

Cultivating Contact: How Social Norms Can Reduce Mental Illness Stigma in College Populations

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The stigmatization of mental illness is pervasive and destructive, but not immutable. One well-known way to decrease stigma is to increase contact between stigmatized and nonstigmatized people. Outside of laboratory studies, however, contact is difficult to manufacture. We propose one way to increase contact: improving social norms. Social norms are the beliefs a group has about acceptable attitudes and behaviors toward people with mental illness. Although social norms are often thought of as an intermediate variable through which stigma is decreased, we treat social norms as a primary mechanism. Specifically, we examine the College Toolbox Project (CTP), a program from U Bring Change to Mind, that implemented a continuous and campus-wide anti-stigma intervention over a 2-year period (2015–2017) focused on improving campus norms toward mental illness. Data from 787 respondents regarding their attitudes and behaviors towards individuals with mental illness were collected at two time points: once when the students first matriculated to the university, and again 2 years later. Measurements regarding perceived norms on the campus were collected at the second time point. The CTP provides a context for examining if, by increasing contact, improved social norms decreased both intergroup anxiety and stigma. We find support for our theory and discuss the implications of these findings.

Keywords: stigma, mental health, norms, contact, intergroup anxiety

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Mental health disorders are the second leading cause of years lived with a disability, accounting for 7% of disability-adjusted life years (DALYs, [Institute for Health Metrics and Evaluation, 2018](#); [Rehm & Shield, 2019](#)). College students are disproportionately susceptible to mental disorders ([Cooke, 2006](#); [Eisenberg et al., 2011](#); [Kessler et al., 2005](#)), with an estimated 75% of lifetime mental disorders having their first onset by age 22 ([Kessler & Walters, 1998](#)). For college students, mental health disorders are associated with poorer academic success (e.g., GPA) and higher likelihood of dropping out of college ([Eisenberg et al., 2009](#)). To decrease the probability that mental illness will interfere in individuals' lives, mental illness treatment is essential. Despite the importance of mental illness treatment, more than 50% of individuals with mental illness are currently untreated ([Arnaez et al., 2020](#); [Corrigan, 2004](#); [Gary, 2005](#); [Hedden et al., 2014](#)). Furthermore,

compared to other age groups, young adults seek treatment at an even lower rate ([Han et al., 2015](#)).

One of the primary barriers to seeking and adhering to mental health treatment is stigma ([Corrigan, 2004](#)). Stigma is the simultaneous devaluation (through negative stereotypes) and distancing of one social group by others ([Lucas & Phelan, 2012](#); [Pescosolido, 2013](#); [Pescosolido & Martin, 2015](#); [Phelan et al., 2014, 2019](#)). Extensive research with college populations has found that stigma negatively impacts students' attitudes toward seeking mental health treatment, as well as their treatment engagement ([Arnaez et al., 2020](#); [Eisenberg et al., 2009](#); [Komiya et al., 2000](#); [Vogel et al., 2007](#)). Indeed, stigma accounts for the most variance in college students' negative attitudes toward treatment seeking ([Komiya et al., 2000](#)). One reason for this might be concerns about being treated differently or ostracized for their mental disorder (e.g., [Moses, 2010](#)). Therefore, finding ways to reduce stigma is critical for improving the lives of individuals with mental illness and addressing the public health crisis stemming from untreated mental illnesses ([Rüsch et al., 2005](#)).

As documented in extensive research, having positive direct contact with individuals with mental illness (henceforth referred to as “contact”) is one of the most effective ways to reduce prejudice in general ([Pettigrew & Tropp, 2000, 2006](#); [Pettigrew et al., 2011](#)), and mental health stigma in particular ([Alexander & Link, 2003](#); [Corrigan et al., 2012a](#); [Couture & Penn, 2003](#); [Esterberg et al., 2008](#); [Lauber et al., 2004](#); [Pescosolido, 2013](#); [Reinke et al., 2004](#); [Svensson & Hansson, 2016](#); [Wang & Lai, 2008](#); [Wolff et al., 1996](#)). Despite the promise of contact to reduce stigma, there are several logistical barriers to implementing large-scale contact-based interventions, including cost, resources, and potential resistance from

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individuals with stigmatizing beliefs toward mental illness.¹ Due to these barriers, the current investigation explores an alternative way to reduce mental illness stigma: changing social norms.

Social norms are the implicit and explicit rules that social groups have about the acceptable beliefs, values, and behaviors of their group members. Although social norms have a powerful effect on behavior (Schultz et al., 2007), including prejudice reduction (Ata et al., 2009; Brown & Hewstone, 2005; Cameron et al., 2011; De Tezanos-Pinto et al., 2010; Turner et al., 2007, 2008; Vezzali et al., 2014; Zhou et al., 2019), they have not been examined as a mechanism by which to promote contact and reduce mental health stigma. In this article, we examine whether perceiving positive social norms about mental illness in a real-world setting is associated with increased contact and in turn, decreased stigmatization of mental illness. To do this, we leverage the results of a university-wide intervention designed to decrease mental illness stigma.

