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The Theory of Planned Behavior as It Predicts Potential Intention to Seek Mental Health Services for Depression among College Students

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Abstract

Between 9.5% and 31.3% of College students suffer from depression^{1, 2}. Universities need to understand the factors that relate to care-seeking behavior.

Objective—Across 3 studies, to relate attitude, social norms, and perceived behavioral control to intention to seek mental health services, and to investigate barriers to care-seeking.

Participants—University college students ($N = 845$, 64% female, 26% male, and 10% unspecified).

Method—New measures were created in studies 1 and 2, and were examined using structural equation modeling in study 3.

Results—Partially consistent with the *Theory of Planned Behavior*³, a model with an excellent fit revealed that more positive attitudes about care and higher perceived behavioral control directly predicted higher intention to seek mental health services.

Conclusions—Educating college students about mental health disorders and treatments, enhancing knowledge about available services, and addressing limited access to long-term care might improve treatment rates for students suffering from depression.

Keywords

College Students; Mental Health; Community Health; Counseling

Depression is the most common and costly mental health disorder in the United States, with lifetime and 12 month prevalence rates estimated to be 16.2% and 6.6%, respectively⁴. College students may be particularly at risk for mood disorders, given their major life

transition to college and the stressors of academic life. The *American Freshman Survey* measured over 153,000 full time students at 227 four-year colleges in 2014². Students were asked to rate their emotional health and depression in relation to other people their age. These self-report data showed that 9.5% of students described themselves as “frequently” depressed, which was a 3.4% increase in incidence from 2009. In addition, students’ self-report of emotional health (student endorsement of being “In the highest 10% of people” and “Above Average” in emotional health) dropped to 50.70% in 2014, a decrease of 2.3% since 2009. This is the lowest rate recorded since the onset of the survey in 1985. Moreover, those students who endorsed “frequently” depressed were more likely to self-report negative effects on their academic functioning such as coming late, falling asleep, and being bored in class. They were also less likely to study with other students or work on group projects.

Likewise, in a survey of 123,078 students across 153 colleges and universities, the 2013 National College Health Assessment¹ showed a large number of college students self-reporting feelings of sadness (59.6%), depression (31.3%), and anxiety (51%), with women reporting greater prevalence than men. In addition, 5.9% of the sample had cut, burned, bruised, or otherwise harmed themselves. Finally, 7.4% of the sample had contemplated suicide and 1.5% had attempted suicide.

Other research indicates that mental illness in college students is both increasing and becoming more chronic⁵. University counseling centers have typically been designed for acute problems requiring either short-term care or referral to long-term treatment⁶. If more students are presenting with more chronic problems, this can unduly tax current facilities⁷, potentially creating barriers to psychological treatment

Barriers to treatment occur at the patient, provider, and health system levels^{8, 9, 10, 11, 12}, and may contribute to why a majority of depressed Americans in the general population do not receive appropriate treatment⁸. Certainly, barriers are cited as a significant reason for failing to seek services in other samples. For example, Vanheusden, Mulder, van der Ende, van Lenthe, Mackenbach, and Verhulst¹³ found that 65.5% of their young adult (19–32 year old) Netherlands sample did not seek mental health care when experiencing symptoms of mental illness. Barriers to care were attributed to inability to recognize their own mental health issues, ignorance about available treatments, and a belief that formal care would have no impact. Likewise, in a comprehensive study of Australian adolescents and young adults, Rickwood, Deane, Wilson, and Ciarrochi¹⁴, found that lower competence in identifying and expressing emotions, greater suicidal ideation, and negative attitudes and beliefs about seeking mental health care were associated with lower care-seeking behavior with regard to mental health services.

We linked the problem of seeking mental health services to the *Theory of Planned Behavior*³ (TPB), which is a model that uses the constructs of attitude, social norms, perceived behavioral control (perception of barriers), and intention to understand and predict behavior. According to the TPB, a person’s attitudes about a behavior, such as seeking mental health services; his or her subjective beliefs about what others think about this behavior; and the degree to which there are perceived barriers, all influence the person’s intention to seek mental health services.

