem *particularly* negative to seek help for them *and* be labeled with a disorder, making it especially difficult for someone to seek treatment.

SoAD has an early onset (Kessler et al., 2005a) and has been associated with normalization of symptoms and development of maladaptive coping strategies such as social withdrawal (Wang et al., 2005). Due to the early onset and chronic nature of SoAD, individuals may internalize symptoms as permanent parts of their personality (Rapee, 1995). Delays may also contribute to the comorbidities commonly seen in SoAD (Fehm et al., 2008; Kessler et al., 2005b), particularly because the onset of SoAD usually precedes the onset of comorbid diagnoses (Fehm et al., 2008; Schneier et al., 1992; Weiller et al., 1996). In one study of comorbid SoAD cases (Fehm et al., 2008), SoAD temporally preceded the other disorder 66% of the time. Unrecognized SoAD (and even sub-threshold SoAD symptoms) may serve as a risk factor for the development of other disorders (Fehm et al., 2008; Weiller et al., 1996), emphasizing the importance of earlier recognition and intervention.

Normalization might complicate recognition of GAD as well. GAD is associated with physical symptoms, the source of the majority of patients' concern (Wittchen & Hoyer, 2001). Within the context of physical ailments, anxiety or worry might be perceived as expected, making it difficult to recognize anxiety/worry as problematic. Thus, by normalizing anxiety/worry and focusing on the physical component of GAD (or other comorbid ailments), the condition could persist, as the core psychological component of the disorder goes untreated.

Adding to the potential complications of normalizing, a lack of knowledge and availability of appropriate treatments are the most common reasons that clients give for their delay in treatment seeking for both anxiety and depression (Thompson et al., 2004). It has been suggested that once symptoms are recognized, the delay in treatment seeking is greatly reduced. In one sample of treatment-seeking individuals with SoAD, patients took an average of 7.9 years from initial onset to recognize their symptoms; then, the delay to seeking treatment was only an additional 1.2 years (Thompson et al., 2008). In the same study, participants with GAD took the longest to recognize their problem (10.1 years) compared to SoAD, Panic Disorder (with or without Agoraphobia) Obsessive-Compulsive Disorder, Specific Phobia, and Mood Disorders; in fact, on average, GAD participants recognized their symptoms as a problem only *after* seeking professional help, most likely for health-related concerns, not worry itself. Realization of anxiety as a source of distress was a consequence of seeking treatment for health concerns. The ability for people to more effectively recognize and manage psychological symptoms may help curtail suffering and increase help-seeking behaviors.

Having language to talk about psychological disorders and describe the complex emotions that we experience is vital. Using normalizing labels such as "stress" instead of diagnostic

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labels is hypothesized to reduce treatment-seeking (Jorm, 2012; Jorm et al., 2006). Additionally, framing symptoms in more psychological terms may assist health-care professionals detect untreated anxiety (Herran et al., 1999; Kessler et al., 1999). The physiological symptoms characteristic of anxiety disorders (e.g. heart palpitations) could easily be misinterpreted as purely physical symptoms without mention of psychological distress.

Over half the cost of anxiety disorders is linked to the repeated use of health care services (Greenberg et al., 1999), as individuals overuse primary care to seek relief from their psychological symptoms (Katon et al., 1990; Manning and Wells, 1992). Specifically, individuals with SoAD have been shown to use health care resources more often than individuals without SoAD (Katzelnick et al., 2001), for other issues, such as depressive symptoms (Dalrymple and Zimmerman, 2011; Weiller et al., 1996) or physical ailments (Acarturk et al., 2008), and not for the treatment of SoAD itself. Recognizing distress as anxiety-related, could allow people to be treated more efficiently and expediently, reducing costs.

