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ORIGINAL ARTICLE

Stigma and behavioral health literacy among individuals with proximity to mental health or substance use conditions

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ABSTRACT

Background: Stigma reduction has been identified as a key public health strategy to increase enrollment in behavioral health services. As our understanding about stigma reduction has become more sophisticated, there has been an increased recognition that efforts to reduce stigma must engage the complex relationships between stigma, literacy, and contact with others who have a behavioral health condition.

Aims: The goal of this project was to improve understanding about the relationships between behavioral health literacy, stigma, and contact to inform efforts to increase public behavioral health literacy and decrease stigma. Specifically, this project explored how the structure of these relationships varied for different substance use and mental health conditions.

Method: Structural equation modeling was used to depict relationships with data from a nationally-representative survey on behavioral health literacy and stigma.

Results: The impact of prior contact and literacy on stigma varied by behavioral health condition.

Conclusions: Stigma reduction efforts will be most successful when they match the level of literacy and prior contact with the condition among the target audience for stigma reduction efforts.

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Stigma; health literacy; mental health; substance use disorder

Introduction

The 1999 call by the United States Public Health Service (1999) for increased attention to behavioral health literacy has been heard by a wide range of scholars, government agencies, and non-profit actors. General definitions of the concept of behavioral or mental health literacy have been developed and refined (Mendenhall & Frauenholtz, 2015). More recently, additional nuance has been added to understanding the complex interactions between individuals' knowledge of conditions, treatment-seeking behavior, and behavioral health literacy (Georgakakou-Koutsonikou & Williams, 2017). Recent work has also begun to more fully investigate the relationship between mental health literacy and stigma (Corrigan, Bink, Fokuo, & Schmidt, 2015; O'Keeffe et al., 2016), and between stigma and treatment-seeking behavior (Barry, McGinty, Pescosolido, & Goldman, 2014).

Stigma has been central to a broad and wide-ranging literature since the work of sociologist Erving Goffman (1986) and early social psychologist Shirely Star (Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999). Nuanced elaborations of the elements of stigma, and how the characteristics of stereotype, internal stigma, associative stigma, attitudes, and community stigma relate have been elaborated and verified through multiple national studies (Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012; Clement et al., 2015; Pescosolido & Martin, 2015). Broad conclusions from these and other studies suggest that felt stigma is associated with lower rates of treatment seeking, both when the felt stigma is internalized by the diagnosed individual (Gronholm, Henderson, Deb, & Thornicroft, 2017) and when stigma is felt toward treatment enrollment (Polaha, Williams, Heflinger, & Studts, 2015).

The impact of the relationship between stigma and contact with family members or close friends who have received a diagnosis of mental health disorder on subsequent treatment enrollment and attitudes about treatment is a key area of current and future study (Martin, Pescosolido, Olafsdottir, & McLeod, 2007; Mukolo, Heflinger, & Wallston, 2010; Mendenhall & Frauenholtz, 2015; Parcesepe & Cabassa, 2013). In particular, recent work by Angermeyer, Holzinger, Carta, and Schomerus (2011) has shown the potentially paradoxical relationship of close proximity and increased knowledge of behavioral health conditions producing higher levels of stigma (Angermeyer et al., 2011). Thus, an examination of how contact with individuals experiencing a given behavioral health condition relates to both behavioral health literacy and stigma can add to our understanding of the relationship between contact with individuals with diagnosed conditions, stigma, and treatment-seeking support and encouragement. Our work attempts to add nuance to this understanding by focusing on the relationship between stigma and multiple types of behavioral health literacy, as defined by Jorm, Barney, Christensen,

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Highet, Kelly, and Kitchener (2006), across four different behavioral health conditions. The primary question being investigated is how stigma relates to behavioral health literacy, with the hypothesis that there will be different associations for individuals with or without prior contact with individuals who had received the diagnosis depicted in the vignette. It is also theorized that this relationship will vary among behavioral health conditions. The results of this work have implications for health literacy and stigma-reduction campaigns aimed at increasing positive support and encouragement for treatment-seeking behavior.

Theoretical framework

Contact theory was initially developed to explain how interactions across races could lead to improved understanding and compassion. Initially articulated by Gordon Allport in 1954, this concept has continued to be applied and extended by sociologists, who have looked at the effectiveness of intergroup contact improving relations between races, socioeconomic classes, political groups, and among individuals with medical conditions (Couture & Penn, 2003). As this theoretical model of human interaction has been extended to behavioral health and behavioral health literacy, it has undergone changes and adjustments to the theoretical underpinnings that reflect the complex types of learning and attitudinal change that might occur due to proximity to a behavioral health condition.