Background

As noted above, *stigma* is the simultaneous devaluation and distancing of one social group by others (Lucas & Phelan, 2012; Pescosolido, 2013; Pescosolido & Martin, 2015; Phelan et al., 2014, 2019). Many social characteristics are, or have been, stigmas. Mental illness, however, is among the most stigmatized conditions a person can have (Hinshaw, 2015; Lucas & Phelan, 2019). Specifically, mental illness is associated with robust and pervasive bias which hinders the formation and maintenance of relationships and reduces life chances (Corrigan, 2004; Link & Phelan, 2013; Link & Stuart, 2017; Pescosolido & Martin, 2015; Pescosolido et al., 1999, 2013, 2019; Weber, 1922).

Although negative biases have harmful consequences for individuals and society, intervention is possible (Cohen, 1982; Cohen & Lotan, 1997; Fişek et al., 1991; Goar & Sell, 2005; Kroska & Harkness, 2021; Manago et al., 2019; Pescosolido et al., 2020; Phelan et al., 2014; Ridgeway & Correll, 2006; Walker et al., 2014). One of the most effective methods for reducing stigma is to promote contact across different groups (Allport, 1954; Pettigrew, 1998; Pettigrew & Tropp, 2006; Pettigrew et al., 2011; Zhou et al., 2019). In what follows, we consider both: (a) factors that may be associated with increased contact, and (b) the processes through which contact may decrease stigma.

Contact

Direct contact involves interactions with a specific outgroup member, such as a family member or friend with mental illness.² Extensive work has shown that such contact decreases prejudice related to many characteristics such as race and religion, and, directly relevant to the present study, mental illness (Alexander & Link, 2003; Corrigan et al., 2012a; Couture & Penn, 2003; Esterberg et al., 2008; Lauber et al., 2004; Pescosolido & Manago, 2018; Pescosolido et al., 2013; Reinke et al., 2004; Svensson & Hansson, 2016; Wang & Lai, 2008; Wolff et al., 1996).

Correlational and experimental research demonstrates that contact reduces stigma (such as desired social distance), at least in part, by decreasing intergroup anxiety (for review, see Pettigrew & Tropp, 2008; Stephan, 2014).³ *Intergroup anxiety* is the negative emotion felt when anticipating future, or experiencing actual,

encounters with outgroup members (Brown & Hewstone, 2005; Stephan, 2014; Stephan & Stephan, 1985). Higher intergroup anxiety predicts greater desired social distance from outgroup members (e.g., Pettigrew & Tropp, 2008). By reducing intergroup anxiety, research finds that contact also reduces desired social distance (Binder et al., 2009; Pettigrew & Tropp, 2000; Pettigrew et al., 2011).

For example, a study with incoming college students found that individuals who had been randomly assigned to live with a different-race roommate experienced decreased intergroup anxiety over their first semester, whereas this was not the case for individuals who had been paired with same-race roommates (Shook & Fazio, 2008). This study and others have thus demonstrated the causal relationship between contact and reduced intergroup anxiety (e.g., Stephan, 2014). Contact has also been shown to reduce negative emotions toward individuals with mental illness, specifically fear caused by perceptions of dangerousness and unpredictability (Alexander & Link, 2003; Link & Cullen, 1986; Phelan & Link, 2004).

Although contact shows great promise for reducing discrimination (e.g., intergroup anxiety, desired social distance), it is difficult to manufacture contact outside of the laboratory. Specifically, in real-world settings, higher prejudice is associated with lower willingness to have contact with outgroup members (Angermeyer & Matschinger, 1996; Binder et al., 2009; Loehr et al., 2015). Thus, an ironic consequence of prejudice is that individuals who may benefit the most from contact (e.g., because they have high levels of prejudice) are unwilling to engage in one of the most promising stigma-reduction interventions. The current investigation therefore explores an alternate stigma-reduction strategy—that more positive social norms may promote contact, thereby reducing mental illness stigma.

Social Norms

*Social norms*⁴ are the beliefs that individuals have about others' attitudes and behaviors, such as how members of one's social group behave in different social situations or how members of one's own social group view others (Horne & Mollborn, 2020). Social norms may directly or indirectly affect stigmatizing beliefs. First, because adhering to social norms is critical for gaining social acceptance (Chartrand & Bargh, 1999; Cialdini & Goldstein, 2004; Horne & Mollborn, 2020), which is a fundamental human need (Baumeister & Leary, 1995), social norms can be powerful predictors of attitudes and behavior (Berkowitz, 2005; Schultz et al., 2007; Yamin et al., 2019). The desire for social acceptance is so powerful that in order to conform to social norms, individuals may even ignore their own personal beliefs (Asch, 1956; Milgram et al., 1969; Sherif, 1936; Stangor et al., 2001).

