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Do Healthcare Students Endorsing Stigma of Mental Illness Screen for Suicidal Ideation? An Evaluation of Knowledge, Attitudes, and Behaviors

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Do Healthcare Students Endorsing Stigma of Mental Illness Screen for Suicidal Ideation? An

Evaluation of Knowledge, Attitudes, and Behaviors

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In partial fulfillment

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by

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ABSTRACT

Do Healthcare Students Endorsing Stigma of Mental Illness Screen for Suicidal Ideation? An Evaluation of Knowledge, Attitudes, and Behaviors

by

Dannel K. Petgrave

The stigma of mental illness endorsed by healthcare professionals has been linked to adverse outcomes. This issue underscores the need for early anti-stigma interventions in the context of professional training. The present study measured stigma change and suicide screening behaviors among medical, nursing, and pharmacy students enrolled in an interprofessional Communication Skills for Healthcare Professionals course. The Mental Health Knowledge Schedule (MAKS; Evans-Lacko et al., 2010), Opening Minds Scale for Health Care Providers (OMS-HC; Modgill, Patten, Knaak, Kassam, & Szeto, 2014), and the Marlowe-Crowne Social Desirability Scale Form C (M-C SDS Form C; Reynolds, 1982) was administered at baseline (T_1), a mid-semester assessment (T_2), and post-intervention (T_3) to 176 students. Post-intervention changes in stigma components (knowledge, attitudes, and behavioral intent) were mixed for all groups. Knowledge, attitudes, and behavioral intent did not predict whether students screened for suicidal ideation ($p > .05$). Findings from the present study support past research indicating that the stigma can be improved with appropriate intervention. Findings also support interprofessional training as an appropriate context for anti-stigma interventions. Currently, there is no general consensus regarding the best method and combination of tools to measure stigma among healthcare students. Additionally, the relationship between stigma and screening for suicidal ideation is an important area for further scientific inquiry.

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CHAPTER 1

INTRODUCTION

Epidemiological estimates suggest that 26.2% of U.S. adults meet criteria for a *DSM-IV* disorder annually (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). Despite this high national prevalence and the public's relatively optimistic attitudes toward treatment outcomes for mental health (Hennessy, Green-Hennessy, & Marshall, 2012), most U.S. adults remain untreated or receive inadequate care (Wang, Lane, Olfson, Pincus, Wells, & Kessler, 2005). One explanation for this is the stigma of mental illness, which is a widely recognized barrier to accessing mental health care (Corrigan, 2004), and has also been reported to be a barrier to treatment and recovery (U.S. Department of Health & Human Services, 1999).

Many professional organizations have advocated for individuals living with mental illness and have worked toward reducing the stigma of mental illness (e.g., American Psychiatric Association, American Psychological Association, National Alliance on Mental Illness [NAMI], and Substance Abuse and Mental Health Services Administration [SAMSHA]) (Corrigan, Morris, Michaels, Rafacz, & Rusch, 2012; Pinot-Foltz & Logsdon, 2009). One example of this is NAMI's *In Our Own Voice* (IOOV), an anti-stigma program that utilizes trained speakers who share their personal story about living with mental illness. While IOOV is available in most U.S. states, few studies have empirically investigated its impact (e.g., Rusch, Kanter, Angelone, & Ridley, 2007; Wood & Wahl, 2006). Despite widespread efforts, stigma of mental illness remains to be common in the U.S. (Parcesepe & Cabassa, 2013). Due to limited progress in ameliorating the problem, a conservative estimate of 43.6 million U.S. adults (Center for Behavioral Health Statistics and Quality, 2015) remain vulnerable to myriad adverse effects associated with the stigma of mental illness, including inaccurate and negative stereotypes,

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prejudice, and discrimination (Corrigan, Druss, & Perlick, 2014; Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999; Michaels, Lopez, Rusch, & Corrigan, 2012; Monahan & Arnold, 1996; Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999; Phelan, Link, Stueve, & Pescosolido, 2000; Thornicroft, Brohan, Kassam, & Lewis-Holmes, 2008; Wahl, 1999).

Conceptualizations of Stigma

Stigma is a construct that is not easily defined and there is no universally accepted definition (Link, Yang, Phelan, & Collins, 2004). In Goffman's (1963) seminal work on stigma, it was viewed as a socially discredited attribute that precipitates unjustified treatment by others. Extant stigma models (e.g., Corrigan, 2004, 2005; Link & Phelan, 2001; Thornicroft, 2006) fundamentally conceptualize stigma as the interplay of cognitive (e.g., labeling, stereotyping, cognitive separating), affective (e.g., emotional reactions/prejudice), and behavioral components (e.g., social distance, status loss/discrimination) (Kassam, Papish, Modgill, & Patten, 2012; Link et al., 2004). Stigma components also include public stigma and self-stigma (Corrigan, 2004; Corrigan et al., 2014). Public stigma refers to the stereotypes, prejudice, and discrimination from the public whereas self-stigma refers to the internalization of public stigma (Corrigan, 2004; Corrigan et al., 2014; Corrigan et al., 2012; Michaels et al., 2012).

Public-stigma toward individuals with mental illness has implications for employment, income, public views about resource allocation, and healthcare costs (Corrigan, Edwards, Green, Diwan, & Penn, 2001; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Corrigan, Watson, Warpinski, & Gracia, 2004; Sharac, McCrone, Clement, & Thornicroft, 2010). One example of public stigma is the perception of a strong association between mental illness and violence. Despite improved definitions of mental illness over time, the public was 2.5 times more

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likely in 1996 to associate psychosis with violence compared to 1950 (Phelan et al., 2000). Furthermore, a nationwide survey of the public revealed that a wide range of mental illness symptoms were associated with violence and a desire for social distance (Link et al., 1999). The public's perception of individuals with mental illness, including their likelihood of violence, ability to make treatment decisions, and the need for coerced treatments may vary by the presentation of mental illness (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2005; Pescosolido et al., 1999). While the public has historically perceived a strong link between mental illness and violence, the empirical evidence has shown that violence is, at best, weakly associated with mental disorders (Monahan & Arnold, 1996). Interventions that target the attitudes and behaviors of the public are particularly important for further research as these negative attitudes and behaviors have been associated with self-stigma (Evans-Lacko, Brohan, Mojtabai, & Thornicroft, 2012).

The empirical literature is inundated with examples that underscore the harms of self-stigma. Self-stigma has been shown to negatively predict low self-esteem (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001) and help-seeking behaviors (Lannin, Vogel, Brenner, Abraham, & Heath, 2016). In one study, Rusch and colleagues (2014) concluded that shame, as an emotional proxy for self-stigma, and poor mental health literacy may be barriers to help-seeking. Self-stigma has also been shown to predict psychiatric hospitalization in patients with schizophrenia, schizoaffective, and affective disorders (Rusch et al., 2009). In a meta-analysis on psychosocial and psychiatric variables, Livingston and Boyd (2010) found that psychosocial variables (i.e., hope, empowerment, self-esteem, self-efficacy, quality of life, and social support) were negatively associated with self-stigma (rs ranged from -.28 to -.58). Regarding psychiatric variables, self-stigma was found to be positively associated with psychiatric symptom severity

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and inversely related to treatment adherence. Thus, the evidence shows that self-stigma is both harmful to individuals and unfavorably related to psychosocial and psychiatric variables.

The present study adopted the tripartite model's definition of stigma, which defines stigma as problems related to knowledge (ignorance), attitudes (prejudice), and behavior (discrimination) (Thornicroft Rose, Kassam, & Sartorius, 2007; Thornicroft, 2006; Thornicroft et al., 2008). Within this framework, the problem of attitudes is conceptualized as prejudice, which encompasses both stereotypes and emotional reactions, components that have been parceled out as separate components in prior stigma models (Kassam et al., 2012; Papish et al., 2013). As a result, the tripartite model has been described as a flexible model with stigma components that can be measured and targeted in research and intervention contexts (Kassam et al., 2012; Papish et al., 2013; Thornicroft, 2006). Thus, the tripartite model was selected for its parsimonious and pragmatic conceptualization that results in clearly defined and measurable targets for anti-stigma research and intervention.

