

Comparing educational interventions: Correcting misperceived norms improves college students' mental health attitudes

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Abstract

This research targeted potential psychological contributors to college students' low levels of help-seeking for mental distress using a field experiment. Researchers randomly assigned 520 undergraduates to 15-min interventions: a novel, theory-driven social norms intervention correcting misperceived distress, stigma, and help-seeking norms; a general education intervention increasing mental health awareness; and a stress management active control condition. The norms intervention instilled more accurate perceptions of mental health norms and temporarily reduced perceived public stigma compared to other conditions. The norms and general education interventions improved attitudes toward seeking help for mental distress for at least 2 months, relative to the control. Effects on help-seeking behavior were not observed in this timeframe. This research elucidates the robustness of brief social psychological mental health interventions on college campuses.

1 | INTRODUCTION

Student mental health has emerged as a priority on college campuses nationwide. College-aged individuals experience a higher prevalence of mental distress, functional impairment due to mental health problems, and suicidal ideation than other adults (Center for Behavioral Health Statistics and Quality [CBHSQ], 2015). These high levels of mental distress are particularly troubling given that mental health problems may be on the rise on some college campuses (e.g., Gallagher, 2015) and that suicide already follows vehicle accidents as the second leading cause of death among students at 4-year colleges (Turner, Leno, & Keller, 2013).

Strikingly, this same group of young adults who experience high levels of distress is also the population least likely to seek help (CBHSQ, 2015). Consistently, only a third or less of college students who are in distress seek mental health treatment (e.g., Eisenberg, Hunt, Speer, & Zivin, 2011). Undertreatment is associated with a longer, more severe course of illness and the development of co-occurring mental disorders (Wang et al., 2005), and contributes markedly to college attrition among students: In a recent national survey, two-thirds of students who dropped out of college cited a mental health issue as the reason they left, and half of this group never utilized mental health services prior to dropping out (Gruttadaro & Crudo, 2012).

Despite increased national and scholarly attention to college mental health, interventions to improve help-seeking for mental distress are seldom evaluated empirically in the college population. Rigorous

research on the use of inexpensive, brief, and easily administered interventions to address student mental health may be particularly valuable to colleges and universities, which must frequently work with limited resources (Gruttadaro & Crudo, 2012). The present study makes an important contribution to this area by introducing a novel intervention approach based on correcting misperceived mental health norms. This brief intervention aims to improve attitudes toward seeking help by reducing mental health stigma.

1.1 | Mental health stigma and correcting misperceived norms

Although attitudes regarding mental illness have improved substantially over the years, many stereotypes are still prevalent, including that people with mental health conditions are dangerous, incompetent, and too weak to handle the ordinary stress of life (Schomerus et al., 2012). These persistent stereotypes contribute to continued *personal stigma* of mental illness (an individual's own stigmatizing attitudes toward people with mental illness) as well as *perceived public stigma* (an individual's perception of the general public's stigmatizing attitudes toward people with mental illness; Corrigan, 2004). Stigmatizing attitudes are directed both at people experiencing a psychological problem, as well as specifically toward those who seek help for that problem (Tucker et al., 2013). For example, undergraduates rate individuals who have depression more negatively (e.g., as less competent, interpersonally interesting, and confident) than those who have a physical condition

(e.g., back pain); moreover, they rate individuals who seek treatment for depression more negatively than both those who are depressed but do not seek treatment and those who seek treatment for a physical problem (Ben-Porath, 2002).

Not surprisingly, high levels of personal and perceived public stigma may be associated with poorer student mental health and greater perceived barriers toward seeking help (e.g., Eisenberg, Downs, Golberstein, & Zivin, 2009). Two prior studies indicate that 20%–25% of depressed students choose not to seek help because of concern about what others would think, fear of a negative impact on their future career, fear that a mental health-related diagnosis would enter their academic record, or general stigma of seeking help for mental health conditions (Eisenberg, Golberstein, & Gollust, 2007; Tija, Givens, & Shea, 2005).

Given that attempts to reduce mental health stigma inexpensively have had mixed results (see Yamaguchi, Mino, & Uddin, 2011), the current research proposes using a social norms intervention approach to reduce stigma and improve help-seeking attitudes by correcting misperceived norms about student mental health. Social norms interventions have achieved substantial success in shifting college students' attitudes and behaviors toward healthier patterns in a range of health contexts (e.g., drinking and driving: Perkins, Linkenbach, Lewis, & Neighbors, 2010; disordered eating: Mutterperl & Sanderson, 2002; condom use: Sanderson & Yopyk, 2007). These norms interventions have been effective when (a) the target population misperceives health-related norms and (b) these misperceptions contribute to unhealthy outcomes. Prior research suggests that college students may consistently misperceive two types of mental health norms in a way that meets these criteria.

First, studies that assess both perceived public stigma and personal stigma suggest that college students consistently overestimate the normative level of help-seeking stigma held by their peers. For example, Eisenberg et al. (2009) found that students across 13 different universities believed that most people held significantly higher levels of stigma of seeking mental health treatment than they did themselves. This misperception of stigma norms may have severe consequences for student health: High perceived public stigma could dissuade students from utilizing mental health services if they experience mental distress, either directly (e.g., Corrigan, 2004) or through internalization of stigmatizing attitudes (Vogel, Bitman, Hammer, & Wade, 2013). In addition, the perception of high public stigma could worsen stressed students' mental status and hinder recovery from mental illness (Britt et al., 2008).