¹ Also see work being done on virtual contact which can circumvent many of these barriers (Corrigan, 2012b).

² There are two forms of contact: Direct and indirect. In this article, we focus on direct contact.

³ While some scholars have discussed the theoretical possibility that intergroup anxiety affects contact, most research supports the idea that contact affects intergroup anxiety. Where intergroup anxiety is found to affect contact, it is most often in terms of *willingness for future contact*, also known as, desired social distance, rather than actual contact, that is, behavior. This is primarily because research has been able to causally test the effect of contact by facilitating it in experimental settings, but research has not been able to change intergroup anxiety.

⁴ In this manuscript, we use "social norms" and "norms" to refer to ingroup descriptive social norms.

Social norms have been successfully applied to changing individuals' health or risk behaviors (Berkowitz, 2005; Borsari & Carey, 2003; Schultz et al., 2007; Yamin et al., 2019). For example, interventions that manipulate individuals' perceptions of others' beliefs, that is, norms, are more effective at reducing drinking behavior (Borsari & Carey, 2001, 2003; Carey et al., 2010). Indeed, as it pertains to stigma, research suggests that more positive social norms are associated with reduced stigma, but more research is needed to examine the causal processes (Kroska & Harkness, 2021; Norman et al., 2008). Here, we examine the power for social norms to change individuals' stigmatizing beliefs about people with mental illness both directly and indirectly—through contact. By examining the relationship between perceptions of improved social norms and contact with individuals with mental illness, this novel approach provides a potential pathway for large-scale interventions designed to reduce mental illness stigma.

Social norms may decrease stigma by promoting contact—and specifically friendship—with stigmatized individuals. Social norms that involve more positive evaluations of stigmatized persons (henceforth referred to as “improved norms”) may be associated with increased contact through two (not mutually exclusive) paths. First, improved norms may positively predict individuals' willingness to disclose mental illness to friends (Follmer et al., 2020). Second, improved norms have been found to increase individuals' willingness to interact and befriend those with a stigmatized characteristic (Ata et al., 2009; Cameron et al., 2011; De Tezanos-Pinto et al., 2010; Mallett & Wilson, 2010; Schofield et al., 2010; Turner et al., 2007, 2008; Vezzali et al., 2015; Zhou et al., 2019). Said otherwise, a social environment that promotes positive social norms about stigmatized individuals could be associated with higher rates of maintaining and/or developing friendships with stigmatized individuals.

Summary and Hypotheses

In summary, social norms are potentially powerful tools for decreasing prejudice, such as stigma. Since contact with different groups is associated with less prejudicial attitudes toward these groups, positive social norms may be a potential pathway by which to promote contact and decrease prejudice. Below we detail our predicted hypotheses.

First, perceptions of positive social norms toward traditionally stigmatized persons are associated with decreased prejudice (Ata et al., 2009; Brown & Hewstone, 2005; Cameron et al., 2011; De Tezanos-Pinto et al., 2010; Norman et al., 2008; Turner et al., 2007, 2008; Vezzali et al., 2014; Zhou et al., 2019). As noted above, one of the more pernicious forms of prejudice is stigma, most often measured as a desire for social distance (Jorm & Oh, 2009). Therefore, if individuals adjust their attitudes to match social norms, and prejudice generally and stigma specifically are social norms, then:

Hypothesis 1. Perceptions of more positive social norms toward individuals with mental illness will be associated with lower desire for social distance from individuals with mental illness.

If perceptions of positive social norms are positively associated with individuals' likelihood to disclose their mental illness (Follmer et al., 2020), and/or individuals' willingness to interact with stigmatized others (Cameron et al., 2011; Vezzali et al., 2015; Zhou et al., 2019), then:

Hypothesis 2. Perceptions of more positive social norms will be associated with more contact with individuals with mental illness.

Contact, and especially close contact such as friendship, with individuals with mental illness is associated with decreased intergroup anxiety and, in turn, desired social distance. Specifically, prior to making friends with mental illness, individuals may anticipate that interactions with those with mental illness would be uncomfortable. By having positive interactions with these individuals, this intergroup anxiety may be decreased. Therefore, if contact is increased and contact is largely positive, then:

Hypothesis 3. Increased contact with individuals with mental illness will be associated with decreased intergroup anxiety.

Finally, if people anticipate social interactions to be uncomfortable (i.e., have high levels of intergroup anxiety), they may not want to engage in these interactions; therefore, we predict:

Hypothesis 4. Intergroup anxiety will be positively associated with desired social distance.

Based on our predicted direct effects, we also predict mediating effects. Specifically, if positive social norms are associated with more contact, more contact is associated with less intergroup anxiety, and less intergroup anxiety is associated with less desired social distance, then:

Hypothesis 5. Contact will mediate the relationship between social norms and desired social distance; and

Hypothesis 6. Intergroup anxiety will mediate the negative relationship between contact and desired social distance.

