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The Effectiveness of Peer to Peer Mentoring in Reducing Symptoms of Depression and Anxiety in College Students

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Abstract

University counseling centers are struggling against resource constraints to meet the rising demand for mental health care. Peer-based mentoring programs offer the potential for an alternative approach to mitigate the increasing demand for treatment and improve overall psychological well-being among college students. However, research investigating peer mentoring programs on college campuses is lacking. This study evaluates program feasibility and potential effectiveness in reducing anxiety and depression symptoms among college students that underwent a 4-week peer mentoring program. Results from this preliminary study indicate peer-based programs may be more effective in reducing symptoms of depression (especially anhedonic depression) compared to anxiety. These data support that peer-based programs may be a promising alternative resource that can be offered at most colleges and universities.

The Effectiveness of a Peer-Based Mentoring Program in Reducing Anxiety and Depression Symptoms Among College Students

High Demand for Therapists on College Campuses

Since 2014, the number of students receiving mental health treatment during college has grown by 35%, while total undergraduate student enrollment has only grown by just 5%. By 2018, nearly 1 in 10 students reported visiting a college counseling center for psychological treatment, yet the number of licensed counselors on college campuses has not increased proportionately, from an average of 16 to 19 counselors per university over the last five years (Binkley & Fenn, 2019). Furthermore, across the nation, 63% of university counseling center directors reported that their primary administrative concern was the growing demand for services without a corresponding increase in resources (Gallagher, 2007).

The idea of the college experience being stressful is not a new one. However, we are now seeing an unprecedented increase in the demand for mental health care, with an inability to provide that support. When university counseling centers struggle to meet these demands, it has a direct negative impact on the students they serve. Instances of turning students away completely or long wait times (i.e., latency to first therapy session) continue to increase not only in frequency but in severity, with some universities reporting wait times as high as four weeks, nationwide (Thielking, 2017). Experiencing longer wait times and not getting help sooner when it is most critical may be a damaging experience for students already suffering mental health crises. For some, like a student who died by suicide two days after being turned away by their university's

counseling center, these wait times can have dire consequences (Brinkley & Fenn, 2019). Rick Hanson, president of the Association for University and College Counseling Center Directors, recently pointed out that “thinly stretched campus counseling centers routinely depend on overworked psychologists” (Gold, 2007). This means that the strain is not only in denying some students care but likely negatively impacting the quality-of-care counseling centers are able to give to the students currently receiving support.

In the past, two of the greatest barriers to mental health care among college students have been stigma and a lack of awareness of resources. The good news is the conventional methods used to decrease stigmatization whether contact-based (e.g., interactions between clinicians or mentally ill individuals and their community) or education-based (e.g., psychoeducational books, presentations, or videos) have proven to be largely effective (Kosyluk, 2016). This is likely one of the factors contributing to the increase in demand. Now that we are seeing a subtle but important reduction in stigma, many students who were previously unwilling to seek help may now be more willing to reach out to a professional counselor or therapist. An additional barrier has been limited knowledge regarding on-campus resources for psychological treatment. For example, a 2007 study showed that only about 25% of college students were aware of the mental health resources available on campus (Gallagher, 2007). While this percentage has likely increased some, it remains an important, yet preventable obstacle. This means, however, that as resource awareness increases, one might expect to see the demand for care continue to increase.

In 2019, nearly 90% of university counseling centers reported an increase in demand for services (AUCCCD, 2019). Conventional means of expansion (i.e., hiring more therapists) remain difficult or inaccessible for many colleges and universities, as evidenced by increasing staff turnover rates and a struggle to recruit new clinicians (AUCCCD, 2021). For over a decade now, counseling centers at many colleges and universities have reported being underfunded and understaffed. Now due to the COVID-19 pandemic, university counseling centers are experiencing additional hiring freezes and budget cuts (Abrams, 2020). The pace of increased demand continues to accelerate on counseling centers that were already struggling to keep up. If current trends continue a major barrier to receiving care could become the availability of resources, which is a problem more difficult to fix than stigma and awareness. Amid budgeting limitations and the strain on clinicians, simply expecting counseling centers to expand is an ineffective long-term solution, and alternative strategies are necessary.

Early Adopters of Peer-Based Resources

Colleges and universities have begun to search for alternative methods for meeting this increased student demand for mental health services, when they cannot expand in more conventional ways (e.g., hiring more therapists) (Kitzrow, 2003). This has led to some colleges choosing to innovate by implementing peer-based counseling and/or support systems (Duggan, 2022). Peer-based programs broadly refer to a variety of different resources offered by college counseling centers that utilize trained students to help their peers. Some programs such as Yale's Walden Peer Counseling program

offer one-to-one support, while others, such as UCLA's "Resilience Peer Network" are implemented through a group structure.

Regardless of the format, peer support programs offer a variety of benefits. Students frequently report feeling greater levels of approachability in friends, significant others, and peers than in professional counselors (Duggan, 2022). One drawback to this is that many students also report being afraid of how approaching a peer with their mental health concerns could impact the relationship. Peer-based programs provide the confidentiality and unconditionality of traditional mental health resources while preserving the approachability of a peer-based approach. For example, one Canadian university, recently pilot tested a peer counseling support center that offers "support sessions" to students during the COVID-19 pandemic. This study provided initial support for the feasibility and acceptability of a such a program, especially among students with mild to moderate symptoms of depression and anxiety (Suresh et al., 2021).