Second, research also suggests that students may underestimate the prevalence of both mental distress and help-seeking on their campus. For example, 53% of students at four universities indicated they had experienced depression, but only 37% believed depression was a problem at their school (Furr, Westefeld, McConnell, & Jenkins, 2001). Misperception of normative levels of distress and help-seeking makes sense given that students are motivated to present themselves as happy, successful, and self-reliant, and therefore may conceal their anxiety, depression, or help-seeking experiences (Sanderson, Darley, & Messenger, 2002). This discrepancy between outward appearance and private reality may lead to the proliferation of a perceived, but

inaccurate, norm that few others experience mental distress or seek help. These misperceptions could lead struggling students to feel discrepant from the norm, preventing them from seeking help, and increasing their distress by making them feel alienated and alone.

A social norms intervention approach that corrects students' misperceptions about their peers' mental health attitudes and behaviors may thus reduce perceived public stigma of seeking treatment and normalize both mental distress and help-seeking. Achieving these goals may in turn improve both help-seeking attitudes and mental health in the student population.

1.2 | Overview of current study

The current study used a randomized-controlled design to examine the effectiveness of three 15-min interventions in improving mental health attitudes and behavior among college students. The novel social norms intervention described the actual prevalence of various mental health issues and help-seeking behavior on campus, and discussed how norm misperception may affect mental health as well as help-seeking attitudes and behaviors. The second intervention, a general education approach that has achieved success in improving help-seeking attitudes in prior research (e.g., Gonzalez, Tinsley, & Kreuder, 2002; Sharp, Hargrove, Johnson, & Deal, 2006), provided information about specific mental health disorders, myths surrounding mental illness and its etiology and prevalence, and reasons why students seek help from the campus counseling center. This intervention was included to allow comparison of the effects of the new social norms intervention against those achieved by a successful pre-established approach. The third intervention used a stress-reduction approach to teach students about the signs, symptoms, and reduction of stress; this program was similar to many campuses' current method of educating students about mental well-being and thus served as an active control. Information on students' attitudes toward seeking help, perceived public and personal stigma, and perceptions concerning the prevalence of mental distress and help-seeking on campus was collected before, immediately after, and 2 months after each intervention. In this way, the current research examined whether very short interventions designed to be easily incorporated into dorm, orientation, or classroom programming would have any lasting effect on students' mental health attitudes and behaviors.

2 | METHODS

2.1 | Participants

The initial participants in this three-part study were 386 first-year and 134 upper-year (sophomore through senior) undergraduate students (aged 17–23, $M = 18.63$ years; 51.7% female) at a liberal arts college. Of the 520 students who participated in baseline data collection, 356 (68.5%) returned to complete the intervention and post-intervention questionnaire and 283 (54.4%) completed the follow-up questionnaire 2 months later. The students who returned for the follow-up were similar to those in the initial sample (see Supporting Information for details).

2.2 | Procedure

Students were informed of the opportunity to participate in the study through their dormitory resident advisors. All participants signed an informed consent form detailing the study's Institutional Review Board-approved procedure before beginning the study. They subsequently completed a baseline questionnaire assessing their perceived campus mental health norms, personal and perceived public stigma, help-seeking behavior and attitudes, and mental health status. Participants were then randomly assigned by housing group to one of three brief interventions, which they attended 3–14 days after completing the baseline questionnaire. Immediately following the intervention, they completed a post-intervention questionnaire measuring again their perceived norms, stigma, and attitudes toward seeking help. Finally, participants completed a follow-up questionnaire approximately 2 months after the intervention. All participants used a code number instead of their name on each questionnaire and were reminded that their responses would remain anonymous and confidential.

2.3 | Interventions

The researchers developed three interventions based on prior research and in consultation with campus mental health experts. Each was approximately 15 min in length. The interventions were primarily lecture-based to reduce variability due to differing participant contribution across sessions, but each contained brief opportunities for limited participation in order to maintain participant engagement in the material. At the close of all interventions, participants received a comprehensive list of mental health resources available on campus.

Trained student health educators delivered the interventions in participants' dormitories. These student educators were employed by the college to deliver health-related workshops regularly in dorms. They thus had considerable experience disseminating health-related information in this format and were a trusted source of health information among students. Three student educators were trained for each of the interventions, and were kept blind both to the content of the other two interventions as well as the hypotheses of the study.

2.3.1 | Social norms intervention ("Norms")

This intervention focused on discussing and correcting norm misperceptions regarding mental health. Educators defined mental health and gave statistics on the prevalence of various mental health issues on campus. Educators also discussed the high prevalence of mental illness and low rate of help-seeking among the general 18–25-year-old population. Educators then explained the psychology of norm misperception and talked about how misperceiving mental health norms (particularly underestimating prevalence of mental health issues and help-seeking behavior, and overestimating social stigma of seeking mental health treatment) could affect one's mental health and likelihood of seeking help.