Stigma of Mental Illness Endorsed by Healthcare Providers and Students

It is widely recognized that stigma of mental illness exists among the public; however, stigma endorsed by healthcare professionals may be even greater than the stigma endorsed by the public (Jorm, Korten, Jacomb, Christensen, & Henderson, 1999; Nordt, Rossler, & Lauber, 2006; Ross & Goldner, 2009; Schulze, 2007; Wahl, 1999). The stigma endorsed by healthcare professionals may result in delayed treatment seeking or treatment discontinuation, inadequate care for physical conditions, provider pessimism about recovery, and a decreased likelihood of receiving both a referral to specialty care and having prescriptions refilled (Corrigan et al., 2014; Jorm et al., 1999; Thornicroft, Rose, & Kassam, 2007; Thornicroft, Rose, & Mehta, 2010). In a

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review of 40 studies, Luoma, Martin, and Pearson (2002) found that 45% of individuals who die by suicide had contact with their primary care provider within the month of their death. While this finding underscores the need for routine screening, evidence suggests that screening for suicidal ideation is inconsistent among primary care physicians with one study showing suicide screening occurring in 36% of patients presenting with symptoms of depression (Feldman et al., 2007). One barrier to routine suicide screening is the belief that screening may engender suicidal ideation (Bajaj et al., 2008) despite evidence to the contrary (e.g., Crawford et al., 2011). Stigma of mental illness has negative implications for patient care and it is of utmost importance to intervene early in professional training when students are developing early impressions about mental health which will theoretically impact their practice as they enter their careers (Abbey et al., 2011).

Medical students are considered to be an important target for anti-stigma interventions, as these healthcare professionals have a particularly important role in providing accurate knowledge about mental health and modeling appropriate attitudes and behaviors (Abbey et al., 2011). The culture of medical school may predispose medical students to develop early negative attitudes and behaviors toward individuals with mental illness (Abbey et al., 2011; Korszun, Dinos, Ahmed, & Bhui, 2012; Thornicroft et al. 2010). Students may be exposed to misinformation about mental health and adopt negative attitudes and behaviors toward individuals with mental illness due to misinformation or modeling of inappropriate attitudes and behaviors from colleagues and peers (Abbey et al., 2011; Korszun, Dinos, Ahmed, & Bhui, 2012; Thornicroft et al., 2010).

Medical students are described as a high risk group for experiencing depression and suicidal ideation (Goldman, Shah, & Bernstein, 2015). In a study of 769 medical students,

Schwenk, Davis, and Wimsatt (2010) found that medical students with moderate to severe depression scores on the Patient Health Questionnaire reported greater stigma of mental illness than medical students with minimal to no depression scores. Preclinical medical students (i.e., first and second years) compared to clinical medical students (i.e., third and fourth years) were found to be more likely to have negative help-seeking attitudes and believe that the majority of people think medical students with depression would provide inferior treatment to their patients. Medical students with depression were also more likely to have negative help-seeking attitudes compared to medical students without depression. Additionally, male medical students were more likely than female medical students to believe that their peers would not want to work with a medical student with depression and that medical students with depression are dangerous to their patients.

These findings are concerning as research shows an inverse relationship between providers' comfort in utilizing mental health services and stigma (Corrigan et al., 2014). This is supported by a meta-analysis of 144 qualitative and quantitative studies that found a modest, but significant relationship ($d = -0.27$) between stigma and help-seeking (Clement et al., 2015). These findings are echoed in one study which showed that about one-third of medical students experiencing depression and burnout had sought help for an emotional or mental health problem in the last year (Dyrbye et al., 2015). The reluctance to seek treatment was also shown to be common among medical interns (Guille, Speller, Laff, Epperson, & Sen, 2010). Without interventions aimed at reducing stigma, these findings paint a bleak picture on the help-seeking behaviors of medical students.

Medical students with a personal mental illness experience (e.g., have sought treatment for a mental illness or have a close family member/friend with a mental illness) have been shown

to have less stigma than medical students without these experiences (Korszun et al., 2012). Similar findings have been documented in the nursing and pharmacy literature (Martensson, Jacobsson, & Engstrom, 2014; Volmer, Maesalu, & Bell, 2008). Korszun and colleagues (2012) also found that female medical students had less stigmatizing attitudes than male medical students, which is consistent with findings in the nursing literature (Chambers et al., 2010; Halter, 2004). In addition to the differences between female and male medical students, White medical students had less stigmatizing attitudes compared to Chinese and South Asian medical students. Together, these findings support the notion of gender and racial differences in stigma outcomes, which is consistent with findings from other studies (e.g., Clement et al., 2015; Rickles, Dube, McCarter, & Olshan, 2010; Schwenk et al., 2010). The authors concluded that individual differences, such as a student's background and culture, should be considered when developing anti-stigma interventions.

Stigma of mental illness is also a concern within the nursing profession (Fokuo et al., 2016). A literature review by Ross and Goldner (2009) revealed that nurses working in general medical settings commonly endorse negative attitudes, fear, and blame/hostility toward patients with mental illness. On the other hand, psychiatric nurses commonly endorsed pessimistic attitudes toward client prognosis and outcomes, as well as negative attitudes and discriminatory treatment toward patients with borderline personality disorder. In one sample of nursing students, it was shown that intended help-seeking behaviors were more likely among those who believed depression was not under personal control (Halter, 2004). This perspective implies that a mental health condition must be beyond one's ability to self-manage prior to seeking help and may be indicative of stigma and reluctance to seek help. A relative minority of studies have found mixed results in samples of nursing professionals. For example, Poreddi, Thimmaiah, Pashupu,

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Ramachandra, and Badamath (2014) found both positive and negative attitudes toward individuals with mental illness in a sample of 148 undergraduate nursing students. Given the paucity of optimistic findings for nursing professionals, the empirical evidence suggests that this is a population that is in high need of intervention to improve knowledge, attitudes, and behaviors toward individuals with mental illness, especially given their diverse roles on the healthcare team.

With the expanding roles of pharmacists on multi-disciplinary healthcare teams, the problems related to stigma of mental illness remain a critical issue (Rubio-Valera, Chen, & O'Reilly, 2014). An international study investigating stigma among pharmacy students in six countries found that negative attitudes toward individuals with schizophrenia and severe depression were common in all countries (Bell et al., 2008). While stigma was common, a follow-up study (Bell et al., 2010) of the same six countries found that perceived causes of social distance varied by each country. The authors concluded that pharmacy students may benefit from anti-stigma interventions that target the perceived causes of stigma. In one study, Rickles and colleagues (2010) found that community pharmacists were more willing to manage asthma than a mental illness. These community pharmacists also thought that they viewed individuals with schizophrenia less favorably than physicians did. This is concerning considering research showing that stigma toward individuals with schizophrenia predicted high levels of social distance (Volmer et al., 2008). The overall evidence suggests that individuals belonging to the profession of pharmacy are valid and important candidates for anti-stigma interventions. Additionally, extant research suggests that these students may benefit from interventions aimed at improving knowledge about mental illness and improving attitudes and behaviors toward individuals with a mental illness.

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Stigma Interventions

Given stigma's pervasiveness and adverse outcomes, strategies to decrease stigma have been of interest to advocates, researchers, educators, and clinicians. The vast majority of interventions designed to mitigate public stigma fall into the following categories: education, contact, and/or protest (Corrigan & Penn, 1999; Corrigan 2000, 2004; Corrigan & O'Shaughnessy, 2007; Stubbs, 2014). As healthcare professionals and students are not immune to stigma, it is important to fully understand the role of each of the following approaches to effectively intervene.

Education interventions emphasize the dissemination of accurate information about mental illness. Healthcare students may be exposed to misinformation about mental illness (Abbey et al., 2011; Korszun et al., 2012; Sartorius et al., 2010; Thornicroft et al., 2010) and providing accurate information may counteract inaccurately held stereotypes, beliefs, or assumptions about people with mental illness. Education interventions have the potential for widespread impact as they can be implemented in a variety of formats such as print media and electronic formats (Corrigan et al., 2012). Education is a commonly used intervention and in one study assessing the impact of 26 depression-specific programs in 18 European countries (Quinn et al., 2013), improving health literacy was found to be the most common program intervention.

Contact interventions emphasize direct (i.e., face-to-face) or indirect (e.g., video-based) interpersonal interaction between the target of the intervention and the member of the stigmatized group. The personal testimonies of service users have been described as a key ingredient for anti-stigma interventions (Pinfold, Thornicroft, Huxley, & Farmer, 2005).