Knowledge about these factors in a college sample can aid university health and mental health specialists to tailor programs and messages that will successfully encourage the students they serve to recognize potential mental health problems and seek evaluation and care, thus addressing some of the barriers cited above. However, the TPB has yet to be applied to intention to seek mental health services in an American college sample. Past research has only investigated TPB and intention to seek mental health services in international samples. For example, Schomerus, Matschinger, and Angermeyer¹⁵ conducted phone interviews with Germans who were screened for depression. They found that the TPB explained attitudes about seeking mental health services, perceptions of control in seeking mental health services, and perceptions of peers' attitudes about seeking mental health services as they uniquely predicted intention to seek mental health services. Likewise, in their study of randomly sampled Chinese residents of Hong Kong, Mo and Mak¹⁶ found that positive attitudes toward care-seeking, supportive social norms, and strong perceived behavioral control all significantly predicted intention to seek mental health services. Knowing about intention is important because past research has shown that intention is an excellent predictor of future behavior such as blood donation¹⁷, condom use¹⁸, and seeking health services¹⁹, although no specific test of the link between intention to seek mental health services and engaging in that behavior has been conducted.

Past research has established the increasing need for mental health services for college students^{1, 2, 5}. In addition, barriers linked to negative attitudes and lack of knowledge have been linked to lower care-seeking behavior^{19, 29}. Finally, international scholars have shown that the TPB accurately predicts intention to seek mental health services^{15, 16} in non-college samples. Our purpose was to investigate barriers and apply the TPB to predict American college students' intentions to seek mental health services for depression.

For efficiency sake, we chose to focus on intention as our criterion variable. We believe that the preliminary work of scale construction and establishing links between TPB components should be established first, before time and resources are invested in a longitudinal study linking all components of the TPB model to behavior. In addition, we believe that information relating to attitudes, subjective norms, and perceived behavioral control will allow colleges and universities to tailor mental health programs and outreach that will efficiently target their students.

Hypotheses

In studies 1 and 2, we developed measures to investigate the TPB. Resulting scales were established using empirical criteria relating to internal consistency and convergent validity.

In study 3, we hypothesized that participants who had more positive attitudes toward seeking mental health services (attitudes), perceived that their peer group also had more positive attitudes toward seeking mental health services (subjective norms), and perceived that there were few barriers to seeking mental health services (perceived behavioral control) would show a greater intention to seek mental health services, in accordance with the TPB²⁰. In addition, barriers targeting college students were analyzed to investigate self-perceived impediments to seeking mental health services.

Overview of Three Studies

The purposes of this three part investigation were to study the usefulness of using the TPB to predict intention to seek mental health services and to investigate barriers to care-seeking behavior. In order to accomplish these aims, we first developed five new inventories of attitudes, social norms, perceived behavioral control, and intention. In study 1, we tested them for internal reliability and convergent validity with the Mo and Mak¹⁶ TPB measurement instrument based on the template by Ajzen (<http://people.umass.edu/aizen/index.html>) In order to increase the indicators for each TPB factor for structural equation modeling and hypothesis testing, we developed four more scales, in study 2. These new scales were also evaluated for internal reliability and convergent validity with the Mo and Mak¹⁶ TPB measurement instrument. In study 3, we modeled the TPB constructs of attitude, social norms, perceived behavioral control, and intention with regard to seeking mental health services. Research was reviewed by the University IRB committee. All participants were treated in accordance with APA principles in the studies.

Study 1 Method

Participants

Two hundred seventy-nine participants (203 female and 76 male) were recruited from the subject pool at a large Northern California University from January to May of 2011. All participants in the subject pool receive course or extra credit for participation. In terms of ethnic background, the sample consisted of 19% Asian Americans, 7.2% African Americans, 41.6% European Americans, 16.5% Hispanic Americans, 1.8% Middle Eastern Americans, and 14% Multi-Ethnic Americans. Their mean age was 21 years ($SD = 4.26$, with a minimum of 18 and maximum of 57).

Measures

Participants responded to each item using a 5-point response scale (100% Agree, 75% Agree, 50% Agree, 25% Agree, and 0% Agree), unless otherwise specified below. Descriptive statistics for all scales are provided in Table 1, and all scales included in the present study are available upon request.

Attitudes About Seeking Mental Health Services (AASMHS)—The purpose of this scale was to measure the four components of the TPB model². We constructed the scale using the template located on the TPB website (<http://people.umass.edu/aizen/index.html>). It is similar to the one used by Mo and Mak¹⁶ to test the TPB in the domain of seeking mental health services in Taiwanese participants. Our scale includes four subscales: Attitudes (AASMHS-ATT, 3 items), Social Norms (AASMHS-SN, 7 items), Perceived Behavioral Control (AASMHS-PBC, 4 items), and Intention (AASMHS-INT, 2 items). Seven statements are positively worded and nine are negatively worded. For example: “I am confident that if I wanted to, I could talk to a doctor about depression,” and “Most people whose opinions that I value would not approve of me seeking mental health services for depression.”