Importantly, we expect these processes to work for both individuals with and without a history of mental illness. Although individuals with a history of mental illness have been found to hold less stigmatizing attitudes toward others with mental illness (Svensson & Hansson, 2016), past research also shows that many individuals with mental illness still view others—and society at large—as having these negative views (also known as societal stigma, Corrigan & Watson, 2002; Corrigan et al., 2006, 2009; Evans-Lacko et al., 2012). Importantly, individuals with mental illness will internalize society's negative views about individuals with mental illness, including themselves (Corrigan, 2004; Krendl & Freeman, 2019; Kroska & Harkness, 2006; Marcussen et al., 2019; Rosenfield, 1997). These negative attitudes are known as self-stigma. Thus, just because someone has mental illness, this does not mean that person has positive attitudes toward others with mental illness.

Furthermore, individuals with mental illness may not consider others with mental illness to be a part of their ingroup. Specifically, for individuals with mental illness, a common method of deflecting stigma is to view others with mental illness as separate from them (Thoits, 2011, 2016; Thoits & Link, 2016). Therefore, both individuals with and without a history of mental illness may perceive others with mental illness as outgroup members. For both those with and without a history of mental illness, by increasing contact with others with mental illness, social norms may reduce intergroup

anxiety and desired social distance. Below, we describe how we test these hypotheses.

Method

Data

Data come from the College Toolbox Project (CTP), and are the result of one of Bring Change to Mind's three major programs—U(niversity) Bring Change to Mind (UBC2M), a student-led, anti-stigma intervention designed to improve campus social norms toward mental illness (Pescosolido et al., 2020). The intervention included continuous and campus-wide anti-stigma efforts that were developed and implemented by a student-led club (with faculty supervision) over a period of 2 years (2015–2017). Anti-stigma efforts included student-run events (e.g., scavenger hunts), lectures, classes, social media campaigns, and advertising. The breadth of these anti-stigma efforts leveraged activities that might require an “opt-in” (e.g., attending an event), as well as efforts that required no active engagement from students on campus (e.g., seeing a bus on campus advertising the anti-stigma campaign). Both active and passive engagement with the program contributed to perceptions of more positive social norms around mental health (see Pescosolido et al., 2020).

There are several benefits to studying mental health stigma interventions using data from the CTP. First, mental illness is particularly prevalent on college campuses (Cooke, 2006; Eisenberg et al., 2011; Kessler et al., 2005). Second, when young adults enter college, they enter a new social context with a new set of social norms. This new social context and corresponding norms, combined with the relatively insulated nature of college life, makes it possible to stage an intervention that permeates students' academic and social lives. Specifically, one of the CTP's main goals was changing social norms around mental illness on campus. Finally, CTP measures stigmatization and intergroup anxiety toward individuals with mental illness, contact with individuals with mental illness, and perceived social norms, making these data ideally suited to examine the relationship between norms, contact, and stigma.

Data collection was approved by the university's Institutional Review Board (Protocol No. 1407536121). Students who matriculated into the university during the intervention period (the class of 2019) completed online surveys at two time points (in 2015 and 2017). The surveys were designed to assess, among other things, students' stigma toward mental illness pre- and post-intervention. The survey items are described below (see Table 2). All class of 2019 students ($N = 7,376$ in 2015) were eligible to participate in the survey.

Demographic Characteristics of Sample

Table 1 includes demographic characteristics of the sample. Compared to the university's student body, our sample over-represents women. The percent of students who are first generation and the proportions based on race/ethnicity are comparable to university estimates (Indiana University-Bloomington, 2016). Between Time 1 and Time 2, there are a couple of interesting changes that took place. One of the more dramatic demographic findings is that at Time 1, 15% of students reported having mental illness; and at Time 2, this number doubled—30% of students reported having mental illness.

Measures

Table 2 includes the wording of focal independent, mediating, and dependent scale variables. For the wording of other variables, for example, demographics, see Supplemental Material B.

Independent Measures (Exogenous)

Perception of Improved Social Norms. Perceptions of improved social norms (Borsari & Carey, 2003) were measured by asking respondents the extent to which they agreed with three questions about their perceptions of the campus climate toward individuals with mental illness. Since the first wave of data was collected early in students' first year of college, they would not have been aware of the social norms on the campus at that point. Thus, we only collected the social norms measure at Time 2 (2017), not at Time 1 (2015). To ensure that the social norms measure captured

Table 1
Sample Demographics at T1 and T2 ($N = 787$)

Sample characteristics	Time 1				Time 2			
	Mean/prop.	SD	Min.	Max.	Mean/prop.	SD	Min.	Max.
Age in years	18.042	.475	17.000	22.000	20.290	.527	18.000	24.000
Gender: Woman	.724				.724			
Race								
Asian	.089				.090			
Black	.032				.032			
White	.771				.774			
Other/multiracial	.108				.104			
Hispanic or latino/a/x	.056				.062			
International student	.020				.020			
Member of LGBTQ community	.095				.150			
First generation student	.224				.227			
Childhood financial stability	.708				.663			
Network contacts with mental illness	.557	1.044	.000	8.000	1.262	1.461	.000	9.000
Respondent received mental illness treatment	.149				.299			

Note. T1 = Time 1; T2 = Time 2.