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Corrigan and Kosyluk (2013) recommended that contacts be targeted, local, credible, and continuous.

Protest interventions emphasize the suppression of publicly stigmatizing messages. This approach targets both the media and the public by discouraging inaccurate portrayals of mental illness and the tendency for laypeople to believe these portrayals. Protest interventions have been criticized for their lack of empirical support (e.g., Michaels et al., 2014; Corrigan et al., 2001b; Corrigan et al., 2012; Griffiths, Carron-Arthur, Parsons, & Reid, 2014) and their potential to worsen stigma via a "rebound" effect (Macrae, Bodenhausen, Milne, & Jetten, 1994; Macrae, Bodenhausen, Milne, & Wheeler, 1996). This approach has also been criticized for its tendency to neglect promotion of positive messages and accurate information about mental illness (Corrigan, 2000; 2004).

Among these interventions, recent meta-analyses (Corrigan et al., 2012; Griffiths et al., 2014) have repeatedly demonstrated that education and contact interventions were the *only* interventions effective at reducing mental health-related stigma. Corrigan and colleagues (2012) found overall *Cohen's d* effect sizes of 0.29 and 0.28 for education and contact interventions, respectively, across outcome measures assessing attitudes, affect, and behavioral intentions as components of stigma. When randomized controlled trials were parceled out, a *Cohen's d* of 0.15 and 0.36 were found for education and contact interventions, respectively. While in-person and video-based contact interventions had an effect on overall outcomes, attitudes, and behavioral intentions, it was found that in-person contact had a greater effect ($d = 0.52$) than video-based contact ($d = 0.16$). In one study of 244 college students randomly assigned to videotaped education or videotaped contact interventions, it was found that the videotaped contact intervention showed improvement in a wider variety of outcome variables, suggesting that

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videotaped contact interventions may have broader effects than videotaped education interventions (Corrigan, Larson, Sells, Niessen, & Watson, 2007).

Results from Corrigan and colleagues' (2012) meta-analysis were supported in a second meta-analysis (Griffiths et al., 2014), concluding that education and contact-based interventions effectively reduce public stigma. Griffiths and colleagues (2014) investigated the effect of these interventions on the stigma associated with specific mental health disorders. Using both qualitative and quantitative studies, this meta-analysis showed that stigma interventions are effective for specific categories of mental disorders including depression and psychosis/schizophrenia. Education interventions alone were ineffective for reducing stigma associated with psychosis/schizophrenia and cognitive-behavioral interventions were ineffective for reducing stigma associated with all psychiatric disorders assessed, although the number of cognitive-behavioral studies was limited. Effect sizes detected ranged from small to medium for interventions across all mental disorders combined ($d = 0.28$), and for depression ($d = 0.36$), psychosis/schizophrenia ($d = 0.20$), and generic mental illness ($d = 0.30$). Educational interventions ($d = 0.33$) and interventions incorporating consumer contact ($d = 0.47$) successfully decreased public stigma; however, the standalone effects of consumer contact were not demonstrated due to an insufficient number of studies. In addressing public stigma, Internet programs were shown to be, at least, equivalent to face-to-face programs suggesting that they may be important methods of intervention delivery in the future.

Outcomes studies of healthcare staff, providers, and students have yielded optimistic findings (e.g., Clarke, Taylor, Bolderston, Lancaster, & Remington, 2015; Friedrich et al., 2013; Michaels et al., 2014; Thornicroft et al., 2016). While there is a paucity of outcome studies with nursing students, one study of 216 nursing students found that students randomized to contact

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interventions had improved attitudes and intended social proximity than a control group at post-intervention (Clement et al., 2012). Given the scarceness of outcome studies with nursing students, Fokuo and colleagues (2016) emphasized the need to develop interventions within the context of the nursing student curriculum.

Pharmacy students have been shown to respond positively to anti-stigma interventions. For example, brief interventions have been shown to improve mental health stigma, as well as depression and schizophrenia-related mental health knowledge among pharmacy students (Bamgbade, Ford, & Barner, 2016). An emergent literature continues to support the effectiveness of anti-stigma interventions with pharmacy students (e.g., Gable, Muhlstadt, & Celio, 2011; O'Reilly, Bell, & Chen, 2010; Patten et al., 2012), though research suggests that mental health lectures delivered by pharmacists and pharmacy placements in the community may not decrease stigma endorsed by pharmacy students (Bell, Johns, & Chen, 2006). This finding may warrant the need for more tailored interventions toward pharmacy students.

It is important to note that the long-term effectiveness of these interventions is not well understood (Stubbs, 2014). In the first systematic review of medium to long-term outcomes (4 weeks or longer), Mehta and colleagues (2015) found a median effect size of 0.54 for knowledge and -0.26 for stigmatizing attitudes. Thus, anti-stigma interventions had a modest long-term effect on knowledge and attitudinal outcomes. The authors concluded that the superiority of contact interventions to improve attitudes in the long-term was not supported, which indicates that contact interventions are only empirically supported in the short-term. As a result of the limited interventions to reduce public stigma in the long-term, there remains a high need for additional research on long-term stigma change.

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Of equal importance is the impact of anti-stigma interventions on real-world behavior. Anti-stigma outcome studies to date have measured behavioral outcomes using survey-based methods, which measure self-reported behavior and/or behavioral intent (e.g., social distance) as a proxy for discrimination (e.g., Modgill, Patten, Knaak, Kassam, & Szeto, 2014). While anti-stigma interventions have been shown to improve knowledge, attitudes, and behavioral intent in healthcare students, it remains relatively unknown if improvements in these domains predict changes in real-world behaviors.

Current Study

Recognizing the need to develop effective anti-stigma interventions for students in professional training, the focus of the present study was on the attitudes and behaviors of entry-level healthcare students (i.e., medicine, nursing, pharmacy, and psychology). Extant literature describes the context of interprofessional education to be an ideal setting to address stigma (e.g., Maranzan, 2016). These students take part in an interprofessional Communication Skills for Healthcare Professionals course at a mid-sized university in the southeastern region of the U.S., an area recognized as being in the Appalachian region. Students are placed into small groups of six to eight students, each led by one to two faculty instructors affiliated with the Colleges of Medicine, Nursing, Pharmacy, and the Department of Psychology.

The course does not require that students possess clinical or therapeutic knowledge. Instead, this course emphasizes patient-centered interviewing skills with the goals of understanding the patient's perspective, collecting information to inform diagnosis or recommendations, and reaching common ground with the patient regarding their perspective of their illness and acceptable recommendations. These goals are met using core skills taught in this

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course in the context of online modules: rapport building, agenda setting, information management, active listening, addressing feelings, common ground, ending the interview, and interprofessional communication. Students are also exposed to modules on communicating negative results with patients and health literacy.

The course has two major didactic components: informational and transformational instruction. Informational instruction emphasizes concepts, ideas, and the identification of skills. Students obtain this informational instruction via multiple weekly online modules. Upon completing each module, students completed a quiz demonstrating their knowledge of the concepts, ideas, and skills. Transformational instruction emphasizes how team members function, practice, and define their roles. At semi-weekly class meetings, students discussed topics related to team-based approaches and roles in a group discussion led by a faculty instructor. Students are provided a specific module on interprofessional communication, which emphasizes the roles of each profession in the healthcare team. These experiences are believed to help students develop a stronger professional identity and refine their awareness of their roles in healthcare. The semi-weekly class meetings include an opportunity for each student to practice skills learned from the modules, with trained actors known as standardized patients (SPs), following case scripts. Students are provided feedback from their peers, faculty member, and the SP to promote a team-based and co-learning environment. The course has two points of practice evaluation, with graded interactions with SPs enacting case scripts (OSCEs; Objective Structured Clinical Evaluations), at mid-semester and the end of the semester.

This course was not specifically designed as an anti-stigma intervention; however, it was expected to have anti-stigma elements embedded into the course structure. This course was designed to teach students basic communication skills to be competent healthcare providers with

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a secondary emphasis on communicating with professionals from other disciplines. Students are taught many skills including how to be an active listener, how to address patient's personal feelings, and how to find common ground with a patient. Students are also provided formal didactics on suicide screening and assessment with patients presenting with depression. Students then engage SPs in role-play to apply their skills and to develop competency. Given that this course is aimed at teaching healthcare students skills to engage patients presenting with a behavioral and non-behavioral health concerns, it is expected that this course will serve as an education-based intervention and that stigma in students will decrease throughout the course. Additionally, it was expected that the role-play with SPs would be similar to contact-based interventions and would positively impact stigma.