Coles, et al. (2008) have called for increased focus on mental health literacy so that barriers to treatment might be reduced. Coles and Coleman (2010) conducted a study investigating mental health literacy for anxiety disorders showing that individuals were able to correctly recognize SoAD in vignettes 86.8% of the time, compared to 41.4% for GAD and 88.2% for Major Depressive Disorder (MDD). Their findings for SoAD are surprising, given the evidence suggesting that SoAD may be under recognized (for discussion, see Dalrymple, 2012). However, these recognition rates should be interpreted with caution, as participants selected from a list of disorder names and other labels (e.g. general life stress) instead of self-generating labels. This is particularly germane for SoAD, due to the strong resemblance of SoAD symptoms with the disorder name. Indeed, “general life stress” was selected 41.4% of time for GAD vignette, which is the same percentage that correctly labeled GAD. Having a normalized term that (not necessarily intentionally) corresponds with GAD, but no such comparable term for SoAD, could partially explain the recognition rate differentials between those two disorders. In fact, using the same vignettes as Coles and Coleman, Furnham and Lousley (2013) conducted a study prompting for open-ended responses to label the vignettes. They found that only 10.73% and 2.84% of participants correctly labeled SoAD and GAD, respectively. Additionally, Coles and Coleman (2010) found that people recommended treatment less frequently for SoAD and GAD than for MDD. One potential explanation that we offer for these results may be that compared to MDD, people view SoAD and GAD symptoms as less severe conditions (potentially due to normalization) that do not reach the threshold necessary to recommend treatment.

While labeling disorders is one important aspect for awareness of specific conditions, our question regarding severity and recognition lies within a more fundamental judgment regarding the ability to identify some threshold of psychological distress and to recognize that it is significant enough to warrant intervention. Therefore, we chose to investigate judgments of severity more generally, as opposed to using a diagnosis-specific recognition judgment. We argue that using a dimensional measure of severity might be a more informative way to operationalize *recognition* of psychological distress as opposed to the

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categorical determination of whether or not behaviors have been correctly labeled. It is possible for people to correctly label symptoms while having differing or erroneous beliefs about the seriousness of those very symptoms. Furthermore, given that many psychological disorders can be conceptualized on a spectrum, it is possible that people may have differing beliefs about a disorder category depending on the severity of its presentation. It is important to study recognition for a variety of presentations and severities, as there is no guarantee that recognition would be the same for mild/subclinical case as it would be for severe cases.

In addition to SoAD, we chose to investigate GAD, another anxiety disorder whose symptoms are often normalized as "general life stress" (e.g. Coles and Coleman, 2010), and has been associated with poor recognition (Thompson et al., 2008). We also wanted to compare these two anxiety disorders to MDD, which is associated with more expedient treatment contact, higher overall likelihood of treatment-seeking (Wang et al., 2005), and the highest proportion of met need (46.7%) among psychological disorders (Messias et al., 2007) perhaps related to awareness campaigns, which have improved public opinion associated with depression (Paykel et al., 1998). To date, such public campaigns have focused primarily on depression, with anxiety disorders receiving far less attention (e.g., Griffiths, 2013). Indeed, Wittchen (2000) contends that public awareness campaigns conducted in the 1990's in Germany may have helped to increase the healthcare usage for both SoAD and GAD, accounting for the higher rates of health utilization for those two disorders in Germany compared to those reported in the US during the same time period. Dalrymple and Zimmerman (2008) suggest that the lack of publicized attention has historically contributed to the under recognition of SoAD. While these campaigns have been markedly beneficial for raising awareness of MDD, even greater public efforts may be required for SoAD and GAD in the future. The early onset, normalization, and chronic course of SoAD may cloud recognition of the interference caused by symptoms (e.g., Rapee, 1995). Additionally, people with GAD may be more likely to attribute their suffering to non-psychologically based health concerns (Thompson et al., 2008; Wittchen & Hoyer, 2001) making it increasingly difficult for their anxiety to be identified and treated by a mental health professional. Conversely, the often episodic nature of MDD may be more conducive for patients to identify contrasts of depressed and non-depressed periods and draw attention to the negative impact of MDD symptoms.

To further understand this question of whether individuals are underrating the severity of SoAD and GAD, we presented individuals with vignettes representing three severities (mild/subclinical, moderate, and severe) for each disorder (SoAD, GAD, and MDD). Consistent with a normalization hypothesis, we predicted that people would underrate severity on the mild/subclinical and moderate areas of the spectrum for symptoms of anxiety disorders (SoAD and GAD), but not MDD, perceiving the anxiety symptoms as less severe than the MDD symptoms. Moderate cases may be the critical cases in that they indicate clinically significant suffering but may not be perceived to be severe enough to warrant treatment.