2.3.2 | General mental health education intervention ("GenEd")

This intervention provided a basic education in mental health issues (e.g., Gonzalez et al., 2002; Sharp et al., 2006). Educators defined

mental health and discussed common mental health myths (regarding, e.g., prognosis, etiology, stereotypes). Educators then described several disorders (including mood, anxiety, and eating disorders). The intervention concluded with a brief listing of the most common concerns among students who sought therapy from the campus's counseling center.

2.3.3 | Stress management intervention ("Stress")

This intervention targeted the recognition and management of stress as an important aspect of mental health. Educators defined mental health, conveyed statistics on the prevalence of stress on campus, articulated the difference between acute and chronic stress, and discussed behavioral, emotional, and physical signs of stress. Educators then offered strategies on how to manage stress, including time management tips and breathing exercises. This intervention was a shorter version of a workshop already delivered by student health educators on campus and thus served as an active control condition.

2.4 | Measures

2.4.1 | Perceived norms

Participants were asked on each of the three questionnaires to estimate the percentages of students on their campus who sought help from the college counseling center, felt so depressed it was difficult to function, seriously contemplated suicide, and felt overwhelmed by all they had to do in the past 12 months. These questions mirrored those collected in the American College Health Association's National College Health Assessment, thus enabling the researchers to compare perceived norms to the actual norms aggregated from students' responses the prior year on the same campus (McGoldrick, 2010).

2.4.2 | Perceived public and personal stigma

Stigma toward seeking psychological help was measured on all three questionnaires through an adapted scale, including items from the Stigma Scale for Receiving Psychological Help (Komiya, Good, & Sherrod, 2000), the Discrimination-Devaluation Scale (original: Link, 1987; adapted: Eisenberg et al., 2009), and three items created by the researchers. Response choices ranged from 0 (*Strongly Disagree*) to 3 (*Strongly Agree*) for all items. A principal components factor analysis with promax rotation identified a two-factor solution as the best fit: the Perceived Public Stigma subscale (PPS; $\alpha = .79$ in baseline, 0.85 in post-intervention, 0.83 in follow-up) and the Personal Stigma subscale (PS; $\alpha = .69, 0.80, 0.77$). One item was dropped due to its failure to load at ± 0.40 . The PPS tapped into the degree of social stigma participants perceived around seeking help (e.g., "Most people will see a person in a less favorable way if they come to know (s)he has seen a psychologist") whereas the PS measured the degree of stigma participants themselves held toward seeking psychological help (e.g., "If I found out that a role model had seen a psychologist for a mental health issue, I would admire him or her less"). Higher scores indicated greater stigma for both scales.

2.4.3 | Help-seeking and help-referring behavior

Participants' help-seeking behavior for mental health needs was measured on the baseline and follow-up questionnaires through the following question: "Did you receive counseling or support for your mental or emotional health from any of the following sources?" In the baseline questionnaire, first-years were asked about the period "*before arriving to [college name]*" and "*since arriving to [college name]*," whereas upper-year students were asked about the period "*in the last 12 months.*" For all students, the follow-up questionnaire asked the same question about the period "*since the beginning of your participation in this study (about two months ago).*" In addition, participants' help-referring behavior was assessed by asking, "Did you refer a friend or family member to any of the following support resources for their mental or emotional health?" in reference to the same time periods. Potential help resources included: friend, family, professional counseling, professor/teacher, support group, religious advisor, dormitory resident advisor, and other.

2.4.4 | Attitudes toward seeking help

Attitudes toward seeking help from professional counseling services were measured on all three questionnaires through the Attitudes Toward Seeking Professional Psychological Help-Short Form scale (ATSPPH-SF; Fischer & Farina, 1995). This scale consists of 10 statements that participants rate from 0 (*Disagree*) to 3 (*Agree*), including "If I believed I was having a mental breakdown, my first inclination would be to seek professional attention" and "I would want to get psychological help if I were worried or upset for a long period of time." The ATSPPH-SF had a strong internal coherence of $\alpha = .77$ on the baseline questionnaire, $.80$ on the post-intervention questionnaire, and $.77$ on the follow-up questionnaire. Higher scores indicated more positive attitudes toward seeking professional help.

2.4.5 | Mental health status

The Center for Epidemiologic Studies Depression Scale (CES-D), a 20-question scale designed to measure depressive symptomatology (Radloff, 1977), was used to assess participants' mental health in the previous 2 weeks on the baseline and follow-up questionnaires. On this scale, participants rate items such as "I felt that everything I did was an effort" and "I felt sad" from 0 (*Not at all or very rarely*) to 3 (*Nearly every day*). In addition, two items ("I felt confident about my ability to handle my personal problems" and "I felt that I could not cope with all the things I had to do") were added to the CES-D from the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), an instrument used to measure the perception of stress, in order to assess participants' general stress levels. A principal components factor analysis with promax rotation revealed that a single factor, including these two additional items, provided the best fit for the data. The internal reliability of this scale was very high ($\alpha = .90$ at both baseline and follow-up). Higher scores indicated greater mental distress.