The structure of this course is consistent with the tripartite model of stigma (Thornicroft et al., 2008). Students are exposed to accurate mental health information in the didactics portion of the course and this information has been reviewed by faculty coordinators of the course and clinical psychology doctoral students. Students can check their mastery of content information via self-paced quizzes at the end of each module. Specific modules (e.g., "Addressing Feelings") aim to improve attitudes toward individuals with mental illness by emphasizing common barriers that healthcare students face in discussing patients' emotional experiences. Finally, role-plays with SPs provide students an opportunity to demonstrate skills emphasized in preceding modules (e.g., rapport building, active listening, addressing feelings) and allows students an opportunity to experience what it may feel like to be in closer contact with individuals presenting with behavioral health difficulties (e.g., depression).

Aims and Hypotheses

The present study had three aims. The first aim was to assess the effects of the course on students' knowledge, attitudes, and behavioral intent with regard to mental health issues. Our second aim was to assess the components of the tripartite model as predictors of whether students screen for suicidal ideation. Screening for suicidal ideation was emphasized given the important role that healthcare professionals have in identifying those at risk. Additionally, rates of screening for suicidal ideation are typically low in primary care settings (Feldman et al., 2007) and components of stigma, such as a lack of knowledge, may play a role in willingness to screen for suicidal ideation (Bajaj et al., 2008). The third aim was to assess if the components of the tripartite model predict whether students screen for suicidal ideation after controlling for the influence of additional variables (specifically, controlling for the influence of age, social desirability, gender, race, and personal experiences with mental illness).

The present study had three primary hypotheses that were closely linked to the aims. The first hypothesis was that medical, nursing, and pharmacy students would have improved knowledge, attitudes, and behavioral intent at the end of the course (T_3) compared to baseline (T_1). The second hypothesis was that knowledge, attitudes, and behavioral intent would predict whether students screen for suicidal ideation. The third hypothesis was that knowledge, attitudes, and behavioral intent would predict whether students screen for suicidal ideation after controlling for age, social desirability, gender, race, and personal experiences with mental illness.

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CHAPTER 2

METHOD

Participants

A nonprobability sample of healthcare students ($n = 181$) enrolled in an interprofessional course (Communication Skills for Healthcare Professionals) and their faculty instructors ($n = 23$) was used. Student participants included first-year medical students ($n = 71$), freshmen nursing students ($n = 31$), first-year pharmacy students ($n = 73$), and first-year clinical psychology doctoral students ($n = 5$). Faculty instructors were affiliated with the Colleges of Medicine ($n = 9$), Nursing ($n = 2$), Pharmacy ($n = 7$), and the Department of Psychology ($n = 2$). Three faculty instructors (13.00%) did not list their affiliated discipline. Due to the low sample size for psychology students and their likely prior exposure to topics related to mental health stigma, they were excluded from the analyses. This resulted in a final sample size of 176 students.

Demographic information for students is summarized in Table 1. The average student was 23.43 years old ($SD = 4.02$) and age ranged from 18 to 47 years old. Among students, a total of 95 participants (54.00%) were female and 81 were male (46.00%). The racial background of student participants was mostly homogenous: 154 students (87.50%) identified as White, 6 (3.40%) identified as Black, 13 (7.40%) identified as Asian, 2 (1.10%) identified as Multi-racial and 1 (0.60%) identified as Other. Due to the small sample size for faculty instructors, only demographic information for the overall sample is summarized for confidentiality purposes. To contextualize the findings of the present study, demographic information for faculty instructors is also summarized. The average faculty instructor was 42.37 years old ($SD = 12.91$) and age ranged from 26 to 68 years old. Among faculty instructors, a total of 15 participants (65.20%)

were female and 8 (34.80%) were male. The racial background of faculty participants was also mostly homogenous: 21 faculty (91.30%) identified as White, 1 (4.30%) identified as Asian, and 1 (4.30%) identified as Multi-racial.

The present study included demographic questions (see Appendix A) aimed at obtaining participants' personal experiences with mental illness. These questions have been used in previous studies (e.g., Kassam et al., 2012; Kassam, Glozier, Leese, Loughran, & Thornicroft, 2011; Korszun et al., 2012; Modgill et al., 2014; Papish et al., 2013); however, two questions were modified to use less stigmatizing language about suicide (Maple, Edwards, Plummer, & Minichiello, 2010; Silverman, 2006). A total of 90 students (52.60%) and 19 faculty (86.40%) responded 'yes' to the question: "Do you know a close friend or family member with mental illness? A total of 58 students (33.90%) and 16 faculty (69.60%) responded 'yes' to the question: "Have you personally known anyone who has died by suicide?" A total of 114 students (66.70%) and 20 faculty (87.00%) responded 'yes' to the question: "Have you encountered someone who had thoughts about ending his/her life?" A total of 18 students (10.20%) and 7 faculty (30.40%) 'yes' to the question: "Have you ever been treated for a mental health problem?"

Table 1

Demographic Variables of Students

	Total (N = 176)	Medicine (*n* = 71)	Nursing (*n* = 31)	Pharmacy (*n* = 74)
Age in years (standard deviation)	23.43 (4.02)	23.96 (3.11)	20.94 (2.07)	23.99 (4.95)
Sex				
Female	95 (54.0)	30 (42.3)	27 (87.1)	38 (51.4)
Male	81 (46.0)	41 (57.7)	4 (12.9)	36 (48.6)

Table 1 (continued)

	Total (N = 176)	Medicine (*n* = 71)	Nursing (*n* = 31)	Pharmacy (*n* = 74)
Ethnicity				
White	154 (87.5)	65 (91.5)	30 (96.8)	59 (79.7)
Black	6 (3.4)	-	-	6 (8.1)
Hispanic	-	-	-	-
Indian/Native American	-	-	-	-
Asian	13 (7.4)	5 (7.0)	-	8 (10.8)
Pacific Islander	-	-	-	-
Multi-racial	2 (1.1)	-	1 (3.2)	1 (1.4)
Other	1 (0.6)	1 (1.4)	-	-
Do you know a close friend or family member with mental illness?				
Yes	90 (52.6)	48 (68.6)	13 (43.3)	29 (40.8)
No	81 (47.4)	22 (31.4)	17 (56.7)	42 (59.2)
Have you personally known anyone who has died by suicide?				
Yes	58 (33.9)	30 (42.9)	5 (16.7)	23 (32.4)
No	113 (66.1)	40 (57.1)	25 (83.3)	48 (67.6)
Have you encountered someone who had thoughts about ending his/her life?				
Yes	114 (66.7)	53 (75.7)	19 (63.3)	42 (59.2)
No	57 (33.3)	17 (24.3)	11 (36.7)	29 (40.8)
Have you ever been treated for a mental health problem?				
Yes	18 (10.5)	10 (14.3)	4 (13.3)	4 (5.6)
No	146 (85.4)	55 (78.6)	25 (83.3)	66 (93.0)
Prefer not to answer	7 (4.1)	5 (7.1)	1 (3.3)	1 (1.4)

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Materials

Mental Health Knowledge Schedule (MAKS; Evans-Lacko et al., 2010; see Appendix B). The Mental Health Knowledge Schedule (MAKS) is a self-report measure, which assesses stigma-related mental health knowledge. The MAKS consists of a total of 12 items. The first six items assess knowledge of different stigma-related mental health domains (i.e., help-seeking, recognition, support, employment, treatment, and recovery). The remaining six items assess classification of various conditions as a mental illness (i.e., depression, stress, schizophrenia, bipolar disorder, drug addiction, and grief). The MAKS is scored on a Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. Consistent with scoring instructions, items rated as "Don't know" were scored as "neither agree nor disagree" (i.e., neutral). Three items are reverse scored (items 6, 8, and 12) to indicate the direction of the correct response. The latter six items do not contribute to the total score of the MAKS, but are intended to contextualize the responses to the former six items. Thus, the total MAKS score is based on the first six items and scores range from 6 (least knowledge) to 30 (greatest knowledge).