We also hypothesized that people would be more accurate with detecting anxiety symptoms when presented with more severe cases, suggesting that people *do* recognize anxiety symptoms as treatment-worthy, but only when they are more clearly severe. If this is the case, more efforts could be put forth to reduce the normalizing of anxiety symptoms and to

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raise awareness about the debilitating nature of symptoms that may seem manageable, before they become severe, particularly since people with anxiety disorders tend to be more reluctant to seek treatment once symptoms are more severe (Meltzer et al., 2000). This again underscores the need for earlier detection of anxiety.

Additionally, we examined some participant characteristics that might affect recognition of severity. Since this study was conducted on a college campus, we were unable to see the impact on a range of education levels; however, we compared responses for psychology majors to those of non-psychology majors. We also looked at self-reported experience with psychological disorders[1] and examined responses based on gender and racial/ethnic minority status. Some initial evidence suggests that women may have better recognition of SoAD and GAD (Coles and Coleman, 2010) and, while not statistically significant, they also showed that racial/ethnic minorities might have poorer recognition of some psychological disorders compared to non-racial/ethnic minority individuals. Differences based on these factors could help identify sub-groups in the population who may be at risk for poorer mental health literacy.

Method

Participants

270 individuals (76.7% women, 19.6% men, 3.7% who did not indicate gender) at a large public University provided informed consent and participated in an online study. All participants were offered entry into a raffle to win one of two $50 gift cards. The institutional review board approved all procedures. The mean age was 26.8 (SD=9.4), which is typical of samples drawn from this urban-centered commuter school. The racial/ethnic breakdown was as follows: 65.2% White, 9.6% Asian American, 7.0% Latino/Hispanic, 6.3% Multi-Racial, 3.7% Black, 0.04% each Middle-Eastern, Native American, and Pacific Islander/Native Hawaiian, and 7.0% did not indicate race/ethnicity. 14.8% had completed <1 year of college, 43.7% 1-3^{+} years of college, 22.6% Bachelor's Degree, 9.6% Master's Degree, 5.6% Professional Degree, and 3.7% did not indicate level of education. 21.5% majored or are majoring in Psychology. 75.9% of participants self-reported some previous experience with psychological difficulties. 36.7% self-reported having experiences with social anxiety, 47.8% generalized anxiety, and 65.6% depression.

Measures

Nine vignettes matched for length (*M*=173 words), content, and detail were created. Each described a scenario and emotional reaction, brief demographic information, and cognitive, behavioral, and physiological symptoms. Vignettes depicted mild/subclinical, moderate, and severe cases of SoAD, GAD, and MDD. Two expert raters trained in the Anxiety Disorders Interview Schedule (ADIS; Brown et al., 1994) reached consensus[2] on diagnosis and Clinician's Severity Rating (CSR) scores based on each vignette. CSRs are 0-8 ratings that accompany each diagnosis to indicate the level of impairment. A CSR of 4 is considered

[1]Self-reported experience with psychological disorders was assessed with the following question: "Have you (or anyone close to you) ever had a psychological or emotional difficulty?"

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clinically significant and in need of treatment. Ratings resulted in one mild/subclinical (CSR of 2), one moderate (CSR of 4), and one severe (CSR of 6) case for each of the three disorder classes. To control for gender, approximately half of the participants viewed an alternate version of each vignette, with the gender of the individual in the vignette switched.

Participants rated the severity of each vignette and were told that they would be making ratings on a scale from 0 to 8 and that, "This scale can be thought of as a continuum that contains healthy behaviors on one end and problematic behaviors on the other. This scale is meant to capture the full spectrum of human behavior. Trained clinicians consider cases of 4 and above to be clinically significant (warranting professional treatment)."

Procedure

Participants completed this study via an online survey. They rated the severity of the nine vignettes in pseudo-randomized order, and then completed a detailed demographics questionnaire, including a question asking whether or not participants (or anyone their lives) ever had a psychological or emotional difficulty.