Contact has been offered as a strategy for remediating or reducing stigma associated with behavioral health conditions, symptoms and treatment (Couture & Penn, 2003). After completing a meta-analysis of over 500 studies, Gronholm et al. (2017) conclude that "contact can diminish prejudice through resulting anxiety about contact, and increased empathy and perspective taking" (p. 254). In addition to these general positive outcomes among adults, Pescosolido and Martin (2015) have found that among adolescents, as knowledge increases there is an associated decrease in stigma. Individuals, especially family members or close friends, with diagnosed behavioral conditions are not likely to be experienced or categorized as the other in the same manner that the contact theorists have conceptualized inter-group relationships.

The main distinction as we see it between other applications of contact theory and its use in behavioral health is that the person with a diagnosis is not part of a social group defined as "the other" when they receive a medical diagnosis. The diagnosis is "the other," unlike the original conceptualization by Allport (1954), where the people-group being reflected by the individual functions as the unknown social gulf to overcome. The process of receiving a diagnosis, and then becoming an "other," is the process that underlies stigma between individuals that have relationships prior to the diagnosis. In this process, knowledge about the disorder has been found to be related to higher levels of stigma (Pescosolido, 2016).

To contribute to our understanding of the relationships between stigma, behavioral health knowledge and contact, this paper attempts to further clarify the nature of these interactions. Unlike prior research that has focused on how contact with an individual can shift attitudes, our work focuses on how stigma is shaped by both contact and behavioral health literacy across groups with different degrees of self-reported contact, across four behavioral health conditions, two associated with mental health and two associated with substance use. In the methodology described below, we asked questions that allow us to characterize respondents' capacity to accurately evaluate a vignette portraying a given behavioral health condition, the associated treatment pathways and likelihood for recovery.

Substance use disorders, specifically alcohol abuse and drug use, have consistently held higher levels of stigma and perceptions of personal responsibility than mental health conditions (McGinty, Goldman, Pescosolido, & Barry, 2015; Pescosolido, 2016). In our review, we were unable to locate research that compared among substance use and mental health outcomes to identify distinctions in how behavioral health literacy and stigma interact differ for individuals with or without close relationships with individuals reporting a diagnosed behavioral health condition. The focus of the analysis is on how involvement by family members or close friends with the conditions of alcohol abuse, depression, general anxiety disorder, and prescription drug abuse may impact the behavioral health literacy levels of respondents while controlling for stigma.

Methods

In this analysis, we are testing three hypotheses: (1) Prior contact with individuals who have experienced a specific mental health or substance abuse condition will result in less strong expressions of stigma, and (2) The effect of contact on stigma will be mediated by literacy about a specific mental health or substance abuse condition, and (3) The relationships between prior contact, literacy, and stigma will differ by type of behavioral health condition.

Data collection

The behavioral health literacy survey of the Community Assessment and Education to Promote Behavioral Health Planning and Evaluation (CAPE) project sought to produce a nationally representative survey (based on age, gender, and income) on behavioral health literacy, with an oversample of rural communities and a focus across multiple behavioral health conditions and outcomes. The research project and design received ethical review from the Michigan State University Institutional Review Board (application #i046841) and were found be exempt under category 2 (research involves standard survey procedures without any applicable exclusions). Participants were informed of the purpose and use of the data gathered in the survey and provided an affirmation of informed consent by selecting an "I consent" box before beginning the survey.

The CAPE behavioral health literacy survey was delivered as a web-based survey with a total sample of $N = 4399$.

Sampling was designed to produce 500 respondents per each of the behavioral health conditions, with an oversample in counties defined as rural by the 2013 USDA Rural Urban Continuum Codes. To enable additional analysis unrelated to this paper, the depression survey vignette ($N = 2514$) had a larger sample than the alcohol ($N = 626$), prescription drug use ($N = 631$), or anxiety vignettes ($N = 628$). Each survey presented the respondent with a vignette that described an individual with symptoms/behaviors associated with one of four behavioral health topics: alcohol abuse, depression, general anxiety disorder, and prescription drug abuse. Sampling was completed by Survey Sample International (SSI) and was comprised of opt-in respondents who received nominal payment for their participation in the survey. SSI was instructed by the research team to produce a data set representative of the age, gender, and income distributions of the United States population. Additional weighting was completed by the research team to ensure representativeness when compared to current national demographic estimates about age, gender, and income distributions. All respondents were above the age of 18.