Mental Health Services Attitudes (MHSA)—This inventory was developed for the present study to measure attitudes toward using mental health services in general. There were 24 statements, 12 positively worded and 12 negatively worded for Study 1. For example: “I would want to get mental health services, if I were worried or upset for a long time,” and “A person should work out his or her own emotional difficulties without professional help.”

Attitudes Toward Seeking Professional Psychological Help – Short Form²¹—In order to avoid demand characteristics this scale was named “Attitudes About Talking to a Doctor (AATD)” for the present study. It consists of 11 statements, two positively worded and nine negatively worded. For example, “The doctor might think less of me, if I brought up my depression symptoms” and “I feel it is my doctor’s job to deal with emotional problems.” Fischer and Farina²¹ reported a Cronbach alpha reliability coefficient of .84. Furthermore, known groups validity analysis showed a significant point biserial correlation ($r = .39$) between scale scores and having sought help for a psychological disorder or not.

Life Circumstances (LC)—This inventory was developed for the present study to measure barriers to seeking mental health services and was included as a measure of perceived behavioral control. . There are 35 statements, 18 positively worded and 17 negatively worded. There are eight domains of control: transportation, scheduling, stress, time, fatigue, scheduling conflicts, cost, and access. For example, items include “Transportation to a counselor’s office to get counseling for depression would *not* be difficult,” and “I feel that medication for depression would cost too much.”

Procedures

Participants volunteered for the study using the on-line University research web-site. The studies were conducted in sessions with one to seven participants. Participants entered the communal lab space and were told the general purpose of the study. They viewed a PowerPoint presentation of the procedures and signed a consent form. Then, each participant entered one of seven small computer rooms containing one computer, where they each participated separately. Participants logged on to the site, and were randomly assigned to view one of four public service announcements developed for another study. They viewed the video once and then completed the inventories, which were presented in a counterbalanced fashion using a Balanced Latin Square Design. The demographic questions were always presented last. When participants finished the study, they were given a debriefing form to read and then their questions were answered. Finally, all participants were given a community resource sheet that provided them with options for treatment of mental health disorders.

Study 1 Results

The purpose of Study 1 was to pilot test materials. As shown in Table 2, the scales measuring the TPB constructs (except for the composite score) were not reliable ($\alpha = .51 - .67$).

Study 1 Comments

The AASMHS subscales showed poor reliabilities ranging from .51 to .67. This was particularly disappointing given that we used Ajzen's TPB inventory template resulting in a scale that was very similar to the one used by Mo and Mak¹⁶. Their reliabilities ranged from .77 for three items to .97 for three items. Because of the poor psychometric qualities of the AASMHS inventory, we conducted Study 2, wherein we added more items to the AAMHS scale and developed three more scales (Perceived Behavioral Control, Social Norms, and Intention) to ensure that the constructs were properly measured in structural equation models.

Study 2 Method

Overview

The purpose of Study 2 was to pilot test four new inventories for reliability and convergent validity with our TPB scale (AASMHS), in order to increase the indicators for each TPB factor for structural equation modeling.

Participants

Seventy-one participants were recruited from summer classes at a large Northern California University in July of 2011. They received extra credit for participation. They were from the same population of students in Study 1 and have similar characteristics.

Measures

AASMHS—Please see Study 1 Materials section for the description of this scale, which includes subscales measuring all of the TPB dimensions. Two more statements were included for a total of 18 items: eight positive and ten negative. Both items were additions to the intentions subscale (AASMHS-INT).

Social Norms (SN)—This inventory was developed to measure perceived social support for seeking mental health services. There are 22 statements, 11 positively worded and 11 negatively worded. For example: “The people in my life would support me, if I sought mental health services,” and “My family would not be proud of me, if I spoke to a doctor about my mental health.”

Perceived Behavioral Control (PBC)—This inventory was developed to measure beliefs about how easy or hard it would be to get professional help for depression. There are 12 statements, six positively worded and six negatively worded. For example: “It is simple to get help for depression,” and “Treatment for depression is unavailable.”

Intention to Seek Mental Health Services (ISMHS)—This inventory was developed to measure intention to seek professional help for depression. There are 14 statements, seven positively worded and seven negatively worded, e.g., “If I were depressed, I would make plans to get help from a professional,” and “I would *not* choose to get help for depression.”