Results

This study utilized a 3 (*Diagnosis*: SoAD, GAD, MDD) x 3 (*Severity*: mild/subclinical, moderate, severe) within-subjects factorial design. One-sample T-Tests were conducted to compare difference scores (between participants' and the assessment team's ratings of severity) for each vignette to 0 (a perfect match). All means (see Tables 1 and 2 for mean participant severity ratings and mean difference scores, respectively) were significantly different from 0 (all *p*'s < .02), except for SoAD severe ($p = 0.80$), indicating that there were differences in the ratings given by participants and the assessment team. One-way ANOVAs revealed significant differences between the original and gender-flipped vignettes for three vignettes: mild/subclinical MDD [$F(1,268)=5.01$, $Mse=1.91$, $p=0.03$], mild/subclinical GAD [$F(1,268)=4.32$, $Mse=1.31$, $p=0.04$], and severe GAD [$F(1,268)=7.38$, $Mse=2.11$, $p=0.01$], indicating that mild/subclinical MDD was rated higher when displaying a man while mild/subclinical and severe GAD were rated lower when displaying a woman.

A 3 (*Diagnosis*: SoAD, GAD, MDD) x 3 (*Severity*: mild/subclinical, moderate, severe) within-groups factorial ANOVA controlling for vignette gender type (original vs. gender-flipped) with follow-up analyses using the LSD procedure ($p=0.05$) was performed to examine the effects of *Diagnosis* and *Severity* with respect to difference ratings. There was a main effect of *Diagnosis* [$F(2, 536)=35.26$, $Mse=1.24$, $p<0.001$].

To further examine the pattern of differences, Fischer's Least Significant Difference test (LSD; see Williams & Abdi, 2010) was used. The LSD minimum mean difference

[2]Vignettes were originally developed by the 1st author. They were edited by the 3rd author, a licensed clinical psychologist, trained in administration and supervision of ADIS assessments. Vignettes were then sent to a trained ADIS assessor blind to all aspects of the study. ADIS training is extensive and consists of watching a series of ADIS assessments then matching a trained assessor on the CSRs of three ADIS's. Assessors in this study were clinical psychology doctoral students who were actively administering ADIS's under supervision of the 3rd author. Vignettes were given in random order and the assessor was asked to provide a diagnosis and associated CSR for each. Edits were made on vignettes until consensus was reached. Then, two new blind assessors (the experts referenced in text) individually rated these final vignettes. Agreement was successful on the final 9 vignettes.

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represents the smallest difference between main effects or cells that would be considered statistically significant at alpha = 0.05. Therefore, any differences greater than the LSD value are considered significant differences (at $p < 0.05$). The LSD for the main effect of diagnosis was 0.11. Therefore, because the difference was greater than 0.11, MDD ($M=0.71$) was significantly higher than our assessor ratings for both SoAD ($M=-0.74$) and GAD ($M=-0.68$). GAD and SoAD ratings were not significantly different from each other, as the 0.06 difference between SoAD and GAD is less than the LSD value of 0.11.

There was a main effect of *Symptom Severity* [$F(2, 536)=9.44$, *Mse=1.93*, *p<.001*]. For the main effect of severity, the LSD was 0.14. Based on this LSD, across all disorder classes, severe cases ($M=0.21$) were rated higher than moderate cases($M=-0.23$), which were then higher than mild/subclinical cases ($M=-0.68$).

These main effects were qualified by an interaction of *Diagnosis* and *Symptom Severity* [$F(4, 1072)=13.70$, *Mse=1.13*, *p<0.001*] with LSD minimum mean difference of 0.18 for all interactions. Based on this LSD, for SoAD, while both the mild/subclinical ($M=-1.37$) and moderate ($M=-0.87$) were under-rated, mild/subclinical was under-rated more than moderate and both mild/subclinical and moderate were significantly lower than severe ($M=0.02$). For GAD, all three severities were under-rated, with mild/subclinical ($M=-1.19$) being under-rated significantly more than severe ($M=-0.63$), which was under-rated significantly more than moderate ($M=-0.20$). Contrary to the findings for SoAD and GAD, participants rated all MDD severities higher than assessor ratings. Severe ($M=1.23$) was over-rated significantly more than mild/subclinical ($M=0.53$) and moderate ($M=0.36$), which were not significantly different from each other.