3 | RESULTS

Analyses were conducted to examine the impact of condition (GenEd, Norms, and Stress) on perceived mental health norms, stigma of

seeking treatment for mental distress, perceiving a need for help, help-seeking attitudes and behaviors, and depressive symptomatology at two time periods compared to baseline measurement: immediately after and 2 months after the intervention. All analyses included intervention condition, gender, and class year (first-year vs. upper-year) as fixed factors, and baseline responses to each variable and housing group as covariates. The means reported in the text are covariate-adjusted; Table 1 presents the raw means and standard deviations of each measure by intervention condition at the baseline data collection, post-intervention, and 2-month follow-up. Whereas the text describes between-condition comparisons at the two follow-up periods controlling for baseline measurement, Table 1 also includes within-condition comparisons of mental health attitudes over time.

3.1 | Question #1: Did intervention condition affect students' beliefs and attitudes regarding mental health immediately following the intervention?

A series of analyses of covariance (ANCOVAs) examined the immediate effects of intervention condition on mental health beliefs and attitudes, specifically, perceived mental health norm accuracy, personal and perceived public stigma, and attitudes toward seeking help for mental distress.

3.1.1 | Perceived norm accuracy

Analyses assessed the accuracy of participants' perceived campus mental health norms for four types of norms. First, an analysis predicting students' perceived campus prevalence of seeking help from the campus counseling center revealed a marginally significant effect of condition ($F(2, 333) = 2.85, p = .059, \eta^2 = .017$). Pairwise comparisons indicated that participants in the Norms ($p = .036$) and Stress ($p = .040$) conditions reported significantly more accurate perceptions of help-seeking prevalence than those in the GenEd condition (M s of prevalence estimated by participants = 34.82% in Norms, 29.29% in GenEd, 35.36% in Stress; actual prevalence: 37%).

A second analysis predicting participants' perceived campus prevalence of feeling depressed also revealed a significant main effect of condition ($F(2, 333) = 7.07, p = .001, \eta^2 = .041$). Pairwise comparisons indicated that participants in the Norms ($p = .001$) and GenEd ($p = .002$) conditions reported significantly more accurate perceptions of depression prevalence than those in the Stress condition (M s of prevalence estimated by participants = 23.47% in Norms, 23.04% in GenEd, 12.00% in Stress; actual prevalence: 44%).

A third analysis predicting participants' perceived campus prevalence of suicide ideation again revealed a significant main effect of condition ($F(2, 333) = 14.38, p < .001, \eta^2 = .080$). Pairwise comparisons indicated that participants in the Norms condition reported significantly more accurate perceptions of suicidality than those in the Stress and GenEd conditions ($p < .001$ for both; M s of prevalence estimated by participants = 13.96% in Norms, 7.36% in GenEd, 7.30% in Stress; actual prevalence: 15%).

A fourth analysis predicting participants' perceived campus prevalence of feeling overwhelmed revealed a significant main effect of

TABLE 1 Outcome measures at study time points (Mean, SD) for Norms ($n = 188$), GenEd ($n = 154$), and Stress (active control; $n = 159$)^a groups

Variable	Baseline	Immed. post	p_{between}	p_{within}	2 month	p_{between}	p_{within}
Estimated campus prevalence of... ^b							
Seeking help							
Norms	21.91 (16.73)	27.73 (14.73)	.844	.012	30.29 (19.07)	.014	.017
GenEd	21.66 (17.82)	23.27 (16.40)	.040	.416	25.15 (17.70)	.932	.326
Stress	19.76 (14.34)	27.69 (20.61)		< .001	23.44 (17.90)		.412
Depression							
Norms	16.99 (17.80)	36.76 (21.77)	.001	< .001	30.79 (24.39)	< .001	< .001
GenEd	13.29 (11.34)	32.78 (16.75)	.002	< .001	24.90 (24.54)	.113	< .001
Stress	16.03 (17.50)	23.19 (21.49)		< .001	19.74 (20.64)		.184
Suicide ideation							
Norms	5.61 (8.69)	14.44 (8.06)	< .001	< .001	10.10 (8.10)	< .001	.003
GenEd	4.68 (4.80)	7.43 (7.12)	.970	.001	5.91 (6.02)	.254	.025
Stress	4.43 (5.51)	6.89 (11.09)		.018	4.36 (4.30)		.648
Feeling overwhelmed							
Norms	69.15 (26.93)	82.03 (15.33)	.282	< .001	78.80 (19.38)	.319	.014
GenEd	69.26 (25.65)	66.23 (24.67)	.013	.557	73.37 (22.32)	.668	.057
Stress	65.71 (27.87)	76.84 (24.96)		< .001	72.90 (25.87)		.286
Perceived Public Stigma							
Norms	1.47 (0.54)	1.27 (0.59)	.018	< .001	1.31 (0.58)	.295	.003
GenEd	1.44 (0.51)	1.56 (0.50)	.341	.002	1.46 (0.48)	.937	.942
Stress	1.49 (0.47)	1.51 (0.53)		.422	1.42 (0.49)		.362
Personal Stigma							
Norms	0.52 (0.44)	0.50 (0.50)	.933	.792	0.46 (0.49)	.187	.326
GenEd	0.48 (0.50)	0.46 (0.51)	.414	.958	0.41 (0.46)	.292	.286
Stress	0.63 (0.49)	0.60 (0.56)		.498	0.58 (0.53)		.911
Attitudes toward seeking help							
Norms	16.57 (5.75)	17.95 (5.50)	.201	< .001	17.78 (5.35)	.045	< .001
GenEd	17.08 (5.55)	19.73 (4.98)	< .001	< .001	19.40 (5.17)	.004	< .001
Stress	16.39 (5.03)	16.69 (5.42)		.028	17.05 (5.21)		.197
Mental health status							
Norms	11.82 (7.83)	-			15.67 (10.62)	.161	.039
GenEd	11.84 (7.65)	-			16.19 (12.28)	.049	.006
Stress	14.01 (10.41)	-			14.64 (9.10)		.513