Using the definition by Jorm et al. (2006), the survey utilized a subset of their 5-element definition of behavioral health literacy: (1) the ability to recognize a mental disorder; (2) knowledge about risk factors and causes of the disorder; (3) knowledge and beliefs about help sources; (4) attitudes toward help-seeking; and (5) knowledge of how to seek mental health information (see also Munson, Narendorf, & McMillen, 2011). A single vignette was presented to each respondent, and questions were asked that examine or measure the first four elements listed above. The purpose of this paper to explore the relationship between proximity to a family member or close friend with a mental health or substance use disorder and three characteristics of behavioral health literacy, specifically numbers 1, 3, and 5 of the Jorm et al. (2006) definition.

Respondents were provided with a vignette associated with one of the four conditions. After reading the vignette, they were asked a series of questions in which they were asked to diagnose the condition of the individual portrayed in the vignette, make recommendations about treatment seeking behaviors for the condition, answer a series of questions measuring personal stigma. After answering these sets of questions, respondents were given the name of the disorder depicted in the vignette and asked if they had personal connections or contacts with this disorder. As the disorder was not identified by the interviewer until the survey was nearly completed, we are confident that no bias associated with condition stigma was inserted into the responses evaluating behavioral health literacy.

Example vignette – depression

> Michael is 30 years old. He has been feeling unusually sad and miserable for the last few weeks. Even though he is tired all the time, he has trouble sleeping nearly every night. Michael doesn't feel like eating and has lost weight. He can't keep his mind on his work and puts off making decisions. Even day-to-day tasks seem too much for him. This has come to the attention of his boss, who is concerned about Michael's lowered productivity.

Data analysis

Raw data was processed to ensure conceptual and mathematical consistency before beginning analysis. For example, the series of stigma questions were originally asked on a five-point strongly agree to strongly disagree scale, with respondents also being given the option of don't know. This scale was collapsed into an agree (combined strongly and agree), a disagree (combined strongly and disagree) and a neither/don't know option (NA for the purposes of factor analysis). The literacy indicators are a series of yes/no questions focused on knowledge and beliefs about risk factors for the specific condition and appropriate treatment for specific conditions. A literacy index was constructed out of these 40 indicators by assigning one point to each correct "yes" answer, and then summing the points for each respondent. In addition to testing for various structural relationships between contact, literacy and stigma variables and factors, several exogenous covariates (control variables) often associated with health literacy and stigma were

Table 1. Variables used in SEM parameterization and model testing.

Variable name and description	Data type	Range/categories
Covariates		
Gender	Binary	Male/female
Age	Ordinal	18–34, 35–54, 55+
Education	Ordinal	High school or less, Some college, BA/BS, Graduate
Predictor variables		
Contact – Anyone in your family or a close friend had this condition	Binary	Yes/No
Personal experience – Have you had this condition	Binary	Yes/No
Mediating variables		
Literacy – Sum of correct yes answers for treatment	Index	0–8/12 (differs by condition)
Diagnosis – What is wrong based on vignette?	Binary	Yes/No
Stigma indicators		
B – If I had the condition I would not tell anyone	Binary	Agree/Disagree
C – People with the condition could snap out of it	Binary	Agree/Disagree
D – Condition is a sign of personal weakness	Binary	Agree/Disagree
E – Condition is not a real medical illness	Binary	Agree/Disagree
F – Best to avoid people with the condition so you don't develop it	Binary	Agree/Disagree
G – People with the condition are unpredictable	Binary	Agree/Disagree
H – I would not employ someone if they currently had the condition	Binary	Agree/Disagree
I – I would not vote for someone if I knew they currently had the condition	Binary	Agree/Disagree
J – I would not employ someone if they had condition in the past	Binary	Agree/Disagree

included in initial models, including gender, age and education. The full set of variables included in initial model parameterization are included in Table 1.

To test the first and second hypotheses listed above, (1) that prior contact with an individual with a behavioral health condition will impact stigma and (2) that literacy will mediate that impact, we used exploratory factor analysis to identify underlying types of stigma expressed by survey respondents through their responses to specific stigma questions. For the purposes of factor analysis, all responses to the stigma questions were binary (agree/disagree) answers, and so we first calculated polychoric correlation matrices for the full set of stigma indicators. These correlation matrices were then used for explore how many factors best fit the set of indicators and whether those factors were correlated. We used an oblimin rotation, to test the assumption that if there was more than one stigma factor present then those factors would covary, and a maximum likelihood estimator. All analyses were done using the polycor (Fox, 2016) and psych (Revelle, 2018) packages in RStudio (RStudio Team, 2016).