Table 2Scale Items, Cronbach's α (α), and Mean Inter-Item Correlation (MIIC) ($N = 787$)

Scales and scale items	Time 1		Time 2	
	α	MIIC	α	MIIC
Norms scale	N/A	N/A	.794	.562
How much do you agree with the following about your time at IU? [(1) <i>strongly disagree</i> –(4) <i>strongly agree</i>]				
I feel more free to talk about mental health problems and stigma issues.				
I have been exposed to more tolerant attitudes toward people with mental health problems.				
I've become more aware of mental health and stigma issues since coming to IU.				
Intergroup Anxiety Scale	.811	.517	.827	.544
Next, we would like to get your opinions on individuals with a history of mental illness. Again, remember there are no right or wrong answers, just what you really think . . . [(1) <i>strongly disagree</i> to (4) <i>strongly agree</i>]				
It would make me feel nervous to be around a student with a history of mental illness.				
Being around a person with a history of mental illness would make me feel uncomfortable.				
I am frightened to be around persons with a mental health problem.				
People with mental health problems are hard to talk to.				
Social Distance Scale	.932	.579	.936	.595
How willing would you be to do the following [(1) <i>definitely willing</i> to (4) <i>definitely unwilling</i>]:				
Have a student with a history of mental illness in one of your classes?				
Spend an evening hanging-out with a student with a history of mental illness?				
Have a student with a history of mental illness as your roommate?				
Work closely with a student with a history of mental illness on a class project?				
Make friends with a student with a history of mental illness?				
Have a serious romantic relationship with a student with a history of mental illness?				
Have students who have a history of mental illness living in your dorm?				
Be in a study group with a student with a history of mental illness?				
Have a student with a history of mental illness marry into your family?				
Take a class taught by a professor with a history of mental illness?				

Note. IU = Indiana University.

perceived *changes* in norms, the questions about norms ask the respondents for their perceptions of *campus norms* compared to *norms prior to coming to campus* (see Table 2). For each item, responses ranged from (1) *strongly disagree* to (4) *strongly agree*, with higher numbers indicating more positive perceptions of campus norms. To create a final scale, the averaged of each item was taken, Cronbach's α (α) = 0.794, mean inter-item correlation (MIIC) = 0.562. The final averaged scale ranges from 1 to 4.

Mediating and Dependent Measures (Endogenous)

Contact. Contact is measured at Times 1 and 2 using a network framework. Specifically, individuals were first asked to list their 12 closest friends/family. We then asked respondents if any of these friends/family had a mental illness. At each time point, we added the total number of people with mental illness from the list of close friends/family. We then subtracted the number of close contacts at Time 1 (2015) from the number of close contacts with mental illness at Time 2 (2017). The final measure ranges from -7 to $+9$, with negative numbers indicating fewer contacts in 2017 relative to 2015, and positive numbers indicating more contacts with mental illness in 2017 relative to 2015.

Intergroup Anxiety. Intergroup anxiety was measured at both time points using a four-item scale that asked respondents to evaluate how they would feel interacting with a person with mental illness, which is consistent with other measures of intergroup anxiety (Brown & Hewstone, 2005; Stephan & Stephan, 1985). For example, respondents were asked to what extent they agreed that "It would make me nervous to interact with a student with a history of mental illness" (see Table 2 for all items). Options for each

question ranged from (1) *strongly disagree* to (4) *strongly agree*, with higher numbers indicating more intergroup anxiety. After examining interitem correlations and using exploratory factor analysis to determine that the items represent one latent factor, we took the average of respondents' answers to the items (Time 1 $\alpha = 0.811$, MIIC = 0.517; Time 2 $\alpha = 0.827$, MIIC = 0.544). We examine the change in intergroup anxiety by subtracting respondents' answers in 2015 from their answers in 2017. The final measure ranges from -3 to $+1.75$, negative numbers indicate intergroup anxiety decreased over time; positive numbers indicate intergroup anxiety increased.