Procedures

In classes, announcements were made that professors were offering extra credit for participating in a research project concerning attitudes about mental health. Participants came to a separate classroom and completed the study in groups of 20 to 40. A research assistant explained the purpose of the study and participants signed a consent form. Participants were handed a packet of inventories to complete by hand. The inventories were presented in randomized order. When participants finished the study, they were orally debriefed and then their questions were answered. Finally, all participants were given a community resource sheet that provided them with options for treatment of mental health disorders.

Study 2 Results

Reliability coefficients were calculated for each new measure of the TPB constructs (SN, PBC, and ISMHS; see Table 3). Each new scale demonstrated acceptable reliability. Next, each new measure of each construct was correlated with the AASMHS version used in Study 1 in order to demonstrate validity (see Table 3). The bivariate correlation analyses revealed strong correlations between the new measures and the AASMHS measures of each construct.

Study 2 Comments

The high internal consistency of our newly constructed scales (Cronbach Alphas from .75 to .95) and their high correlations with the AASMHS subscales showing convergent validity (r 's = .39 to .81) gave us confidence to fully test the TPB model as it related to mental health seeking behavior.

Study 3 Method

Overview

The purpose of Study 3 was to use the newly created scales to predict intention to seek mental health services for depression, based on the TPB constructs of attitude, social norms, and perceived behavioral control. Structural equation modeling (SEM) was used to analyze data. In addition, correlations and descriptive statistics were used to analyze student-perceived barriers to seeking mental health services.

Participants

Four hundred ninety five participants (341 female, 145 male, and 9 who did not report their sex) were recruited from the subject pool at a large Northern California University from September to November of 2011. They received course or extra credit for participation. In terms of ethnic background, the sample consisted of 21.8% Asian Americans, 6.3% African Americans, 36.8% European Americans, 17.6% Hispanic Americans, 1.0% Middle Eastern Americans, .6% Native Americans, and 11.1% Multi-Ethnic Americans (3.2% selected "Other" and 1.6% did not report their ethnicity). Their average age was 21 years ($SD = 4.28$, with a minimum of 17 and maximum of 57).

Students completed the PHQ-9²² to measure depression. Participants responded to each item using a 4-point response scale (0 = Not at all, 1 = Several days, 2 = More than half days, or 3 = Nearly every day; $\alpha = .87$). With regard to Kroenke and Spitzer's²² recommendations for scoring depression, the current distribution ($N = 489$) was positively skewed with 17% of the sample scoring in the no-depression range, 47% in the minimal symptoms range, 29.2% in the minor depression range, 4.7% in the major depression-moderately severe range, and 2% of the sample in the major depression-severe range. Based on the scoring criteria for the PHQ-9, 35.9% of respondents reported "clinically relevant depression" (had sum scores higher than 10).

Measures

Measures from Study 3 have been described in Study 1 and Study 2 and are available upon request. They include the AASMHS subscales of attitudes (AASMHS-ATT), social norms (AASMHS-SN), perceived behavioral control (AASMHS-PBC), and intention (AASMHS-INT); the scales measuring attitudes (MHSA, AATD); the scale measuring social norms (SN); the scales measuring perceived behavioral control (LC, PBC), and the scale measuring intention (ISMHS). Due to poor reliability of the AASMHS-ATT subscale in Study 1 and Study 2, five statements, two positively worded and three negatively worded, were added to the AASMHS-ATT subscale for Study 3. Cronbach alphas were all acceptable, except for the AASMHS-PBC subscale ($\alpha = .61$) and the AATD scale ($\alpha = .67$). One item on the AASMHS-PBC subscale ("Whether or not I talk to a doctor about depression is completely up to me") had low intercorrelations with the other items so it was dropped from the subscale, resulting in an acceptable Cronbach's alpha of .71. For the AATD scale, two items ("I might cry or become too emotional during a visit, where I talk to my doctor about personal problems" and "The doctor might *not* send me to a psychiatrist") had low intercorrelations with the other items so they were dropped from the scale, resulting in an acceptable Cronbach's alpha of .74. Final Cronbach alphas across all scales were good ranging from .74 to .95 (see Table 4). In addition, our created scales showed good convergent validity with the AASMHS subscales, with correlation coefficients ranging from .44 to .77 (see Table 4).

The MHSA scale, AATD scale, and AASMHS-ATT subscale were all used as indicators of the latent variable Attitudes in the structural equation model; the SN scale and the AASMHS-SN subscale were used as indicators of the latent variable Social Norms; the PBC scale, LC scale, and AASMHS-PBC subscale were all used as indicators of the latent variable Perceived Behavioral Control; and ISMHS scale and the AASMHS-INT subscale were used as indicators of the latent variable Intentions.