The MAKS has been shown to have an overall one-week test-retest reliability of .71 using Lin's concordance statistic. Item retest reliability using weighted kappa ranged from .57 to .87. The Cronbach's alpha for the first six items was .65 (alphas ranged from .54 to .69). It is important to emphasize that the MAKS was not designed to function as a traditional scale, thus little emphasis is given to the internal consistencies because of the multidimensionality of the individual items. Thus, recommendations suggest that the alpha should only be used to interpret trends in responses (Evans-Lacko et al., 2010).

The overall internal consistency for the MAKS at T_1, T_2, and T_3 in the present study is reported in Table 2. The internal consistency for medical, nursing, and pharmacy students at each time point is also reported. The internal consistency for the MAKS at T_1, T_2, and T_3 was considered unacceptable for the overall sample (alphas ranged from .34 to .43) and for medical (alphas ranged from .34 to .52), nursing (alphas ranged from .25 to .32), and pharmacy students (alphas ranged from .16 to .51).

Table 2

Internal Consistency of the MAKS

	n	MAKS T_1	MAKS T_2	MAKS T_3
Medicine	70	.52	.34	.36
Nursing	30	.30	.32	.25
Pharmacy	72	.16	.51	.46
Overall	172	.34	.43	.42

Opening Minds Scale for Health Care Providers (OMS-HC; Modgill et al., 2014; see Appendix C). The Opening Minds Scale for Health Care Providers (OMS-HC) is a self-report questionnaire, which assesses attitudes and behavioral intentions toward people with mental illness. The OMS-HC is based on the tripartite model of stigma (Kassam et al., 2012) and contains 15 items with scores that can range from 15 (least stigmatizing) to 75 (most stigmatizing). Items have Likert scale answers: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree. The items in OMS-HC were developed using stakeholder consultations and content validation following item-pool generation (Kassam et al., 2012).

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This measure contains a total of three subscales. The first subscale called Attitudes of Health Care Providers towards People with Mental Illness (PMI) refers to general attitudes toward people with mental illness and the role of health care providers (e.g., "There is little I can do to help people with mental illness"). Scores for the 6-item PMI subscale range from 6 to 30. The second subscale is called Attitudes of Health Care Providers towards Disclosure and Help-seeking (DHS) refers to support (or lack thereof) for patient self-disclosure of mental illness and help-seeking behaviors (e.g., "I would be reluctant to seek help if I had a mental illness"). Scores for the 4-item DHS subscale range from 4-20. The third subscale called Attitudes of Health Care Providers towards Social Distance (SD) refers to a willingness to readily engage persons with mental illness in various activities and relationships (e.g., "I would not want a person with a mental illness, even if it were appropriately managed, to work with children"). In the present study, SD was used as a proxy for behavioral intent. Scores for the 5-item SD subscale range from 5-25. Some items that were positively phrased were reverse-scored to be consistent with the scoring instructions and interpretation of scoring (e.g., "I would not mind if a person with a mental illness lived next door to me").

The OMS-HC has been shown to have an overall internal consistency (Cronbach's alpha) of .79 and internal consistencies ranged from .67 to .68 for the three subscales in a sample of 1,305 healthcare professionals, which was considered acceptable (Modgill et al., 2014). Further, it has been shown that the internal consistencies of the subscales have been consistent across health care providers (alphas ranged from .61 to .81) except for social workers (alpha ≤ .60) (Modgill et al., 2014).

The tripartite model does not specify which types of attitudes that are problematic. For this reason, a composite Attitudes subscale was created to capture a more diverse representation

of stigmatizing attitudes, which was the average of the PMI and DHS subscales. The overall

internal consistencies for the Attitudes and SD subscale at T_1, T_2, and T_3 are reported in Table 3.

The internal consistencies for medical, nursing, and pharmacy students at each time point are

also reported. The internal consistency for the Attitudes subscale at T_1, T_2, and T_3 was

considered acceptable for the overall sample (alphas ranged from .72 to .78). Internal consistency

on the Attitudes subscale ranged from acceptable to good for medical students (alphas ranged

from .72 to .80), questionable to good for nursing students (alphas ranged from .67 to .84), and

questionable to good for pharmacy students (alphas ranged from .65 to .81).

The internal consistency of the SD subscale at T_1, T_2, and T_3 ranged from questionable to

acceptable (alphas ranged from .65 to .72). Internal consistency on the SD subscale ranged from

questionable to acceptable for medical students (alphas ranged from .59 to .70), questionable to

good for nursing students (alphas ranged from .68 to .85), and questionable to acceptable for

pharmacy students (alphas ranged from .67 to .74).

Table 3

Internal Consistency of the OMS-HC

	N	Attitudes T_1	Social Distance T_1	Attitudes T_2	Social Distance T_2	Attitudes T_3	Social Distance T_3
Medicine	70	**.78**	.59	**.72**	**.70**	**.80**	.59
Nursing	30	.67	**.71**	**.71**	.68	**.84**	**.85**
Pharmacy	72	.65	.68	**.81**	.67	**.72**	**.74**
Overall	172	**.72**	.65	**.76**	.68	**.78**	**.72**

Note: α ≥ .70 bolded

Marlowe-Crowne Social Desirability Scale Form C (M-C SDS Form C; Reynolds,

1982; see Appendix D). The Marlowe-Crowne Social Desirability Scale Form C (M-C SDS

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Form C; Reynolds, 1982) is a brief measure of social desirability, the bias to depict oneself similarly to perceived positive norms and standards of their society and community. The M-C SDS Form C is derived from the original 33-item M-C SDS measure (Crowne & Marlowe, 1960). The M-C SDS Form C conceptualizes social desirability as a single dimension and consists of 13 dichotomous items (i.e., True/False). The M-C SDS Form C has been shown to have an internal consistency of .79 as measured by Kuder-Richardson Formula 20 (KR20; Kuder & Richardson, 1937) and was strongly associated with the original 33-item M-C SDS ($r = .93$) (Reynolds, 1982).

The overall internal consistency for the M-C SDS Form C at T_1, T_2, and T_3 in the present study is reported in Table 4. The internal consistency for medical, nursing, and pharmacy students at each time point is also reported. The internal consistency for the M-C SDS Form C was considered unacceptable for the overall sample (alphas ranged from .49 to .53), nursing students (alphas ranged from .40 to .46), and pharmacy students (alphas ranged from .35 to .43). The internal consistency for the M-C SDS Form C ranged from unacceptable to questionable for medical students (alphas ranged from .56 to .61).

Table 4

Internal Consistency of the M-C SDS Form C

	n	M-C SDS T_1	M-C SDS T_2	M-C SDS T_3
Medicine	70	.56	.59	.61
Nursing	30	.46	.42	.40
Pharmacy	72	.43	.36	.35
Total	172	.50	.49	.53

Procedure

Data was collected at three points: 1) On the first day of class (T_1); 2) during the seventh week of class (T_2); and 3) on the last day of class, which was 15 weeks into the course (T_3). The T_1, data collection occurred prior to in-class practice, but after the three most basic communication skill modules had been read by students (i.e., rapport building, agenda setting, and information management). At T_2, students also completed modules on active listening, addressing feelings, common ground, ending the interview, and interprofessional communication. In addition, the topics of depression and suicide risk assessment were addressed in modules and in class role-plays prior to T_2 data collection. At T_3, students also watched a video on interprofessional communication and completed modules on delivering negative news and health literacy.

The final OSCEs that students completed at T_3 were videotaped. This OSCE emphasized a middle-aged adult patient with a history of recurrent mild to moderate depression and was presenting with complaints of sleep disturbance and "blue, sad" mood. Prior to taking their OSCEs, students wrote their study ID number on a tracking sheet (see Appendix E), so their video-taped OSCEs could be matched to their survey responses. OSCES were coded by the research team to assess whether the student participant screened for suicidal ideation. Screening for suicidal ideation was defined as: "the interviewer asks a direct or indirect question toward the interviewee that would *typically* elicit a response from the interviewee that would indicate whether he or she is endorsing suicidal ideation. Suicidal ideation includes thinking about, considering, or planning to end one's life." The research team consisted of one graduate student (PI) and seven undergraduate research assistants. Screening for suicidal ideation was coded dichotomously (i.e., Yes or No). OSCE videos were approximately eight minutes long and each

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video ($n = 158$) was coded independently by two research assistants and inter-rater reliability was assessed. There was a total of two discrepancies between raters and all discrepancies were resolved by the lead investigator, who has formal training in suicide risk screening. This resulted in an inter-rater reliability of 98.73%.