Desired Social Distance. Desired social distance, our measure of stigma, was measured at Times 1 and 2 by using 10 standard social distance items that were adapted for the college context (e.g., respondent's willingness to "have a student with mental illness in one of your classes," "as a roommate," and "spend an evening socializing with", Pescosolido et al., 2020).⁵ Options for each question ranged from (1) *definitely willing* to (4) *definitely unwilling* (see Table 2 for all items). The final scale took the average of respondents' answers to the items (Time 1 $\alpha = 0.932$, MIIC = 0.579; Time 2 $\alpha = 0.936$, MIIC = 0.595). We examine the change in desired social distance by subtracting respondents' answers in 2015 from their answers in 2017. The final measure ranges from -2.9 to $+2$. Negative numbers indicate desired social distance decreased over time; positive numbers indicate desired social distance increased.

⁵ One item from the original scale, "willingness to have a casual sexual hookup", was a weaker measure of the latent variable, social distance, than the other variables. We conducted sensitivity analyses with and without this measure and the final conclusions did not change. We decided to omit the measure since it did not seem to be a strong indicator of the latent concept.

Data Management

For a detailed discussion of data management strategies, please see [Supplemental Material A](#). To summarize, because we were interested in the transformative nature of the intervention, we only kept respondents who responded to the survey at both Time 1 and Time 2 (see Attrition Analysis in [Supplemental Material A](#)). If respondents answered demographic information (e.g., gender, race/ethnicity) at one time point but not the other, we imputed the information from the time point for which they responded. For individuals missing on focal independent or dependent variables (<5%), we used listwise deletion ([Allison, 2002](#)).⁶ Our final sample size is 787.

Results

Descriptive Statistics and Overall Trends

In [Table 3](#), we provide general descriptive statistics of our variables of theoretical interest (i.e., all variables in the model). Overall, we find that respondents agreed that the campus norms toward mental illness were positive. Specifically, on a range from (1) *strongly disagree* to (4) *strongly agree*, the mean is 3.245. Additionally, this distribution is negatively (left) skewed, with most respondents saying they either *agree* or *strongly agree* with all responses. Thus, although we do not have a measure of perceived norms prior to the intervention, students perceived that campus norms toward mental illness were positive.

Our models also include measures of number of close contacts (i.e., contact), intergroup anxiety, and desired social distance (our measure of stigma). As is visible in [Table 3](#), overall, the number of contacts with mental illness increased by 0.705 between T1 and T2. Additionally, both intergroup anxiety and desired social distance decreased between T1 and T2, by -0.258 and -0.248 , respectively.

To examine the general patterns of difference between Time 1 and Time 2, we used ordinary least squares (OLS) regression to calculate average marginal effects of contact, intergroup anxiety, and desired social distance at T1 and T2. Using OLS regression allows us to account for the nonindependence of observations. Specifically, in these regression models, the DV (contact, intergroup anxiety, and desired social distance) is regressed on the time point, and the standard errors are clustered on the respondent (accounting for nonindependence of observations). At Time 1 (prior to the intervention), respondents had, on average, less than one friend in their network with a mental illness (T1 friends = 0.557). At Time 2, the number of network contacts with mental illness had increased to being, on average, more than one friend (T2 friends = 1.262, $\Delta = 0.705$, $p < .001$). At Time 1, intergroup anxiety was 1.848 (range: 1–4), and this decreased to 1.590 at Time 2 ($\Delta = -0.258$, $p < .001$). Finally, between Time 1 (prior to the intervention) and Time 2, the average desired social distance from those with a mental illness decreased as history of mental illness decreased ($\Delta = -0.248$, $p < .001$). In the next section, we examine the paths through which these changes occurred.

Analytic Strategy—Path Analysis

To examine our proposed theoretical pathways, we used a structural equation model (SEM). In the SEM, each respondent is only represented one time (data is in wide format). Because we are interested in

Table 3
Descriptive Statistics (N = 787)

Variable	Mean/prop.	SD	Min.	Max.
Perception of improved norms	3.245	.629	1.000	4.000
Δ Contact	.705	1.473	-7.000	9.000
Δ Intergroup anxiety	-.258	.613	-3.000	1.750
Δ Desired social distance	-.248	.547	-2.900	2.000
Δ Gender or sexual orientation	.080			
Δ Mental health diagnosis	.150			

individual-level change, we estimate models of difference ([Allison, 1990](#); [Castro-Schilo & Grimm, 2018](#); [Gollwitzer et al., 2014](#); [Rogosa & Willett, 1985](#)). In our model, we included the T1 measure of desired social distance, our primary dependent variable, as a predictor of the change in desired social distance between T1 and T2. We also estimated a difference model in which all endogenous variables had T1 predictors. Although this model provided comparable results (same direction, size, and significance), the fit indices were considerably worse. Finally, although we are primarily interested in change, for sensitivity analyses, we also estimated a lagged (residualized) model. All three models showed comparable results, however, the model we present had the best fit indices, and appears to be a relatively good fit for the data, $\chi^2(19) = 75.764$, $p < .001$, comparative fit index; CFI = 0.904, Tucker-Lewis index; TLI = 0.833, standardized root mean square residual; SRMR = 0.036, root mean squared error of approximation; RMSEA = 0.062 (see bottom of [Table 4](#)). For transparency, we include the other two models in [Supplemental Material C](#). To calculate mediation effects, we use a modified Baron and Kenney approach ([Baron & Kenny, 1986](#); [Iacobucci et al., 2007](#); [Mehmetoglu, 2018](#)).