Procedures

The present study took place as part of a larger study investigating the role of public service announcements in intention to seek mental health services. The following procedures contain references to the larger study. After signing consent forms, participants were randomly assigned to one of five videos about a sleep disorder (control) or depression (four different conditions). They then completed the inventories which were presented in a counterbalanced fashion using a Balanced Latin Square Design. The demographic questions

were always presented last. There were no statistically significant differences between any of the experimental conditions on any of the TPB variables (data available upon request). When participants finished the study, they were debriefed and then their questions were answered. Finally, all participants were given a community resource sheet that provided them with options for treatment of mental health disorders.

Study 3 Results

Structural Equation Model

According to the TPB²⁰, attitudes, subjective norms, and perceived behavioral control should predict intention to seek mental health services. To examine the relative contributions and interrelations of attitudes, subjective norms, and perceived behavioral control to intentions to seek mental health treatment, variables were examined in structural equation models using AMOS 22 software. Because multiple indexes of fit are preferable when explaining how well data fit structural equation models²³, we report the comparative-fit index (CFI), the parsimony ratio (PRATIO), and the root mean square error of approximation (RMSEA) along with its 90% confidence interval and an index of its closeness of fit (PCLOSE), and the Expected Cross-Validation Index (ECVI)²⁴. The CFI reflects the degree to which an independent model matches the observed data, with values greater than .95 indicating an acceptable fit and values greater than or equal to .97 indicating a good fit²⁵. The PRATIO provides a measure of model parsimony, with values expected in the 50s²³. The RMSEA is an index of fit that takes the error of approximation of the population into account. A value less than .05 reflects a good fit, a value less than .08 reflects a reasonable fit, and a value greater than .10 indicates a poor fit^{25, 26}. In addition to reporting the RMSEA, Byrne²³ argues for reporting the PCLOSE, which tests whether the RMSEA fits the population. *P*-values for the PCLOSE should be greater than .05²⁷. Finally, the ECVI measures the likelihood that a model will be valid in another sample from the same population, with smaller values indicating the greatest potential for replication²⁵.

Before examining SEMs, analyses were conducted on all variables to ensure normality of the distribution and reliability of measures. Zero-order correlations between all variables were calculated and examined next (see Table 4). The measurement structure of each variable was examined in a model allowing attitudes, subjective norms, perceived behavioral control, and intentions to correlate with each other. As shown in Table 5, this model (Measurement Model 1) did not yield an adequate fit to the data, despite high factor loadings. Examining the modification indices revealed that the fit would be improved by allowing the error terms associated with a subscale of attitudes (AASMHS-ATT) and a subscale of perceived behavioral control (AASMHS-PBC) to correlate. This addition significantly reduced the chi squared value, but did not yield an adequate fit to the data. Through the process of examining modification indexes, 12 additional models were tested, each correlating an additional error term with a different error term, and each significantly improving the model. The final measurement model provided an excellent fit to the data, $\chi^2(17) = 20.14$, $p = .27$, CFI = 1.00, PRATIO = .31, RMSEA = .02 [CI (90) .00, .05], PCLOSE = .97, ECVI = .24.

Next, a completely saturated version of the hypothesized model was examined, whereby attitudes, subjective norms, and perceived behavioral control were all correlated with each other, and each of these variables also predicted intentions. This model yielded an excellent fit to the data, $\chi^2 (17) = 20.14$, $p = .27$, CFI = .99, PRATIO = .31, RMSEA = .02 [CI (90) .00, .05], PCLOSE = .97, ECVI = .24. However, the pathway from subjective norms to intentions was not significant, and was therefore trimmed from the model. The final model yielded an excellent fit to the data, $\chi^2 (18) = 20.25$, $p = .32$, CFI = .99, PRATIO = .33, RMSEA = .02 [CI (90) .00, .04], PCLOSE = .98, ECVI = .23. The standardized path coefficients for the final model are presented in Figure 1, and show that attitudes, subjective norms, and perceived behavioral control explained 93% of the variance in intention to seek mental health services. Both higher attitudes ($\beta = .70$) and higher perceived behavioral control ($\beta = .29$) directly predicted higher intention. In addition, higher attitude was significantly correlated with higher subjective norms ($r = .77$) and higher perceived behavioral control ($r = .85$), and higher subjective norms was also significantly related to higher perceived behavioral control ($r = .95$).