The measures used in the current study were voluntarily completed without compensation for participation. All student and faculty responses were anonymous to protect confidentiality and encourage honest responses (Levine, Breitkopf, Sierles, & Camp, 2003). However, participants created a unique identifier based on pieces of personal information (first two letters of mother's first name, two-digit birth month, last two digits of primary telephone number, and the first two letters of high school name; see Appendix D), for the purposes of tracking responses across administration. The study was approved by the Institutional Review Board prior to data collection.

CHAPTER 3

RESULTS

Assessing Changes in Knowledge, Attitudes, and Social Distance

It was hypothesized that medical, nursing, and pharmacy students would have improved knowledge, attitudes, and behavioral intent (social distance) at T_3 compared to T_1. Knowledge was assessed using the MAKS, attitudes were assessed using the composite Attitudes subscale of the OMS-HC, and behavioral intent was measured using the Social Distance subscale of the OMS-HC. To test this hypothesis, a linear generalized estimating equations (GEE) approach was used. GEE is a multilevel regression technique appropriate for longitudinal data analysis in which repeated measures are correlated, such as with clustered data (Stokes, Davis, & Koch, 2000). GEE accounts for this dependency by using a priori "working" correlation structure, which defines the relationship between these repeated measures. The average scores on the MAKS, Attitudes, and Social Distance scores for medical, nursing and pharmacy students at T_1, T_2, and T_3 are reported in Tables 5, 6, and 7, respectively.

Table 5

Mean MAKS Scores and Standard Deviations at T_1, T_2, and T_3

	N	MAKS T1	MAKS T2	MAKS T3
Medicine	71	23.84 (2.93)	24.93 (2.41)	25.52 (2.29)
Nursing	31	22.43 (2.22)	23.13 (2.68)	23.57 (2.45)
Pharmacy	74	23.20 (2.35)	23.68 (2.92)	24.51 (2.68)
Overall	176	23.33 (2.62)	24.12 (2.75)	24.75 (2.58)

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Table 6

Mean Attitudes Scores and Standard Deviations at T_1, T_2, and T_3

	n	Attitudes T_1	Attitudes T_2	Attitudes T_3
Medicine	71	11.55 (2.62)	11.38 (2.39)	11.11 (2.67)
Nursing	31	11.05 (2.10)	10.25 (2.24)	9.73 (2.47)
Pharmacy	74	12.17 (2.27)	11.10 (2.70)	10.74 (2.31)
Overall	176	11.72 (2.42)	11.08 (2.51)	10.71 (2.52)

Table 7

Mean Social Distance Scores and Standard Deviations at T_1, T_2, and T_3

	n	Social Distance T_1	Social Distance T_2	Social Distance T_3
Medicine	71	9.59 (2.67)	9.70 (2.88)	9.21 (2.59)
Nursing	31	10.20 (2.67)	10.75 (3.00)	9.13 (3.20)
Pharmacy	74	10.53 (2.78)	10.29 (2.50)	10.36 (3.06)
Overall	176	10.10 (2.74)	10.12 (2.76)	9.68 (2.95)

Data analysis for this hypothesis emphasized changes from T_1 to T_3 on the MAKS, Attitudes subscale, and the Social Distance subscale. Thus, scores at T_2 were excluded from the analysis, which made the selected autoregressive correlation structure (AR-1) produce identical correlations as the exchangeable and unstructured correlation structures. The difference in T_1 and T_3 scores on the outcome variables were assessed for medical, nursing, and pharmacy students. The initial model (model 1) consisted of college and time variables, and their interaction. The second model (model 2) included age, social desirability, gender, race, and personal experiences with mental illness as covariates. Age and social desirability were both centered around the mean.

Changes in knowledge from T_1 to T_3. A linear GEE analysis was used to test changes in MAKS scores from T_1 to T_3. Results showed that medical students had higher scores on the

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MAKS at T_3 compared to T_1, $b = 1.70$, $SE = 0.31$, $p < .001$. This change remained significant after controlling for additional covariates described in model 2, $b = 1.73$, $SE = 0.34$, $p < .001$. Nursing students also had higher scores on the MAKS at T_3 compared to T_1, $b = 1.12$, $SE = 0.40$, $p < .01$. This change remained significant after controlling for additional covariates described in model 2, $b = 1.11$, $SE = 0.40$, $p < .01$. Lastly, pharmacy students had higher scores on the MAKS at T_3 compared to T_1, $b = 1.30$, $SE = 0.33$, $p < .001$, and this change remained significant after controlling for additional covariates described in model 2, $b = 1.28$, $SE = 0.35$, $p < .001$.

In model 2, having been treated for a mental health problem was positively associated with scores on the MAKS, $b = 1.43$, $SE = 0.51$, $p < .01$. Additionally, identification with the 'Other' race group was positively associated with scores on the MAKS, $b = 3.09$, $SE = 0.47$, $p < .001$.

Changes in attitudes from T_1 to T_3. A linear GEE analysis was used to test for differences in scores on the composite Attitudes subscale from T_1 to T_3 among medical, nursing, and pharmacy students. Results of a linear GEE analysis showed that medical students did not have changed scores on the composite Attitudes subscale at T_3 compared to T_1, $b = -.44$, $SE = 0.24$, $p > .05$. This remained unchanged after controlling for additional covariates described in model 2, $b = -.45$, $SE = 0.24$, $p > .05$. Results of a linear GEE analysis showed that nursing students had lower scores on the composite Attitudes subscale at T_3 compared to T_1, $b = -1.24$, $SE = 0.34$, $p < .001$. Similarly, pharmacy students had lower scores on the composite Attitudes subscale at T_3 compared to T_1, $b = -1.43$, $SE = 0.24$, $p < .001$. These changes remained significant for both nursing students, $b = -1.05$, $SE = 0.34$, $p < .01$, and pharmacy students, $b = -1.44$, $SE = 0.25$, $p < .001$, after controlling for additional covariates described in model 2.

In model 2, social desirability was negatively associated with scores on the composite Attitudes subscale, $b = -0.27$, $SE = 0.10$, $p < .01$. Identifying with the 'black' racial group was also shown to be negatively associated with scores on the composite Attitudes subscale, $b = -3.02$, $SE = 0.75$, $p < .001$. Similarly, identifying with the 'Other' racial group was also shown to be negatively associated with scores on the composite Attitudes subscale, $b = -1.40$, $SE = 0.47$, $p < .01$

Changes in social distance from T_1 to T_3 A linear GEE analysis was used to test for differences on the Social Distance subscale from T_1 to T_3 among medical, nursing, and pharmacy students. Results showed that medical students did not change at T_3 compared to T_1, on the Social Distance subscale, $b = -.34$, $SE = 0.26$, $p > .05$. This remained unchanged after controlling for additional covariates described in model 2, $b = -.46$, $SE = 0.26$, $p > .05$. Results showed that nursing students had lower scores on the Social Distance subscale at T_3 compared to T_1, $b = -1.08$, $SE = 0.44$, $p < .05$. This effect was no longer significant after controlling for the additional covariates described in model 2, $b = -.87$, $SE = 0.46$, $p > .05$. Results also showed that pharmacy students showed no change at T_3 compared to T_1 on the Social Distance subscale, $b = -.25$, $SE = 0.30$, $p > .05$. This effect was unchanged after controlling for additional covariates described in model 2, $b = -.19$, $SE = 0.31$, $p > .05$.

In model 2, having been treated for a mental health problem was negatively associated with scores on the Social Distance subscale, $b = -1.76$, $SE = 0.60$, $p < .01$. Additionally, identifying with the "Other" racial group was negatively associated with scores on the Social Distance subscale, $b = -1.68$, $SE = 0.48$, $p < .001$. Similarly, identifying with the "Multiracial" racial group was negatively associated with scores on the Social Distance subscale, $b = -2.15$, $SE = 0.54$, $p < .001$.

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Tripartite Model as a Predictor of Suicidal Ideation Screening

A total of 70 (46.10%) students screened for suicidal ideation. Specifically, 36 (52.20%) medical, 4 (20.00%) nursing, and 30 (47.60%) pharmacy students screened for suicidal ideation. This resulted in a total of 82 (53.90%) students who did not screen for suicidal ideation. Specifically, 33 (47.80%) medical, 16 (80.00%) nursing, and 33 (52.40%) pharmacy students did not screen for suicidal ideation.