All statistical analyses were conducted in Stata, 15.1 and used the SPPost suite for postestimation ([Long & Freese, 2014](#)). In all models, we include the following demographic covariates: Change in history of mental illness, age, race, change in lesbian, gay, bisexual, transgender, queer (LGBTQ+) identity, and if respondents are first generation students. Of these covariates, only a history of mental illness (difference between T1 and T2), gender, and change in LGBTQ+ identity between T1 and T2 were statistically significant predictors of the change in desired social distance between T1 and T2.⁷ Despite the lack of statistical significance for many of these demographic covariates, the model with multiple controls fit better than a simpler model (see [Table C3, Supplemental Material C](#)).

Direct Effects. Overall, perceptions of improved norms at Time 2 are associated with a decrease in desired social distance between T1 and T2 ($b = -0.170$, $p < .001$) and an increase in network

⁶ For respondents missing on scale items, we used proration to maintain as much data as possible. Due to known issues with proration, however, we also constructed the scales and estimated the models using full information maximum likelihood ([Mazza et al., 2015](#)). The results were of comparable size, in the same direction, and had the same level of statistical significance apart from a single control variable (change in sexual orientation). These results are available in [Supplemental Material A, Table SA1](#).

⁷ We examined these processes separately for those with and without a history of mental illness. For all effects, the direction is the same. Compared to those who have not been diagnosed with mental illness, for those who have been diagnosed, the effect of perceived norms on contact is larger ($\Delta = 0.411$, $p < .05$) as is the effect of perceived norms on desired social distance ($\Delta = 0.099$, $p < .05$). There are no other statistically significant differences in effect sizes.

contacts between T1 and T2 ($b = 0.257, p < .01$) (see Table 4). These findings provide support for Hypotheses 1 and 2, respectively. In support of Hypothesis 3, increased contact between T1 and T2 is associated with decreased intergroup anxiety between T1 and T2 ($b = -0.070, p < .001$). Finally, change in intergroup anxiety between T1 and T2 is positively associated with change in desired social distance between T1 and T2, such that decreased intergroup anxiety is associated with decreased desired social distance ($b = 0.208, p < .001$). This finding supports Hypothesis 4.

Mediation Effects. Mediation effects are reported in Table 5. In Hypothesis 5, we predicted that contact would mediate the relationship between social norms and desired social distance. Overall, contact partially mediates the relationship between perception of improved norms and desired social distance, with contact explaining ~3% (.005/.178)⁸ of the effect of perceived norms on desired social distance (marginal significance). Finally, in Hypothesis 6, we predicted that intergroup anxiety would mediate the negative relationship between contact and desired social distance. Indeed, intergroup anxiety explains about 45% (0.015/0.032) of the relationship between contact and desired social distance ($p < .001$).

Summary of Findings. In summary, the overall theoretical pattern we predicted is supported. Perceptions of improved social norms are both directly and indirectly associated with a decrease in desired social distance. One path through which positive social norms is associated with decreased desired social distance is through increased contact. Specifically, increased contact is associated with decreased desired social distance, but nearly half of this effect (45%), is mediated by a reduction in intergroup anxiety. Taken together, these findings suggest that perceived social norms may be a promising tool for reducing stigma.

Table 4
Structural Equation Model (N = 787)

Variable	Direct	Indirect	Total
Δ Contact			
Perception of improved norms	.257**		.257**
Δ Intergroup anxiety			
Δ Contact	-.070***		-.070***
Perception of improved norms		-.018**	-.018**
Δ Desired social distance			
Δ Contact	-.018*	-.015***	-.032***
Δ Intergroup anxiety	.208***		.208***
Perception of improved norms	-.170***	-.008**	-.178***
T1: Desired social distance	-.556***		-.556***
Demographic covariates ^a			
Δ Mental health diagnosis	-.100*		-.100*
Gender: woman	-.097*		-.097*
Age in years	.012		.012
White	-.067		-.067
International student	-.037		-.037
First generation student	.009		.009
Childhood financial stability	.021		.021
Δ Gender or sexual orientation	-.108*		-.108*

Note. Fit Statistics: $\chi^2(19) = 75.764, p < .001$; CFI = 0.904; TLI = 0.833; RMSEA = 0.062, pclose = 0.086; SRMR = 0.036.

^a Covariates represent overall effect on social distance, measured at Time 1, with the exception for change in mental health diagnosis and change in LGBTQ+ identification, which represent differences between T1 and T2.
† $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$. two-tailed tests.