Exploratory Analyses

We conducted further analyses to investigate perceived barriers to seek mental health services. Information about barriers was gathered from the LC scale, which contained eight subscales and was a measured indicator of perceived behavioral control. Although we did not have explicit hypotheses to test, we believe that information about barriers would be of use to colleges and universities. Therefore, we first reverse-coded the items so that higher scores indicated a greater perception of barriers (as opposed to a greater perception of behavioral control) for ease of interpretation. Next, we ranked the LC subscales by means and correlated each of the subscales to intention to seek mental health services (ISMHS scale and AASMHS-INT subscale; see Table 6).

Study 3 Comments

The Model

The results from Study 3 partially supported the hypothesis that participants who had more positive attitudes toward seeking mental health services, who perceived that their peer group also had more positive attitudes, and who perceived fewer barriers to seeking those services would show a greater intention to seek mental health services for depression. Our data showed that while positive attitudes toward seeking mental health services and perceived behavioral control were significantly associated with intention to seek mental health services, subjective norms were not uniquely associated with this variable. These results are slightly different from those of Schomerus, Matschinger, and Angermeyer¹⁵, and Mo and Mak¹⁶, who found that all TPB factors were significantly associated with intention to seek mental health services.

We see two compatible explanations for the differences between our results and those of previous studies. First, our American college sample was experiencing specific life circumstances and stressors, which made them qualitatively different from the community samples of German and Chinese participants. These differences in findings highlight the

importance of conducting research with samples from the population of interest, rather than simply assuming that generalizations across samples are accurate. A second reason might be because of the false consensus effect²⁸; that is people simply assume that others believe as they do. Our sample was made up of college students, which is a salient social identity²⁹, where group members assume a certain degree of connection and similarity amongst themselves. With regard to subjective norms, our participants could have presumed that their friends and acquaintances had beliefs about seeking mental health services that were similar to their own and thus subjective norms were not a significant predictor in the model.

Attitude and Perceived Behavioral Control

Our strongest predictor of intention to seek mental health services was attitude, with perceived behavioral control being weakly, but significantly related. Schomerus, Matschinger, and Angermeyer¹⁵ also found attitudes to be the strongest predictor of intention, but found subjective norms to be more important than perceived behavioral control. The attitude results are consistent with those of Vanheusden, et.al¹³, and Rickwood, et al.¹⁴, who found that barriers to care in their young adult samples were related to attitudes about care, including ignorance about available treatment options, negative attitudes and beliefs about seeking mental health care, and a belief that formal care would have no impact.

To further analyze perceived behavioral control, we conducted exploratory correlational analyses between barriers to seeking treatment (LC subscales) and intention to seek mental health services. These showed that the top predictors of intention were encompassed by the students' own situation and not controllable by universities and colleges (no time, fatigue, increased stress of treatment, and scheduling conflicts with other activities). The next four LC subscale variables were also significantly related to intention: cost, access to therapy, difficulty in scheduling appointments, and transportation. We believe that these "policy sensitive" barriers are controllable by institutions and can be changed to help increase intention to seek mental health services.

Looking at means rather than correlation coefficients for these exploratory analyses, our sample rated cost of treatment, a policy sensitive variable, as the greatest impediment to intention to seek mental health services. This suggests that universities and colleges might consider providing low or no-cost longer-term treatment, rather than short-term care or referrals to long-term treatment⁶. Other policy sensitive variables: that is difficulty in scheduling appointments, access to therapy, and transportation; were not seen as severe barriers to seeking mental health treatment in our sample. Nonetheless, their significant correlations with intention to seek mental health services did show that variability in these barriers predicted intention. Students who had difficulty in scheduling appointments, perceived challenges to access to treatment, and had no ready transportation showed less intention to seek mental health services. It is very likely that the students in our sample were familiar with the on-campus mental health services. Therefore, they might have seen fewer barriers to seeking mental health services than seen in a community sample, explaining the weaker association between perceived behavior control and intention to seek mental health services.

Limitations

Before we discuss the implications of our findings, it is important to review the study's limitations. Foremost is the nature of our convenience sample. Our final sample from Study 3 showed that 35.9% of participants' self-reported symptoms associated with minor to severe depression. Our Northern California state university convenience sample, with a substantial proportion of participants reporting symptoms of depression, could limit our generalizations to a broader population of college students. In addition, we used scales that were developed for the purposes of this research. Although they showed good reliability and strong convergent validity with our AASHMS based on the Mo and Mak¹⁶ scale developed from the Ajzen template (<http://people.umass.edu/aizen/index.html>), caution is advised in interpreting their meaning. Future studies should continue to investigate the validity of these scales.