A binomial logistic regression using a GEE approach was used to test the hypothesis that components of the tripartite model would predict whether students screen for suicidal ideation. Specifically, knowledge, attitudes, and social distance (i.e., behavioral intent) were assessed as predictors. As the binary outcome variable, screening for suicidal ideation, was only measured at T_3, the analysis only used scores on the MAKS, composite attitudes subscale, and the Social Distance subscale at T_3. Results from the analysis showed that the knowledge, attitudes, and social distance were not statistically significant predictors of whether students screen for suicidal ideation ($p > .05$). Results are displayed in Table 8.

Table 8

Tripartite Model as Predictors of Suicide Screening

	B	*SE* B	Odds Ratio	95% CI for Odds Ratio
(Intercept)	-0.23	0.18		
Knowledge[a]	0.10	0.07	1.10	0.96, 1.26
Attitudes[a]	-0.05	0.07	0.95	0.82, 1.10
Social Distance[a]	0.08	0.07	1.09	0.95, 1.24

Note: [a]Centered around the mean. Model χ^2 (3) = 2.91, $p > .05$

Knowledge, attitudes, and social distance did not emerge as significant predictors of screening for suicidal ideation after controlling for age (centered around the mean), social desirability (centered around the mean), gender, race, and personal experiences with mental illness. The sample identified as predominantly white, thus the remaining racial groups were collapsed into a 'non-white' group for comparison. However, personally knowing someone who has died by suicide was associated with increased odds of screening for suicidal ideation, OR = 2.24 (95% CI: 1.00, 5.03), $p < .05$. Results are displayed in Table 9.

Table 9

Tripartite Model as Predictors of Suicide Screening After Controlling for Covariates

	B	*SE* B	Odds Ratio	95% CI for Odds Ratio
(Intercept)	-0.34	0.42		
Knowledge[a]	0.11	0.08	1.11	0.95, 1.30
Attitudes[a]	-0.11	0.09	0.90	0.76, 1.06
Social Distance[a]	0.12	0.08	1.13	0.97, 1.31
Age	0.05	0.07	1.05	0.92, 1.20
Social Desirability	-0.23	0.14	0.79	0.61, 1.04
Gender	-0.22	0.39	0.80	0.37, 1.74
Friend or Family[b]	-0.81	0.43	0.45	0.19, 1.03
Died by Suicide[c]	0.81*	0.41	2.24	1.00, 5.03
Thoughts of Suicide[d]	0.55	0.45	1.74	0.72, 4.17
History of Treatment[e]	-0.14	0.67	0.87	0.23, 3.22
Non-White	-0.18	0.59	0.83	0.26, 2.62

Note: [a]Centered around the mean. [b]Knowing a close friend or family member with a mental illness. [c]Personally knowing someone who has died by suicide. [d]Personally knowing someone with thoughts of ending his/her life. [e]Have been personally treated by a mental health problem. Model χ^2 (11) = 15.69, $p > .05$. *$p < .05$.

CHAPTER 4

DISCUSSION

The present study utilized a quasi-experimental design to assess changes in mental health stigma from T_1 to T_3 in healthcare students enrolled in an interprofessional Communication Skills for Healthcare Professionals course. Three hypotheses were investigated. The first hypothesis was that medical, nursing, and pharmacy students would have improved knowledge, attitudes, and social distance at the end of the course (T_3) compared to baseline (T_1). The second hypothesis was that knowledge, attitudes, and social distance would predict whether students screen for suicidal ideation. The third hypothesis was that knowledge, attitudes, and social distance would predict whether students screen for suicidal ideation after controlling for age, social desirability, gender, race, and personal experiences with mental illness. To the author's knowledge, this was the first study, to date, to investigate stigma change and suicide screening behaviors among healthcare students enrolled in an interprofessional curriculum using standardized patients.

The curriculum used in this course was consistent with the tripartite model, though it was not designed as an anti-stigma intervention. The hypothesis that scores on measures of knowledge, attitudes, and social distance would improve from T_1 to T_3 for medical, nursing and pharmacy students was partially supported. Medical, nursing, and pharmacy students had improved stigma-related mental health knowledge at T_3 compared to T_1 before and after controlling for age, social desirability, gender, race, and personal experiences with mental illness. Nursing and pharmacy students had improved attitudes at T_3 compared to T_1 and this remained statistically significant after controlling for age, social desirability, gender, race, and

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personal experiences with mental illness. However, medical students did not demonstrate changed attitudes at T_3 compared to T_1 and this did not change after controlling for age, social desirability, gender, race, and personal experiences with mental illness. Medical and pharmacy students did not demonstrate changed behavioral intent (social distance) at T_3 compared to T_1 and this did not change after controlling for age, social desirability, gender, race, and personal experiences with mental illness. While nursing students demonstrated improved social distance at T_3 compared to T_1, this effect was no longer statistically significant after controlling for age, social desirability, gender, race, and personal experiences with mental illness. Consistent with previous literature, the present study demonstrated that stigma of mental illness can be reduced with appropriate intervention (Corrigan et al., 2012; Griffiths et al., 2014; Yamaguchi et al., 2013).

In assessing the components of the tripartite model as predictors of whether students would screen for suicidal ideation, the variables of knowledge, attitudes, and social distance did not emerge as significant predictors. This conclusion remained unchanged after controlling for age, social desirability, gender, race, and personal experience with mental illness. This may be partly due to measurement error. Specifically, while the MAKS is a multidimensional measure, the low internal consistency may have contributed to this unexpected finding.

Those who had personally known someone who died by suicide were 2.24 times more likely to screen for suicide than students who did not personally know someone who died by suicide. One possible explanation for this finding is that students who have had such a personal experience may process experiences with individuals with mental illness differently and subsequently are more inclined to screen for suicidal ideation (Papish et al., 2013). This

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possibility underscores the importance of potential threats to internal validity such as participants' history, as outlined by Campbell and Stanley (1963).

Limitations

Several limitations should be considered when interpreting the findings from the present study. First, random assignment could not be used to place students into meaningful experimental and control groups because all students were exposed to the intervention as part of their academic curriculum. As a result, the study was unable to balance pre-existing group differences at T_1, confounding the results of the intervention at T_3. Second, the use of a non-probability sample limited the representation of disciplines to those required to enroll in the course as part of their curriculum. This left other healthcare professions unrepresented (e.g., public health, social work) and resulted in an unbalanced group design. Third, the curriculum used was not specifically designed to address stigma. It is likely that a curriculum with a greater emphasis on mental health would have a greater impact on students' knowledge, attitudes, and behavioral intent as it relates to individuals with mental illness. Fourth, the use of SPs for contact-based interventions may have been perceived as superficial by students compared to contact with real patients in medical settings. Thus, it may not have been as effective as other types of contact in reducing stigma. Fifth, the interval of time between T_1 and T_3 may have been too brief for larger effects to be detected. Negative schemas toward individuals with mental illness may be more resistant to change and require different intervention modalities for more dramatic changes to occur. Sixth, the present study was mostly homogenous in terms of race and caution should be used when generalizing findings to members of underrepresented racial or cultural origins. Lastly, the low internal consistency of the composite Attitudes and Social Distance subscales, as well as the M-C SDS Form C may have adversely impacted outcomes.

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The problem of measurement error may adversely impact parameter estimates (Campbell & Stanley, 1963; Westfall & Yarkoni, 2016). This issue underscores the need to develop more effective methods of assessing stigma among healthcare students.

Future Directions

Mental health stigma remains an important issue for healthcare and early intervention in professional training is indicated (Abbey et al., 2011). Given the negative implications of mental health stigma endorsed by healthcare providers, it is important to develop effective educational and contact-based interventions for students of various healthcare professions. In interprofessional and multidisciplinary training contexts, it may become increasingly important to develop broader interventions that are effective across multiple disciplines. This study has important implications for the training of healthcare students and shows that stigma change can occur in the context of interprofessional training, even when only indirectly targeted. This conclusion provides additional support to the notion that interprofessional training is a valid and important context for addressing stigma (Maranzan, 2016).