Upon the completion of the exploratory factor analysis, structural equation modeling (SEM) was used to explore the full relationships between prior contact with an individual, literacy about a given condition, and expressed stigma about that condition. All SEM analysis was done using the lavaan package (Rosseel, 2012), which makes many of the decisions about estimators and correlation/covariance based on the data types. The models thus used a combination of polychoric and polyserial correlation matrices, and a diagonal weighted least squares (DWLS) estimator. All parameters were freely estimated. Missing values were removed in listwise fashion. To determine the best fitting and most parsimonious model for each behavioral health issue, we use and report two fit statistics: the root mean squared error of approximation (RMSEA) and the standardized root mean square residual (SRMR). In accordance with the scientific literature, models are considered to be a good fit if the RMSEA is less than .05 (MacCallum, Browne, & Sugawara, 1996) and if the SRMR is less than .08 (Hu & Bentler, 1999). Because the RMSEA of the null model was also low, we do not report any incremental fit statistics.

Results

Factor analysis results

Based upon the literature as overviewed above, the expectation was for the 12 stigma indicators to collapse into three basic factors, reflecting anticipated stigma, stigma endorsement, and treatment stigma. It was also hypothesized that different vignette topics would produce different factors loadings by specific indicators, as is in line with prior research on stigma associated with mental health disorders as compared to stigma associated with substance use disorders (Corrigan et al., 2016; Krendl & Freeman, 2017; McGinty, Goldman, Pescosolido, & Barry, 2015). Factor analysis was used to first explore whether these three theoretically constructed factors did in fact emerge at all, and whether the indicators load consistently across all behavioral health content areas. In contrast to the expectation that there would be three stigma factors and that factor structure would differ by topic, all topics demonstrated a two-factor solution. After a reduction of the 12 initial stigma indicators, the final measurement models included nine indicators that load on two factors and are listed in Table 1. Factor loadings and model fit statistics for each topic demonstrate the consistency across topics (alcohol abuse, prescription drug abuse, anxiety, and depression). Because these were exploratory results meant as a first step in the SEM analysis process, we do not present full results of the factor analysis here but instead include factor loadings for stigma indicators in the SEM results below. The key result of the factor analysis is the reduction of total indicators from 12 to 9, and the finding that there are two stigma factors, not three, as postulated by our review of the literature.

SEM results

The results presented in Table 2 compare model fit statistics for a full model as compared to the parsimonious best-fitting model for each behavioral health condition. The full model includes: three exogenous covariates – age, gender, and education level – and two predictor variables, prior contact in one's personal life with an individual who has experienced the condition, and personal experience one's self with the condition. Two mediating variables, the literacy index and a binary yes/no indicator of whether the respondent correctly diagnosed the condition based on the vignette, were regressed on the exogenous variables. The two stigma factors were regressed on the mediating health literacy variables. The stigma factors were allowed to co-vary, as were the literacy index and diagnosis indicator. The parsimonious best-fitting model is presented in Figure 1 and Table 3, and includes only the included subset of the variables and relationships estimated in the full model. Table 2 demonstrates that the parsimonious model is a better fit for each of the conditions than the full model, and that the parsimonious model is a reasonable fit based on thresholds for both RMSEA and SRMR.

The purpose of this analysis is the identify the structural relationships between personal contact, literacy, and stigma, and to compare the strength and direction of these relationships across four behavioral health conditions. The goal of our SEM approach was therefore to identify a single, good-fitting

Table 2. Results of full SEM and parsimonious best-fitting SEM for each behavioral health condition.

	Full model with all covariates			Parsimonious best-fitting model		
	n size *df*	RMSEA *conf. int.*	SRMR	*n* size *df*	RMSEA *conf. int.*	SRMR
Alcohol	608 *85*	.042 *.034–.051*	.101	626 *50*	.031 *.018–.044*	.060
Drug	615 *85*	.034 *.024–.043*	.166	631 *50*	.043 *.032–.054*	.099
Anxiety	582 *85*	.047 *.038–.056*	.445	672 *50*	.030 *.015–.042*	.080
Depression	2315 *85*	.046 *.042–.050*	.207	2514 *50*	.045 *.040–.050*	.077