Policy Implications

Keeping these limitations in mind and pending further corroborating evidence, possible implications for our findings might be that the most effective avenue for increasing the intention to seek mental health services for college students would be to: 1) change their attitudes about depression and mental health services through education about the nature and efficacy of mental health care^{13, 14}, perhaps as part of an orientation or a freshman seminar; 2) increase publicity about mental health services¹²; and 3) make *longer-term* affordable care available on campus, rather than simply treating students for acute problems requiring *short-term* care then referring them to *long-term* care elsewhere⁶. Providing *longer-term* care could be accomplished through university-community collaborations. Student health center staff could address acute issues and then transition students to *longer-term* care provided by community-based clinicians housed in student health centers. Once relationships have been formed, students might be more likely to continue in community-based *long-term* care with these providers, even after they graduate. The focus on enhancing knowledge and attitudes about mental health and effective treatments, increasing publicity about available services, and providing easier access to affordable *longer-term* care could be efficient ways to influence intention to seek mental health services, conserving resources that would otherwise be used inefficiently on changing peer norms.

Erdur-Baker, et al.⁵ suggest an increase in funding for more staff and the implementation of specialized staff training in mental health interventions for college students in crisis. In addition, increased funding could be used to develop greater outreach and access, thus encouraging college students to recognize mental health problems, to believe that treatment is effective, and to seek treatment earlier. These strategies could be applied to both male and female students, as we found no associations with gender. Because our findings relate particularly to college students, who have been identified as a group with a critical need^{1, 2}, we believe the results of our study are of interest to those in the field of public health in universities.

Conclusions

The next logical step in this line of research would be to include a longitudinal follow-up study linking intention to actual care-seeking behavior. In addition, it would be useful to

investigate whether deliberately changing attitudes and perceived behavioral control in college students would increase intention and behavior related to seeking mental health services for depression. Finally, because depression is so common and costly in the United States⁴, we believe that further study of the usefulness of the TPB as it predicts seeking mental health services in community samples is also warranted. Results from the present study and future research can be used to affect public policy regarding mental health treatment for those suffering from depression.

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Figure 1.

Table 1

Summary of Scale Characteristics

Variable	Study 1 (N = 279)			Study 2 (N = 71)			Study 3 (N = 495)		
	M (SD)	Range		M (SD)	Range		M (SD)	Range	
AASMHS-ATT	2.49 (0.97)	1.00 – 5.00		3.69 (0.81)	1.33 – 5.00		3.84 (0.76)	1.20 – 5.00	
AASMHS-SN	2.66 (0.73)	1.00 – 4.83		3.52 (0.68)	1.29 – 5.00		3.48 (0.82)	1.00 – 5.00	
AASMHS-PBC	2.04 (0.88)	1.00 – 5.00		4.31 (0.71)	1.75 – 5.00		4.07 (0.96)	1.00 – 5.00	
AASMHS-INT	2.81 (1.20)	1.00 – 5.00		3.71 (1.12)	1.25 – 5.00		3.54 (1.10)	1.00 – 5.00	
MHSA	2.44 (0.55)	1.00 – 4.00		-	-		3.45 (0.59)	1.63 – 4.91	
AATD	2.63 (0.73)	1.00 – 4.80		-	-		3.33 (0.73)	1.11 – 5.00	
LC	2.45 (0.66)	1.00 – 5.00		-	-		3.52 (0.71)	1.74 – 5.00	
SN	-	-		4.10 (0.60)	2.52 – 5.00		4.04 (0.68)	1.70 – 5.00	
PBC	-	-		3.80 (0.59)	2.18 – 5.00		3.74 (0.73)	1.00 – 5.00	
ISMHS	-	-		4.08 (0.88)	1.71 – 5.00		3.92 (.093)	1.14 – 5.00	

Table 2

Alpha Reliability Coefficients and Intercorrelations for All Measurement Scales

Scale	1	2	3	4	5	6	8	9
2 AASMHS-ATT	.69	.54						
3 AASMHS-SN	.83	.40	.60					
4 AASMHS-PBC	.76	.34	.47	.67				
5 AASMHS-INT	.68	.51	.41	.38	.51			
6 MHSA	.57	.53	.41	.36	.49	.84		
7 AATD	.60	.25	.54	.55	.36	.35	.71	
8 LC	.56	.37	.48	.47	.37	.53	.47	.92

Note. Bolded numbers reflect bivariate correlations that are significant at the $p < .01$ level; Alpha reliability coefficients for each scale are presented along the diagonal.