The present study provides insight on how stigma among healthcare students may be related to real-world behaviors (via their coded behavioral interactions with SPs), which underscores the importance of intervening with this population to address stigma early in their professional training. The tripartite model is flexible, though the best methods and combination of tools to measure knowledge, attitudes, and behavioral intent are not currently well understood. This question is likely to be an important area of future scientific inquiry. Future studies should also consider the use of objective structured clinical evaluations (OSCEs) to assess for behavioral outcomes, which was initially recommended by Papish and colleagues (2013).

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Additionally, it will be important for future research to objectively observe behaviors of healthcare professionals in healthcare settings pre- and post-intervention to improve our understanding of how stigma-based research can potentially impact clinical services.

While the curriculum used in the present study may not be feasible for other training programs to use for logistical reasons (e.g., barriers to interprofessional training, staffing issues), the tripartite model can easily be integrated into most curriculums. For example, supervisors, faculty, and colleagues can model appropriate attitudes and behaviors regarding mental health to students (Abbey et al., 2011). Furthermore, accurate information about mental health needs to be communicated and shared with students throughout their training. For medical students, their first exposure to mental health-related topics may be during their psychiatry, family medicine, or internal medicine rotations, which occurs in the later stages of their professional training. Students would likely benefit from earlier exposure to patients with mental illness in the context of shadowing experiences (e.g., clerkship). Thus, it will be important for future anti-stigma initiatives to target students early in their professional training and to provide intervention models consistent with the tripartite model.

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APPENDICES

APPENDIX A: DEMOGRAPHIC QUESTIONNAIRE

The purpose of this questionnaire is to gather your attitude and beliefs about suicide and suicide prevention. This project is considered research. Participation is voluntary. Completion of this questionnaire serves as informed consent to participate in the research. Your responses are anonymous. If you do not feel comfortable responding to a survey item, please skip it and proceed to the next item. It should take you approximately 10 minutes to complete this questionnaire. If you have any questions, comments, or concerns, please contact Dr. Rick Hess (hessr@etsu.edu or 423-439-2075). Thank you in advance for your honest feedback.

Gender: ☐ Female ☐ Male What is your age? _____
Race/origin: ☐ White ☐ Black ☐ Hispanic ☐ Indian/Native Amer. ☐ Asian ☐ Pacific Islander ☐ Other
College affiliation: ☐ Medicine ☐ Nursing ☐ Pharmacy ☐ Psychology
Role: ☐ Faculty Member ☐ Student
Do you know a close friend or family member with mental illness? ☐Yes ☐ No
Have you personally known anyone who has died by suicide? ☐Yes ☐ No
Have you encountered someone who had thoughts about ending his/her life? ☐Yes ☐ No
Have you ever been treated for a mental health problem? ☐Yes ☐ No ☐ Prefer not to answer

Instructions: For each of statements 1-6 below, please respond by ticking <u>one box only</u>. Mental health problems here refer, for example, to conditions for which an individual would be seen by healthcare staff

	Strongly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Strongly Agree	Don't know
1. Most people with mental health problems want to have paid employment	1	2	3	4	5	N/A
2. If a friend had a mental health problem, I would know what advice to give them to get professional help	1	2	3	4	5	N/A
3. Medication can be an effective treatment for people with mental health problems	1	2	3	4	5	N/A
4. Psychotherapy (e.g., talking therapy or counseling) can be an effective treatment for people with mental health problems	1	2	3	4	5	N/A
5. People with severe mental health problems can fully recover	1	2	3	4	5	N/A
6. Most people with mental health problems go to a healthcare professional to get help	1	2	3	4	5	N/A

Instructions: Say whether you think each condition is a type of mental illness by ticking <u>one box only</u>

	Strongly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Strongly Agree	Don't know
7. Depression	1	2	3	4	5	N/A
8. Stress	1	2	3	4	5	N/A
9. Schizophrenia	1	2	3	4	5	N/A

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10. Bipolar disorder (manic-depression)	1	2	3	4	5	N/A
11. Drug addiction	1	2	3	4	5	N/A
12. Grief	1	2	3	4	5	N/A

APPENDIX C: OPENING MINDS SCALE FOR HEALTHCARE PROVIDERS

These questions ask you to agree or disagree with a series of statements about mental illness. There is no correct answer. Please mark the box that best fits your opinion.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am more comfortable helping a person who has a physical illness than I am helping a person who has a mental illness.	1	2	3	4	5
2. If a colleague with whom I work told me they had a mental illness, I would be just as willing to work with him/her.	1	2	3	4	5
3. If I were under treatment for a mental illness I would not disclose this to any of my colleagues.	1	2	3	4	5
4. I would see myself as weak if I had a mental illness and could not fix it myself.	1	2	3	4	5
5. I would be reluctant to seek help if I had a mental illness.	1	2	3	4	5
6. Employers should hire a person with a managed mental illness if he/she is the best person for the job.	1	2	3	4	5
7. I would still go to a physician if I knew that the physician had been treated for a mental illness.	1	2	3	4	5
8. If I had a mental illness, I would tell my friends.	1	2	3	4	5
9. Despite my professional beliefs, I have negative reactions towards people who have mental illness.	1	2	3	4	5
10. There is little I can do to help people with mental illness.	1	2	3	4	5
11. More than half of people with mental illness don't try hard enough to get better.	1	2	3	4	5
12. I would not want a person with a mental illness, even if it were appropriately managed, to work with children.	1	2	3	4	5

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13. Healthcare providers do not need to be advocates for people with mental illness.	1	2	3	4	5
14. I would not mind if a person with a mental illness lived next door to me.	1	2	3	4	5
15. I struggle to feel compassion for a person with mental illness.	1	2	3	4	5

APPENDIX D: THE MARLOWE-CROWNE SOCIAL DESIRABILITY SCALE- FORM C

Listed below are a number of statements concerning personal attitudes and traits. Read each item and circle the response whether the statement is true or false as it pertains to you.

True or False

1.	T	F	It is sometimes hard for me to go on with my work, if I am not encouraged.
2.	T	F	I sometimes feel resentful when I don't get my way.
3.	T	F	On a few occasions, I have given up doing something because I thought too little of my ability.
4.	T	F	There have been times when I felt like rebelling against people in authority even though I knew they were right.
5.	T	F	No matter whom I'm talking to, I'm always a good listener.
6.	T	F	There have been occasions when I took advantage of someone.
7.	T	F	I'm always willing to admit it when I make a mistake.
8.	T	F	I sometimes try to get even rather than forgive and forget.
9.	T	F	I am always courteous, even to people who are disagreeable.
10.	T	F	I have never been irked when people expressed ideas very different from my own.
11.	T	F	There have been times when I was quite jealous of the good fortune of others.
12.	T	F	I am sometimes irritated by people who ask favors of me.
13.	T	F	I have never deliberately said something that hurt someone's feelings.

Personal Identifier (please print legibly):

_____   _____   _____   _____

First 2 letters of   Your 2-digit birth   Last 2 digits of your   First 2 letters of
mother's first name   Month (eg, March = 03)   primary telephone #   your high school

APPENDIX D: FINAL OSCE TRACKING SHEET

Order	First 2 letters of mother's first name	Your 2-digit birth month (eg., March = 03)	Last 2 digits of your primary telephone #	First 2 letters of your high school name
1				
2				
3				
4				
5				
6				
7				
8				

SD Card Number: _____

VITA

DANNEL K. PETGRAVE

Personal Data:	Date of Birth: December 06, 1990
	Place of Birth: Windsor, Connecticut

Education: Ph.D., Psychology, East Tennessee State University,
Johnson City, Tennessee, 2018

M.A., Psychology, East Tennessee State University,
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B.A., Psychology, Central Connecticut State University,
New Britain, Connecticut, 2012

Select Presentations: Petgrave, D. K., & Chris, S. Dula (2016, October).
*Addressing the mental health stigma of healthcare students
using a multi-professional communications course.* Poster
presented at the 18th annual meeting of the Collaborative
Families Health Care Association; Charlotte, NC

Petgrave, D. K., & Dula, C. S. (2016, April). *Reduction of
mental health stigma in rural healthcare students: An
evaluation of attitudes and behavioral intent*. Presented at
the 6th annual meeting of the Collaborative Conference on
Rural Mental Health; Boone, NC.

Select Honors and Awards: Outstanding Thesis in Education and Social Sciences,
2016. East Tennessee State University, School of Graduate
Studies

First Place Oral Presentation in Social Behavioral Sciences,
2015. Appalachian Student Research Forum: Master's
Candidates

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