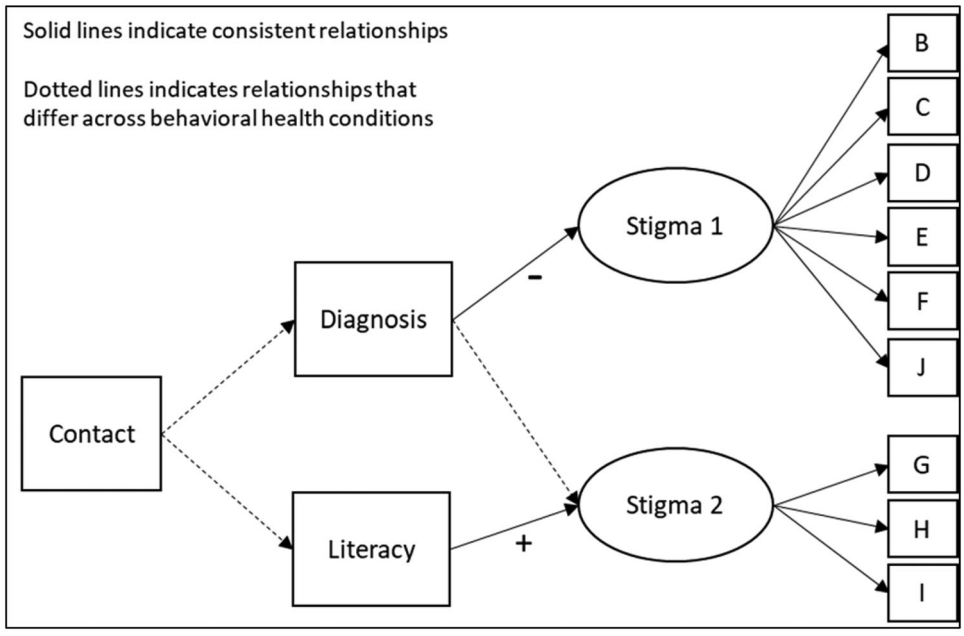

Figure 1. The parsimonious best-fitting SEM.

Table 3. Results of parsimonious best-fitting SEM for four behavioral health conditions.

	Alcohol	Drug	Anxiety	Depression
Measurement model results				
Condition stigma				
B – If I had the condition I would not tell anyone	.722	.680	.765	.749
C – People with the condition could snap out of it	.712***	.719***	.809***	.804***
D – Condition is a sign of personal weakness	.826***	.764***	.838***	.850***
E – Condition is not a real medical illness	.806***	.783***	.764***	.826***
F – Best to avoid people with the condition	.870***	.794***	.858***	.834***
J – Not employ if they had condition in the past	.889***	.762***	.848***	.836***
Social stigma				
G – People with the condition are unpredictable	.730	.751	.749	.742
H – Not employ if they had condition currently	.850***	.878***	.908***	.910***
I – Not vote if they had condition currently	.734***	.796***	.688***	.741***
Structural model results				
Contact→Literacy	.197***	.038	.175***	.197***
Contact→Diagnosis	.174**	−.120*	.086	.147***
Diagnosis→Condition stigma	−.297***	−.600***	−.511***	−.494***
Diagnosis→Social stigma	.201**	.059	−.324***	−.287***
Literacy→Social Stigma	.282***	.240***	.124**	.218***
Covariance Literacy and Diagnosis	.292***	.240***	.259***	.262***
Covariance Stigma 1 and Stigma 2	.837***	.897***	.970***	.874***

*.1, **.05, ***.01.

model for all four conditions and to compare the specific path coefficients among the models fit to each condition. Figure 1 depicts the parsimonious best-fitting model that was estimated for each condition (fit statistics for this model are presented in Table 2). Table 3 presents the results of the best-fitting model by condition, including measurement model estimates, standardized path coefficients, significance levels, and covariances. No parameters were fixed (other than the reference loading for the factors, for which there is no significance level included in the measurement model section of Table 3).

The results presented in Table 3 demonstrate many consistent relationships across the four behavioral health conditions as well as several relationships that vary in strength and/or direction. The relationship between Contact and Literacy is consistently positive across all four models but is not significant in the case of prescription drug use. The relationship between Contact and Diagnosis is significant and positive for alcohol and depression, significant and negative for prescription drug use, and non-significant for anxiety. The relationships between Contact and Stigma are mediated by Literacy and Diagnosis in largely consistent ways. Diagnosis is significantly and negatively related to Stigma 1, and the Literacy is significantly and positively related to Stigma 2 across all four behavioral health conditions. Diagnosis has a variable relationship with Stigma 2, however, showing a significant positive relationship in the case of alcohol, a non-significant relationship in the case of prescription drug use, and significant negative relationships in the cases of anxiety and depression. These results and in particular some of the differences across the regressions are analyzed in the discussion section.