Note. p_{between} values indicate significant effects of the social norms and general education treatment interventions relative to the stress management active control condition at follow-up, controlling for baseline measurement. p_{within} values indicate significant changes over time in each variable within conditions from baseline to a follow-up. Immed post = immediately after intervention; Norms = social norms intervention, GenEd = general education intervention, and Stress = stress management control intervention.

^aAlthough 520 students participated in the baseline questionnaire, the condition assignments of 19 students who did not return for the intervention could not be identified due to a clerical error. Thus, the baseline means of the remaining 501 students are presented here broken down by condition.

^bPrevalence means provided here and in the text are the means of the actual percentages estimated by participants (e.g., participants' estimated percentage of students who have sought help or have been depressed).

gender ($F(1, 333) = 4.65, p = .032, \eta^2 = .014$), with women believing that a higher percentage of their peers felt overwhelmed than men ($M_s = 57.12\%$ vs. 51.23%), as well as a significant main effect of condition ($F(2, 333) = 7.82, p < .001, \eta^2 = .045$). Pairwise comparisons indicated that participants in both the Norms ($p < .001$) and Stress ($p = .013$) conditions reported significantly more accurate perceptions of feeling overwhelmed prevalence than those in the GenEd condition (M_s of prevalence estimated by participants = 59.46% in Norms, 47.12% in GenEd, 55.93% in Stress; actual prevalence: 87%).

3.1.2 | Stigma

Analyses were then conducted to examine immediate effects of intervention condition on participants' personal and perceived public

stigma of seeking help for mental health issues. The analysis predicting personal stigma revealed only a significant main effect of gender ($F(1, 328) = 5.85, p = .016, \eta^2 = .018$), indicating that women held a lower personal stigma than men ($M_s = 0.63$ vs. 0.77). The analysis predicting perceived public stigma revealed a significant main effect of condition ($F(2, 332) = 6.86, p = .001, \eta^2 = .040$). Pairwise comparisons indicated that participants in the Norms intervention ($M = 1.12$) reported significantly lower perceived public stigma than those in the Stress ($p = .018; M = 1.30$) and GenEd conditions ($p < .001; M = 1.38$). Thus, although there was no difference in personal stigma across conditions, participants in the Norms intervention reported significantly lower levels of perceived public stigma than those in the Stress or GenEd conditions.

3.1.3 | Help-seeking attitudes

Finally, an analysis predicting students' attitudes toward seeking help for mental health issues revealed a significant main effect of class year ($F(1, 327) = 4.09, p = .044, \eta^2 = .012$), indicating that first-years had significantly more positive attitudes toward seeking help than upper-year students ($M_s = 21.80$ vs. 4.78). This analysis also revealed a significant main effect of condition ($F(2, 327) = 6.79, p = .001, \eta^2 = .040$), which was qualified by a significant gender X condition interaction ($F(2, 327) = 3.59, p = .029, \eta^2 = .021$). Pairwise comparisons indicated that men in the GenEd condition ($M = 17.80$) reported more positive attitudes toward seeking professional help than men in the Norms ($p = .033; M = 16.09$) and Stress conditions ($p < .001; M = 14.10$) and men in the Norms condition had significantly more positive attitudes toward seeking help than those in the Stress condition ($p = .021$). In contrast, pairwise comparisons on women's attitudes toward seeking help revealed that women in the GenEd condition had only marginally more positive attitudes toward seeking help than those in the Norms condition ($p = .084; M_s = 11.77$ in GenEd vs. 10.52 in Norms) but did not differ in attitudes compared to those in the Stress condition ($p = .536; M = 11.27$). In other words, the GenEd intervention had the most positive effects on help-seeking attitudes for men, followed by the Norms and then by the Stress interventions, whereas women's attitudes toward seeking help were only marginally improved by the GenEd intervention.

3.2 | Question #2: Did intervention condition affect students' attitudes and beliefs regarding mental health at the 2-month follow-up?

A series of analyses was conducted on the 2-month follow-up data in order to assess whether the interventions had a lasting effect on students' mental health beliefs, attitudes, and behaviors, specifically perceived mental health norm accuracy, personal and perceived public stigma, help-seeking behaviors and attitudes, and mental health status.

3.2.1 | Perceived norm accuracy

Participants' perceptions of campus mental health norms 2 months after the interventions were again examined using four ANCOVAs in order to determine whether such perceptions differed as a function of condition.

The analysis predicting students' perceived campus prevalence of seeking help from the campus counseling center revealed a significant main effect of intervention condition ($F(2, 234) = 4.33, p = .014, \eta^2 = .036$). Pairwise comparisons indicated that participants in the Norms condition reported significantly more accurate perceptions of help-seeking prevalence than those in both the GenEd ($p = .013$) and Stress ($p = .014$) conditions (M_s of prevalence estimated by participants = 26.17% in Norms, 17.78% in GenEd, 18.08% in Stress; actual prevalence: 37%).