We performed additional analyses to investigate effects of participant gender, racial/ethnic minority status, self-reported experience with psychological disorders, and Psychology major. Gender interacted significantly with the main effect of *Diagnosis* ($F(2, 518)=3.88$, *Mse*=1.22, *p=0.02*; see table 3), with women underrating SoAD ($M_{\text{women}}=-0.78$; $M_{\text{men}}=-0.55$) and GAD ($M_{\text{women}}=-0.73$; M_{men} −0.39) to a greater extent than men, though ratings were similar for MDD (M_{women} =0.73; M_{men} 0.71). Due to relatively few individuals from each racial or ethnic minority group, we compared those with and without a racial/ethnic minority status. We found that minority status interacted significantly with the main effect of *Symptom Severity* ($F(2, 496)=3.37$, *Mse*=1.83, *p<0.04*; see table 4), with non-minority participants underrating mild/subclinical ($M_{\text{non-minority}}=-0.74$; $M_{\text{minority}}=-0.57$) and moderate cases ($M_{\text{non-minority}}=-0.30$; $M_{\text{minority}}=0.00$) more than minority participants. Non-minority participants overrated severe cases slightly more than minority participants ($M_{\text{non-minority}}=0.28$; $M_{\text{minority}}=0.18$). Self-reported experience with psychological difficulties interacted significantly with the main effect of *Symptom Severity* ($F(2, 504)=5.32$, *Mse*=1.92, *p<0.01*; see table 4) as those with experience underrated mild/subclinical ($M_{\text{experience}}=-0.74$; $M_{\text{no experience}}=-0.44$) and moderate cases ($M_{\text{experience}}=-0.29$; $M_{\text{no experience}}=-0.11$) more than those without experience and overrated severe cases more than those without experience ($M_{\text{experience}}=0.27$; $M_{\text{no experience}}=0.01$). Majoring in psychology significantly moderated the main effect of *Symptom Severity* ($F(2, 514)=3.25$, *Mse*=1.92, *p<0.04*; see table 4) with psychology majors underrating mild/subclinical cases ($M_{\text{psychology}}=-0.76$; $M_{\text{non-psychology}}=-0.64$) and overrating severe cases ($M_{\text{psychology}}=0.45$;

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$M_{non\text{-}psychology}$=0.15) more than non-psychology majors; ratings for moderate cases were similar ($M_{psychology}$=−0.19; $M_{non\text{-}psychology}$=−0.25). Given that there were differences on these factors, we ran another 3 (*Diagnosis*: SoAD, GAD, MDD) x 3 (*Severity*: mild/subclinical, moderate, severe) within-groups factorial ANOVA including participant gender, minority status, self-reported experience, and major as covariates. The same pattern emerged with and without these covariates.

Discussion

In an effort to learn more about delays in treatment seeking associated with anxiety disorders, we conducted this study to investigate potential differences in beliefs regarding symptoms of SoAD, GAD, and MDD. We hypothesized that people are not as adept at recognizing the distress associated with anxiety disorders (SoAD and GAD), as opposed to MDD, which may lead to people suffering instead of pursuing professional assistance.

Participants perceived mild/subclinical and moderate cases of SoAD to be significantly less severe compared to our assessors' ratings. To our knowledge, this is the first study in the area of mental health literacy for anxiety disorders to employ dimensional measures to operationalize recognition, as well as the first to test cases along a spectrum using materials rated by expert assessors. Interestingly, there was no difference between our participants' and experts' ratings for the severe SoAD cases. Using these realistic, yet artificial vignettes, we provide evidence that people do have the ability to identify the impairment and distress associated with SoAD symptoms, but only once symptoms are more severe. This novel finding suggests that potential public awareness campaigns used to bolster mental health literacy might need to be sensitive to more subtle, though serious, expressions of psychological symptoms, that are commonly normalized. Importantly, the mild/subclinical cases are, by definition, below the threshold for clinical significance and not "disorders" so the underrating is not necessarily problematic for those cases. It is, however, important to be mindful of sub-threshold symptoms, as they have been suggested to serve as risk factors for the development of other disorders (Fehm et al., 2008; Weiller et al., 1996) and have even been described as "intermediate preclinical" cases (Filho et al., 2010) due to increased disability and prevalence with other psychological disorders, compared to controls. Nevertheless, it is interesting to notice that with increased severity, there is less underrating.