Table 5
Mediation Effects

Estimates	Delta	Sobel	Monte Carlo
Panel A. Contact mediating relationship between perceptions of improved norms and desired social distance			
Indirect effect	-.005	-.005	-.004
Std. Err.	.003	.003	.003
z-value	-1.801	-1.684	-1.597
p value	.072	.092	.110
Panel B. Intergroup anxiety mediating relationship between contact and desired social distance			
Indirect effect	-.015	-.015	-.015
Std. Err.	.003	.003	.003
z-value	-4.603	-4.298	-4.218
p value	$p < .001$	$p < .001$	$p < .001$

Conclusion

Research that considers interventions into processes of discrimination in general, and stigma, in particular, often focuses on the power of contact. In most of this research, social norms are treated as mediating variables rather than potential motivators for change. This is somewhat surprising given (a) past researchers' success in manipulating social norms to affect behavior (for meta-analysis, see Borsari & Carey, 2003) and (b) the logistical and moral challenges associated with imposing contact. Although this study does not manipulate norms or contact, we leverage a longitudinal dataset that assessed changes in contact over time, and perceived social norms to gain insight into whether perceiving positive social norms predicts increased contact with individuals with mental illness. We found that students' more positive perceptions of campus norms toward mental illness are associated with more contact with individuals with mental illness, less intergroup anxiety, and reduced stigma.

These findings have important implications for both theory and practice. In terms of theory, our findings provide both further support for past research and new theoretical insights. Our primary contribution is illuminating the power of social norms in discrimination processes. Specifically, we find that perceptions of more positive social norms are associated with increased contact and decreased stigma. Additionally, our research provides further support for the proposed mechanism, that is, intergroup anxiety, through which contact is associated with decreased stigma. Intergroup anxiety is particularly powerful, mediating 45% of the effect of contact on desired social distance.

In terms of practice, we encourage researchers to consider social norms as a primary lever for decreasing discrimination. Direct contact with outgroup members is a powerful predictor of discriminatory beliefs, but it is very difficult to orchestrate. Our work identifies a way to increase contact, even when individuals may not be initially inclined to make such contact. Interventions that explicitly manipulate social norms may allow researchers to increase contact, which is a well-established way to decrease stigma.

⁸ Note, the indirect effect for contact 0.005 does not equal the entire indirect effect 0.008 as seen in Table 4, because some of that effect is explained by intergroup anxiety.

We see the potential for intervention campaigns that combine norms-based interventions with others (e.g., those emphasizing competence and/or mental health literacy). For example, recent research suggests that emphasizing the competence of individuals with mental illness is a particularly powerful tool for reducing stigma (Kroska & Harkness, 2021). Combining these insights with those from our study, perhaps future interventions could focus on changing individuals' perceptions of how most people view the competence of individuals with mental illness. Additionally, research has noted that, in some circumstances, increased mental health literacy can reduce stigma (Hansson et al., 2016; Jorm et al., 1997; Svensson & Hansson, 2016; Wang & Lai, 2008). Since both norms-based and literacy-based interventions are focused on providing information, perhaps interventions can combine these methods to reduce mental health stigma.

There are some limits to our study's ability to test the proposed mechanisms. First, there is no control group. For example, perhaps by going to college, individuals are generally exposed to more positive norms and the manipulation was not the primary mechanism for changing perceived norms. Second, there was considerable attrition between time points. Based on our attrition analysis (see Supplemental Material A), we have no reason to suspect the attrition was related to the dependent or mediating variables; however, such high attrition may temper the strength of our conclusions. Third, and as with all studies, there is a potential for unmeasured variables to affect these processes. Fourth, as previously mentioned, we did not explicitly manipulate social norms in this study, so a causal mechanism cannot be established. Finally, there are multiple definitions and types of stigma (e.g., negative stereotypes), and herein, we examine only the most commonly used measure, i.e., desired social distance (Jorm & Oh, 2009).

Despite these potential shortcomings, our data provide important information about stigma interventions. Specifically, this study was part of a campus-wide intervention to reduce stigma, and findings suggest that even passively exposing students to anti-stigma campaigns was associated with widespread reduction in mental illness stigma (Pescosolido et al., 2020). In particular, we find that perceptions of social norms are associated with changes in attitudes and behavior in an applied context. To further inform both theory and intervention efforts, we hope that future researchers will test these proposed mechanisms with even more precision, in more controlled contexts.

In conclusion, this study uses data from an intervention designed to improve social norms to test a proposed theoretical mechanism. Specifically, we test the power of social norms to improve attitudes and behavior in the stigmatization of mental health. Outside of the context of discrimination, the ability to change behavior and attitudes by manipulating social norms is widely established. We apply these lessons to stigma and find support for the power of social norms in the mental illness context. Building on these insights, we hope that researchers can develop more, and better, manipulations designed to reduce stigma.

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