Analyses also revealed a significant main effect of condition on participants' perceived campus prevalence ($F(2, 234) = 6.29, p = .002, \eta^2 = .051$), qualified by a significant class year X condition interaction ($F(2, 234) = 3.19, p = .043, \eta^2 = .027$). Pairwise comparisons indicated

that upper-year students in the Norms condition reported significantly more accurate perceptions of depression prevalence than those in the Stress condition ($p = .012; M_s = 40.34\%$ in Norms vs. 21.52% in Stress; actual prevalence: 44%) but did not differ significantly in accuracy from those in the GenEd condition ($p = .248, M = 30.43\%$). Conversely, first-years in the Norms ($p = .008, M = 24.97\%$) and GenEd ($p = .029, M = 28.76\%$) conditions reported significantly more accurate perceptions of depression prevalence than those in the Stress condition ($M = 16.84\%$).

The analysis predicting participants' perceived campus prevalence of suicide ideation again revealed a significant main effect of condition ($F(2, 234) = 12.30, p < .001, \eta^2 = .095$). Pairwise comparisons indicated that participants in the Norms condition reported significantly more accurate perceptions of depression prevalence than those in the GenEd ($p = .001$) and Stress conditions ($p < .001; M_s$ of prevalence estimated by participants = 15.60% in Norms, 11.66% in GenEd, 10.26% in Stress; actual prevalence: 15%).

The analysis predicting participants' perceived campus prevalence of feeling overwhelmed revealed no significant main effects or interactions (M_s of prevalence estimated by participants = 56.21% in Stress, 57.88% in GenEd, 59.76% in Norms; actual prevalence: 87%).

3.2.2 | Stigma

Next, ANCOVAs were conducted to examine the effects of intervention condition on both personal stigma and perceived public stigma at the 2-month follow-up. The analysis predicting participants' personal stigma revealed a significant main effect of gender ($F(1, 232) = 4.03, p = .046, \eta^2 = .017$), which was qualified by a marginally significant class year X gender interaction ($F(1, 232) = 2.78, p = .097, \eta^2 = .012$). Pairwise comparisons indicated that male upper-year students held a significantly higher level of personal stigma than female upper-year students ($p < .001; M_s = 0.59$ vs. 0.38), whereas first-years did not vary significantly in personal stigma by gender ($p = .53; M_s = 0.55$ for males vs. 0.49 for females). The analysis predicting participants' perceived public stigma revealed only a marginally significant effect of gender ($F(1, 233) = 3.07, p = .081, \eta^2 = .013$), in which women again held lower levels of perceived public stigma than men ($M_s = 1.07$ vs. 0.94). In other words, at the 2-month follow-up, there was no significant effect of intervention condition on either personal stigma or perceived public stigma of seeking treatment for mental distress.

3.2.3 | Help-seeking behavior and attitudes

Logistic regression analyses were conducted to determine whether students' help-seeking and help-referring behavior varied as a function of intervention condition. An analysis on whether students reported seeking help from any source since the beginning of the study revealed a significant main effect of gender ($\chi^2(1) = 8.46, p = .004$), indicating that more women (87.40%) sought help than men (75.40%). There was also a significant main effect of class year ($\chi^2(1) = 11.50, p = .001$), indicating that a greater proportion of upper-year students (93.30%) than first-years (78.00%) sought help, but there was no significant effect of condition ($p = .556$). The analyses predicting help referral also revealed a significant main effect of class year ($\chi^2(1) = 19.50, p < .001$),

indicating that a greater proportion of upper-year students (82.10%) than of first-years (61.70%) referred a close other to help, but again, no significant effect of condition ($p = .824$). Overall, condition was not associated with any differences in reported help-seeking or help-referral behaviors.

With regard to help-seeking attitudes, however, an ANCOVA predicting attitudes toward seeking professional psychological help for mental health issues revealed a significant effect of condition 2 months following the intervention ($F(2, 231) = 4.46, p = .013, \eta^2 = .037$). Pairwise comparisons indicated that participants showed significantly more favorable attitudes toward seeking help in both the Norms ($p = .045; M = 20.40$) and GenEd conditions ($p = .004; M = 21.20$) than in the Stress condition ($M = 19.03$). These findings indicate that both the Norms and GenEd interventions led to significantly more favorable attitudes toward seeking treatment at the follow-up compared to the Stress condition.

3.2.4 | Mental health status

Finally, students' mental health status at follow-up was examined as a function of intervention. This analysis revealed no significant main effects or interactions.¹

4 | DISCUSSION

This research examined the effects of three 15-min educational interventions—social norms, general education, and stress management active control—on the mental health beliefs, attitudes, and behaviors of college students immediately and 2 months after the interventions.