Underrating of the moderate cases is concerning because if the symptoms are not recognized, they may be at risk to worsen over time, manifesting into more complicated presentations (Fehm et al., 2008). This manifestation is complicated further, given evidence that people with more severe SoAD are less inclined to seek treatment (Meltzer et al., 2000) and remain more impaired upon completing treatment (Hope et al., 1995). Recognizing moderate cases earlier could help people to reach therapy sooner, spend less time suffering, and complete treatment with less impairing symptoms. While we conceptualized recognition as the relative difference between experts who are trained in the CSR scale and lay people with only a brief introduction to it, future work should consider other methods of operationalizing recognition in both personal behaviors and those of others.

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A larger sample of experts would allow for greater confidence in the ratings, though great care went into crafting the vignettes and reaching agreement. Regardless of the number of raters, there is variability associated with CSR ratings, though CSRs have been shown to be reliable (see Grisham et al., 2004). Future work could replicate the current findings by asking experts and lay people to provide descriptive labels (e.g. no impairment, subclinical/mild, moderate, severe) to the vignettes to circumvent the variability in the exact CSR and allow for better agreement on the categorical description of the symptoms.

Also, while these vignettes were realistic and detailed, they described prototypical cases of SoAD, GAD, or MDD and did not account for the comorbidity common in anxiety and mood disorders (Kessler, 2005a-b). Therefore, future work will need to broadly target recognition of mental distress, transdiagnostically, rather than for disorder-specific symptoms.

For GAD, there was a significant underrating at all severity levels. People with GAD suffer a chronic, unremitting course and many do not recognize their distress as psychological in nature (Wittchen et al., 2002) often seeking treatment for health-related worries but not worry itself (Thompson, et al., 2008). In fact, non-comorbid GAD is associated with an extremely low rate of treatment seeking, much lower than comorbid GAD (Wittchen et al., 1994). Patients with non-comorbid GAD may not recognize their worrying as part of a psychological problem or view it as severe enough for treatment until problems progress and other problems manifest (Kessler et al., 2001). As with SoAD, efforts should be focused on increasing the recognition of impairing GAD symptoms prior to becoming more severe and complicated.

A different pattern emerged for MDD, as all three severities were significantly overrated. It is possible that efforts to raise awareness for MDD (Paykel et al., 1998) have been effective and have educated the population about the distress and suffering caused by MDD across the spectrum of distress. While it appears that under-recognition of MDD symptoms was not a problem in the current study, the consistent overrating across severity levels may be related to other complications, such as unnecessary prescriptions of psychotropic medications (Bell, et al., 1999; Robinson et al., 2004).

This study is only the first step in a line of work aimed at elucidating mental health literacy. We used written vignettes which, while detailed, were brief and do not allow for probing of additional information. It also removes some of the emotional component inherent in judging your own, or a loved one’s potentially distressing behaviors. Future work should investigate mental health literacy utilizing more naturalistic methodologies. Additional work needs to be done to investigate the development, feasibility, and potential impact of mental health awareness initiatives. While it is critical to identify shortcomings of mental health literacy, research needs to also find ways to improve literacy. Public health awareness campaigns have shown great promise, but more cost-effective and perhaps smaller-scaled strategies should be considered (e.g. web-based trainings or local school interventions).

Some interesting patterns emerged when looking at the covariates in our model. First, the women in our sample underrated SoAD and GAD more than men. This is concerning given

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that women are at a greater risk of developing anxiety disorders (Kessler et al., 2005a), though it is consistent with evidence that women seek treatment for SoAD at a lower rate than men (Weinstock, 1998). Prior evidence suggests that women might be better at recognizing SoAD and GAD (Coles and Coleman, 2010). This could be an artifact of how recognition was operationalized in that study, as discussed earlier. Our sample contained mostly women; therefore a more representative sample including a balance of participant gender could help to draw stronger conclusions.

Second, non-minority participants underrated mild/subclinical and moderate cases, and overrated severe cases, more than minority participants. However, more fine-grained analyses are needed to separate the experiences of individuals from specific racial and ethnic backgrounds rather than artificially combining them as we have here. Future work should also investigate recognition differences in minority/non-minority samples while taking into account socio-economic status and access to higher education, as often, these variables are confounded with race and ethnicity. This may include providing vignettes that vary contextual details, such as: race, ethnicity, gender, sexual orientation, socio-economic status, and access to care to examine differences in literacy based on these clinical presentations. Additionally, another facet of health literacy involves ability to read, write and comprehend information (DeWalt et al., 2004; Nutbeam, 2000; Parker, 2000), so it is important to investigate ranges of educational backgrounds, particularly since higher education is linked to better health literacy (Hanchate et al., 2008).