Table 3

Alpha Reliability Coefficients and Intercorrelations for TPB Measurement Scales

Scale	1	2	3	4	5	6	7	8
2 AASMHS-ATT	.65	.50						
3 AASMHS-SN	.87	.35	.66					
4 AASMHS-PBC	.75	.37	.57	.68				
5 AASMHS-INT	.91	.56	.71	.56	.90			
6 SN	.71	.39	.68	.63	.55	.89		
7 PBC	.67	.41	.58	.62	.55	.68	.75	
8 ISMHS	.81	.47	.68	.59	.80	.75	.60	.95

Note. Bolded numbers reflect bivariate correlations that are significant at the $p < .01$ level. Alpha reliability coefficients for each scale are presented along the diagonal.

Table 4

Alpha Reliability Coefficients and Intercorrelations for All Measurement Scales

Scale	1	2	3	4	5	6	7	8	9	10	11
1 AASMHS-ATT	.75										
2 AASMHS-SN	.51	.69									
3 AASMHS-PBC	.59	.53	.71								
4 AASMHS-INT	.70	.55	.62	.79							
5 MHSA	.65	.45	.48	.63	.85						
6 AATD	.48	.52	.56	.44	.46	.74					
7 SN	.59	.67	.60	.51	.49	.55	.90				
8 LC	.49	.51	.49	.40	.54	.56	.58	.92			
9 PBC	.54	.54	.55	.49	.44	.57	.64	.69	.83		
10 ISMHS	.72	.55	.68	.77	.64	.46	.61	.49	.55	.95	
11 PHQ-9	-.05	-.08	-.13	-.01	-.03	-.10	-.11	-.17	-.11	-.09	.83

Note. Bolded numbers reflect bivariate correlations that are significant at the $p < .01$ level; underlined and italicized numbers reflect bivariate correlations that are significant at the $p < .05$ level. Alpha reliability coefficients for each scale are presented along the diagonal.

Table 5

Summary of Fit Statistics for Measurement Models

Model	χ^2 (df)	CFI	PRATIO	RMSEA [CI (90)]	PCLOSE	ECVI
1 -	287.81 (29)	.92	.53	.13 [.12, .15]	<.001	.73
2 e1, e6	263.01 (27)	.93	.51	.13 [.12, .15]	<.001	.68
3 e6, e7	192.75 (28)	.95	.49	.11 [.10, .13]	<.001	.54
4 e2, e6	176.72 (26)	.95	.47	.11 [.09, .12]	<.001	.52
5 e4, e10	158.10 (25)	.96	.46	.10 [.09, .12]	<.001	.48
6 e2, e7	125.18 (24)	.97	.44	.09 [.08, .11]	<.001	.42
7 e2, e8	106.15 (23)	.97	.42	.09 [.07, .10]	<.001	.39
8 e2, e5	93.95 (22)	.98	.40	.08 [.07, .10]	.001	.36
9 e2, e4	63.90 (21)	.99	.38	.06[.05, .08]	.09	.31
10 e6, e10	52.62 (20)	.99	.36	.06 [.04, .08]	.24	.29
11 e8, e9	39.79 (19)	.99	.35	.05 [.03, .07]	.56	.27
12 e7, e10	26.65 (18)	1.00	.32	.03 [.00, .06]	.90	.24
13 e1, e2	20.14 (17)	1.00	.31	.02 [.00, .05]	.97	.24

Note. (change from previous model) denotes the error terms that were allowed to correlate in the new model. All chi squared values are significant at the $p < .001$ level, except for Model 11 ($p = .003$), Model 12 ($p = .09$), and Model 13 ($p = .27$), and all changes to the models resulted in significant reductions to the chi squared statistic.

Table 6

Descriptive Statistics for Life Circumstances Subscales and Correlations with Intention

Subscale	<i>M (SD)</i>	<i>r</i> with ISMHS	<i>r</i> with AASMHS-INT
Cost	3.03 (1.01)	-.31	-.26
Scheduling conflicts	2.72 (1.10)	-.38	-.33
Fatigue	2.71 (1.15)	-.41	-.33
Increased stress of treatment	2.53 (.94)	-.39	-.36
No time	2.30 (.90)	-.42	-.34
Difficult in scheduling appointments	2.25 (1.07)	-.31	-.26
Access to therapy	2.23 (.90)	-.34	-.25
Transportation	1.86 (.92)	-.26	-.18