Discussion

One of the unique opportunities of the CAPE survey is the ability to compare the relationships between stigma, behavioral health literacy, and contact across multiple categories of substance use disorders and types of mental illness. An advantage of SEM is the ability to compare the indirect and direct relationships among concepts, and thus understandings of the relationships between stigma, behavioral health literacy, and contact are enhanced by using this statistical approach. The results of the models are both consistent with the existing literature and provides additional nuance to our understanding of these relationships. This knowledge can help to continue with federal, state, and local efforts to improve perceptions of behavioral health conditions through multipronged approaches to address both literacy about conditions and to reduce stigma.

The results of this analysis suggest that different approaches may be needed across different topics within behavioral health. For alcohol use disorders, personal contact with an individual who has had an alcohol use disorder diagnosis demonstrates a positive relationship for literacy and accuracy in diagnosis. Accurate diagnosis, however, corresponded to a negative relationship with the stigma 1 factor. The stigma 1 factor is generally reflective of self-stigma indicators or negative perceptions of the diagnosis. The positive relationship with the stigma 2 factor, or the factor that reflects social stigma, is consistent with previous findings in the literature (McGinty et al., 2015; Pescosolido, Martin, Long, Medina, Phelan, & Link, 2010).

In light of the current crisis in the United States related to prescription drugs and opioid use disorders, the finding that relationships between the factors were less strong for prescription drug use disorders is important to note. One possible explanation for the lack of statistically meaningful relationships between contact and literacy, contact and diagnosis, and diagnosis and social stigma for prescription drug use disorders, is that there are simply less varied experiences among those who reported knowledge of an individual who had misused prescription drugs and those who did not.

Anxiety differed from depression and the substance use outcomes, specifically in a very weak relationship between contact and an accurate diagnosis. This finding may not be a surprise, as anxiety disorders have a smaller public presence than alcohol use, prescription drug use, or depression. As the vignettes asked for an accurate diagnosis, the more precise and specific indicators for anxiety may simply be less well known, even among those who report knowledge of someone with an anxiety disorder.

The depression model was consistent with the alcohol model except in there being a negative relationship between an accurate diagnosis and stigma 2, or social stigma. This finding is consistent with prior research that demonstrates a general sympathy for those with mental health diagnosis that is larger than general sympathy for those with a substance use disorder.

Overall, the models suggest that prior contact results in higher literacy and accuracy in being able to diagnosis the vignette condition correctly. Higher levels of literacy, depicted through accurate diagnosis, display a negative relationship with stigma about the condition. An accurate diagnosis displayed the most varied relationship with that of social stigma, as those who accurately diagnosed alcohol had a higher level of social stigma, whereas those who accurately diagnosed anxiety and depression had a lower level of stigma. This finding is again consistent with the literature.

Literacy showed a positive relationship with social stigma across all topics, but produced a non-statistically significant relationship with condition stigma, and produced a less well-fitting model. This finding suggests that the relationship between literacy and stigma is varied, when accounting for prior contact. This finding can inform efforts to engage in outreach among those who know someone with a given behavioral health condition, suggesting that literacy is not necessarily a universally applicable salve for mitgating stigma.

One key limitation to our study should be noted, and that is the likelihood that attitudes toward each behavioral health condition and associated stigma may be shaped by cultural context – in this case, the United States. Additional research could reproduce our study across multiple cultural settings, as a matter of examining how the relationships between behavioral health literacy, contact, and stigma may also be nested within cultural systems and national or regional value structures.

Conclusion

Efforts to decrease stigma associated with substance use disorders will be most effective when they can present information in a manner that accurately reflects the prior contact had by an individual with the given use disorder and their existing levels of literacy. Previous analyses have not been able to demonstrate the manner in which these concepts relate to each other, and to do so in comparative fashion across multiple substance use and mental health conditions. Our results suggest that the capacity of an individual to accurately diagnose a condition was the single largest source of variation in their expression of stigma, while also accounting for their existing levels of contact. Efforts to engage in stigma reduction based upon these results may benefit from study models that use prior contact as a sorting variable, building interventions and educational campaigns with content and learning models that vary both by level of literacy and level of prior contact with the given behavioral health condition.

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