Third, self-reported experience with psychological disorders was associated with underrating mild/subclinical and moderate and overrating severe cases, more than those without experience. We expected experience to *improve* recognition. It is possible that people experiencing these symptoms are normalizing their own symptoms, viewing symptoms as less severe and then in turn underrating the severity of those same symptoms in others. It is important to note that the operationalization of self-reported experience with psychological disorders used in the current study was crude in that there was only one general question asking about experience and thus, limits our findings in that area. Future work should also investigate specifics of experience (e.g. first-hand vs. witnessing).

Last, psychology majors appeared to be more polarized at the extremes, underrating mild/subclinical and overrating severe more than non-psychology majors. Perhaps psychology majors are more familiar with the language, therefore better able to pick up differences in the language, making their ratings more polarized. Importantly, the critical moderate cases did not appear to differ.

In conclusion, both SoAD and GAD were underrated on severity in our study, compared to expert raters. MDD, alternatively, was overrated on severity. Efforts should be made to educate the population about the impact of SoAD and GAD at earlier stages before they become more severe and complicated. Furthermore, though the pervasiveness and cost of anxiety disorders is well documented, many people are needlessly suffering for years, not realizing that their distress is treatable. People with anxiety disorders may normalize their symptoms and internalize anxiety as part of their personality. While normalization is an important consideration, particularly in reducing the stigma towards mental illness in our

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society, it may lead to poorer recognition of treatable distress. Untreated distress, in turn, may serve as a risk factor for further complications and poorer prognosis.

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Table 1

Means of Participants' Judgments of Severity

	Severity			
Diagnosis	**Mild/subclinical**	**Moderate**	**Severe**	**Total**
SoAD	0.63	3.13	6.02	3.26
GAD	0.81	3.79	5.37	3.32
MDD	2.53	4.36	7.23	4.71
Total	1.32	3.76	6.21	

Note: SoAD = Social Anxiety Disorder, GAD = Generalized Anxiety Disorder, MDD = Major Depressive Disorder;

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Table 2

Means of Difference Scores between Participants' and Expert Raters' Judgments of Severity

	Severity			
Diagnosis	**Mild/subclinical**	**Moderate**	**Severe**	**Total**
SoAD	−1.37$^{\alpha}$	−0.87$^{\beta}$	0.02$^{\gamma}$	−0.74
GAD	−119$^{\alpha}$	−0.20$^{\beta}$	−0.63$^{\upsilon}$	−0.68
MDD	0.53$^{\alpha}$	0.36$^{\alpha}$	1.23$^{\beta}$	0.71
Total	−0.68	−0.23	0.21	

Note: Positive values indicate over-rating by the participants; Negative values indicate under-rating. SoAD = Social Anxiety Disorder, GAD = Generalized Anxiety Disorder, MDD = Major Depressive Disorder, LSD = Least Significant Difference; Means in the same row sharing a common superscript are not statistically different (LSD=0.18)

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Table 3

Response Differences Based on Participant Gender

	Participant Gender	
Diagnosis	**Women (*n*=207)**	**Men (*n*=53)**
SoAD	−0.78	−0.55
GAD	−0.73	−0.39
MDD	0.73	0.71

Note: SoAD = Social Anxiety Disorder, GAD = Generalized Anxiety Disorder, MDD = Major Depressive Disorder

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Table 4

Response Differences Based on Racial/Ethnic Minority Status, Self-Reported Experience with Psychological Disorders, and Undergraduate Major

	Severity		
	Mild/subclinical	Moderate	Severe
Participant Minority Status			
Minority (*n*=74)	−0.57	0.00	0.18
White (*n*=177)	−0.74	−0.30	0.28
Participants' Self-Reported Experience with Psychological Disorders			
Reported Experience (*n*=205)	−0.74	−0.29	0.27
No Reported Experience (*n*=50)	−0.44	−0.11	0.01
Undergraduate Major			
Psychology (*n*=58)	−0.76	−0.19	0.45
Non-Psychology (*n*=202)	−0.64	−0.25	0.15