Although all students consistently underestimated prevalence of help-seeking and mental distress among their peers, participants in the social norms intervention reported the most accurate perceptions of campus mental health norms both immediately and 2 months after the interventions. Specifically, the social norms intervention increased students' perceived help-seeking prevalence to levels closer to actual campus norms and this effect lasted at least 2 months later. For distress norms, both the social norms and general education interventions effectively elevated students' perceived campus depression prevalence to more accurate levels in the short-term, with the social norms condition having the most consistent long-term effects across students of all class years. Participants in the social norms intervention also had more accurate perceptions of suicide ideation prevalence than those in the other two conditions both immediately and 2 months later, further supporting the consistent efficacy of the social norms intervention in raising perceptions of distress norms to levels closer to actual campus norms.

Interestingly, none of the interventions had a lasting effect on students' perceptions of the prevalence of feeling overwhelmed. Students in the social norms and control conditions reported a higher (i.e., more accurate) prevalence of feeling overwhelmed than those in the general education condition immediately after the intervention, but these

effects dissipated by the follow-up. Instead, all students, regardless of intervention condition, reported a greater prevalence of feeling overwhelmed at the follow-up than at the baseline measurement. Because the actual proportion of students who report feeling overwhelmed is so high (87% in the year prior to this study) and students may be more likely to discuss feelings of general stress than depression or suicidal ideation, it is possible that students' own experiences with themselves and friends feeling overwhelmed during the 2 month follow-up period (which spanned midterms and much of the semester) outweighed any effects of condition on norm perceptions.

The analyses on personal stigma of seeking treatment for mental health issues revealed only a consistent effect of gender on personal stigma both immediately and 2 months after the intervention, in which men reported a significantly higher level of personal stigma than women. These results highlight gender differences in experiences of personal stigma consistent with prior research (e.g., Eisenberg et al., 2009), but indicate that none of the interventions affected levels of personal stigma. This finding is perhaps not surprising considering that personal stigma often involves a set of deeply entrenched attitudes, influenced by factors such as parental beliefs and cultural norms, that one 15-min intervention may be hard-pressed to change.

In contrast, the social norms intervention significantly reduced perceived public stigma of seeking treatment for mental health issues in the short-term, though these effects faded over the subsequent 2 months. The decrease in perceived public stigma, albeit temporary, is promising, as it suggests that using a social norms intervention to target misperceptions of public stigma may indeed be an effective way to reduce perceived stigma of seeking help. Efforts to strengthen the staying power of these effects may also help to reduce students' personal stigma over time, given research showing that individuals' stigmatizing attitudes toward seeking help stems from their perceived public stigma (Vogel et al., 2013).

Intervention condition did not affect students' likelihood of seeking help for their own mental distress or of referring distressed close others to seek help during the time period studied, but did affect students' help-seeking attitudes. Students in the social norms and general education interventions reported more positive attitudes toward seeking help for mental health issues compared to those in the control condition. Immediately after the interventions, these effects varied by gender: Men in the general education condition had more favorable attitudes toward seeking help than men in the social norms condition, who in turn had more favorable attitudes than those in the stress management control group. Women, conversely, had only marginally more positive help-seeking attitudes in the general education condition than in the social norms condition, suggesting that their attitudes toward seeking help were affected less by the interventions immediately than those of the men. By 2 months later, the gender difference disappeared: Participants in the social norms and general education interventions reported significantly more favorable attitudes toward seeking help than those in the control group regardless of gender. In other words, although participants' help-seeking behaviors did not change as a result of the interventions, the social norms and general education interventions led to more positive attitudes toward seeking

¹Analyses performed using just the CES-D scale without the two added items from the PSS also revealed no significant main effects or interactions.

help, with men benefiting more from both interventions right away. Perhaps for men, who may be less likely to discuss personal issues and help-seeking behaviors than women due to differences in socialization (Fivush, Brotman, Buckner, & Goodman, 2000), simply hearing about others' experiences with distress and seeking help was more immediately impactful. Alternatively, men may generally be more likely than women to conform to perceived norms on campus (Prentice & Miller, 1993), and thus may be more immediately impacted by interventions that convey information about health norms.

4.1 | Limitations

The design of this study as a field experiment purposefully emulated the way these interventions would be delivered on actual college campuses in order to maximize the external validity of the results. However, this design also resulted in several limitations. First, because interventions were conducted in students' own residence halls as opposed to in a laboratory, students' housing groups (usually composed of one or two floors of a building), rather than individuals, were randomly assigned to intervention conditions. It is thus possible that differences among housing groups could have contributed to the observed effects of the interventions.² In addition, although student educators delivering each intervention were trained at the same time, received the same instruction, and were provided with identical protocols, each educator doubtlessly presented the intervention information to housing groups at least slightly differently. It is therefore possible that variations in educators across housing groups could have impacted the participants' experiences of the interventions. In order to minimize the impact of these possible side effects of this design, housing group was entered into each analysis as a covariate; as such, the analyses should have controlled for possible variation.

Another limitation was the small sample of upper-year students who participated in the study, compared to first-years. Although first-years were not required to participate in the study, the interventions were built into orientation events, making participation more convenient and leading to a participation rate of 83.7% of the first-year class. In contrast, because this three-part study represented a substantial commitment that was not built into any prescheduled events for upper-year students, fewer were willing to participate. Thus, there may have been selection bias among upper-year students who chose to participate; for example, perhaps they were more interested in mental health or had more experience dealing with mental health issues. Consequently, the results obtained from the upper-year students in this study may not be generalizable to the general population of sophomores, juniors, and seniors.

Finally, the effects found in this study were overall small in magnitude. Given Cohen's (1988) description of effect sizes, most of the effects in this study were small, ranging from 0.01 to 0.05, although there were two medium effects (0.08 and 0.1, both for students' norm perceptions regarding the prevalence of suicide ideation). These small

effect sizes are perhaps not surprising considering the interventions were a mere 15 min long and their lecture format may have limited full engagement with the material. A more in-depth, interactive intervention could lead to deeper reflection on the information provided, and could therefore lead to more substantial, longer-lasting attitude and behavior change. However, despite its potential benefits, a longer intervention is likely to deter students from participating and thus may reach less of the student body. Future research should therefore consider not only the relative impact of such interventions but also the likelihood that student populations will utilize them. Ultimately, it may be quite cost-effective to conduct a relatively small and inexpensive intervention that yields small effects on a large number of participants (Austin, 2001).

4.2 | Directions for future research

This study's findings have important implications for future research. First, future studies should test the effects of longer, more in-depth mental health interventions on students' attitudes and behaviors. The present study found significant shifts in help-seeking attitudes as a result of 15-min interventions, but no effect on actual help-seeking behavior and only a temporary effect on perceived public stigma. A longer intervention format could allow opportunity for more engaging presentation of mental health information through more participant interaction, which could strengthen the intervention's effects. For example, incorporating interactive methods aimed to increase internalization of the intervention's message successfully used in previous interventions with college students, such as recording reflection videos for future students on how mental health norm misperception could affect help-seeking, could result in longer-lasting "saying-is-believing" effects (Walton & Cohen, 2011).

A longer study could also combine different intervention approaches. For example, a single comprehensive mental health intervention combining the social norms and general education approaches might lead to greater effects on student mental health attitudes and behaviors than either of the two approaches did individually. Future research could also examine the efficacy of integrating contact intervention techniques into these educational programs. Interventions involving direct or indirect contact with someone who has sought mental health treatment in the past have reduced personal stigma, but have been critiqued for not concurrently improving help-seeking attitudes and behaviors (Yamaguchi et al., 2011). Combining the contact approach with social norms information in a single intervention could lead to reductions in stigma of seeking help for mental health issues as well as increases in help-seeking attitudes. The development of an intervention that could improve a broader range of mental health attitudes and behaviors while remaining inexpensive would be a worthwhile goal of future research.

Future research should also investigate the link between attitudes toward seeking professional help and actual help-seeking behavior. In this study, the social norms and general education interventions led to significantly more favorable help-seeking attitudes than the stress management control group, but did not make students more likely to

²This possibility may be more likely among upper-year students on this campus, who chose their dormitories, than first-year students, who were near-randomly assigned to rooms.

seek treatment or refer others to help, a pattern that has also been documented in prior research on help-seeking interventions (Gulliver, Griffiths, Christensen, & Brewer, 2012). It is possible that help-seeking attitudes and behaviors are indeed linked, but that the follow-up period of 2 months was merely too short to see effects on help-seeking behavior. To investigate this possibility, future research could simply extend the length of time between the intervention and the follow-up, or add an additional, later follow-up in order to determine whether increased help-seeking behavior will eventually follow improved attitudes toward seeking help. If this pattern does not emerge in future studies, research on why students do not seek treatment even if they have favorable attitudes toward seeking professional help would be valuable. If researchers can identify the obstacles between developing positive attitudes toward seeking help and actually seeking help, perhaps future interventions can more effectively break down these barriers to encourage students to actually seek treatment.

Although this study did not show many consistent effects of class year and gender, one can imagine that individual differences may moderate the way students react to mental health interventions, as previous research has found with other types of health interventions (e.g., Mutterperl & Sanderson, 2002). Intervention timing may be a particularly important variable for future studies to examine. For example, given that individuals are often most susceptible to the influence of norms when they first enter a new environment (e.g., Newcomb, 1961), colleges and universities may be able to maximize the benefit of their available resources by deploying mental health interventions as early as possible. Future research could also examine how students' unique cultural backgrounds and experiences with mental illness interact with their response to mental health interventions, particularly given the increasing diversity of experience of students on college campuses. Better understanding how the impact of mental health interventions differs across time and students will help institutions more cost-effectively deploy mental health interventions to procure the greatest benefits with the most efficient use of resources.

5 | CONCLUSIONS

Undertreated mental distress prevents countless college students from reaching their full potential, yet rigorous empirical research on easily implementable mental health interventions is limited. Using a randomized-controlled longitudinal design, this study augments prior research by showing that a general education mental health intervention can effectively improve students' attitudes toward seeking help. Moreover, this research evaluated the first known social norms intervention in the context of mental health and found that this approach consistently improved the accuracy of students' mental health norm perceptions, temporarily reduced students' perceived public stigma, and enhanced students' attitudes toward seeking help for mental distress up to 2 months after the intervention. These findings provide additional evidence that presenting normative information can be beneficial in a broad array of student health contexts, and suggest that future research on mental health interventions may benefit

considerably from incorporating social norms information. Continued research on cost-effective psychological interventions to encourage help-seeking is necessary to accelerate amelioration of undertreated mental distress on college campuses.

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SUPPORTING INFORMATION

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