College counseling centers are frequently required to use their limited resources to help more acute cases or individuals suffering from severe mental illness. Moreover, many students with milder symptoms may not feel justified seeking help from licensed clinicians. This represents a huge challenge because symptoms of depression and anxiety can worsen over time if left untreated (van Beljouw, 2010). Furthermore, many students reach out following a particularly stressful event or at peak levels of distress, which may be well after the initial onset of symptoms. The untreated course of depression and anxiety would likely be worsened by the experience of rejection from a counseling center at such a time. This means the timely provision of resources to this

group, such as those that can be offered by peer-based programs, may reduce the immediate strain on counseling centers and work to prevent future increases in psychopathology among students.

Purpose of the Present Study

An important limiting factor, however, is that the efficacy and/or effectiveness of these peer-to-peer programs has yet to be empirically tested. Within the last few months, surveys of students within peer support programs have shown that they are thought of positively by students and have shed light on who is choosing to utilize these programs (Duggan, 2022; Suresh et al., 2021). Despite the recent interest, there is still a lack of research into the effectiveness of peer support systems in an experimental setting that assesses changes in outcomes over time. The present study had two primary aims, the first was to assess the feasibility and acceptability of our peer mentorship program. We wanted to see to what extent students were willing to participate in a continuous one-to-one peer support structure, as both mentors and mentees. The second aim was to conduct an initial test of effectiveness. Prior to this study, peer-based programs had not been experimentally assessed as a singular intervention. This allowed us to assess changes in anxiety and depression symptomology and overall mental wellness and compare those participating in the peer-based intervention versus those that were not. We hypothesized that students would exhibit greater reductions in anxiety and mood symptoms, as well as increases in measures of mental well-being (e.g., happiness) following the peer-based intervention when compared to participants on a wait-list control group.

Method

Participants

47 university students were recruited from the University of Arkansas general psychology subject pool in exchange for class credit. Participants were included in the study if they were currently experiencing mild to moderate symptoms of anxiety and/or depression. Specifically, participants completed a departmental screener survey to determine if they met the following eligibility criteria: a score of 3 or higher on the 2-item Generalized Anxiety Disorder Screener (GAD-2) and/or a score between 5 and 14 on the 8-item Patient Health Questionnaire (PHQ-8), a brief screener for depressive symptoms. Participants were excluded from the current study if they reported total symptoms scores outside of those ranges. Participants were randomly assigned to either receive the peer mentorship intervention program (n = 21) or the waitlist group (n = 26). Of those, 12 did not complete the follow-up survey (intervention group, n = 5; waitlist group, n = 7) and were therefore excluded from the subsequent analyses. The final sample consisted of 35 participants (intervention group, n = 16; waitlist group, n = 19). Notably, when comparing baseline symptom scores among those that were included in the analyses to those that were excluded, there were significant differences in mean scores for the anhedonic depression (AD) subscale of the MASQ and the OHQ, with the included group reporting higher baselines scores on the AD subscale (included, mean AD = 66.4; excluded, mean AD = 51.4; $p < 0.01$) and lower scores on the OHQ (included, mean OHQ = 106.7; excluded, mean OHQ = 126.8; $p < 0.01$). No other group differences were observed.

Protocol

During participant recruitment, a group of ten undergraduate students (Juniors and Seniors) from the University of Arkansas volunteered to serve as trained peer "mentors". This group of students were trained virtually (via Zoom) over the course of three 4-hour meetings. These meetings covered basic listening and questioning skills, diversity and inclusivity training, an overview of mental health disorders that are commonly experienced during on college, crisis intervention techniques, and safety procedures (see Appendix A for training schedule). The training was adapted from a peer assistance program manual developed by Dr. Stephanie Steele-Wren, a clinical psychologist at the University of Arkansas Counseling & Psychological Services (Steele-Wren, 2020). This training was supplemented with additional materials on basic counseling procedures (O'Connor, 2001; Weissman, 2017; Yalom, 2017). The manual was given to the trained peers, and they were required to read chapters relating to the topics covered. The training was conducted by Dr. Ivan Vargas, a licensed clinical psychologist (and primary supervisor of this study) in the Department of Psychological Science at the University of Arkansas, and included lecture-based informative sections, role-play practice, and review.

Following random assignment procedures, all participants were asked to complete a baseline survey (T1) that assessed mental health symptoms (including anxiety, depression, and happiness). Next, each participant assigned to the intervention group was paired with a trained mentor. Participants in the intervention group began meeting with their mentors virtually (via Zoom) once a week for four consecutive weeks.

Mentors and mentees were matched based on availability. Each meeting lasted 30-60 minutes with an unstructured format, having the peer mentors ask open-ended questions and listen. At the end of the first four weeks, all participants were asked to complete the questionnaire battery again (T2). For the subsequent four weeks, the waitlist group met with their assigned peer mentors in the same manner. At the end of the second four weeks (T3), participants from both groups were asked to complete the same questionnaire battery. Please also refer to Figure 1 for an overview of the intervention protocol. At T3, participants were prompted to fill out an optional question asking what they enjoyed about the program and what they would like to see changed.

Measures

Mood Anxiety Symptom Questionnaire (MASQ)

The Mood Anxiety Symptom Questionnaire (MASQ; Watson et al, 1995) is a 90-item scale that was used to assess anxiety and depression symptoms. This self-report measure is scored on a 5-point scale (1=not at all, 5=extremely) with participants asked to indicate how strongly they related to statements given. It included statements such as “Blamed myself for a lot of things” and “Felt like I had a lot to look forward to”. The MASQ 90 item questionnaire is scored into 5 subscales. The general distress mixed subscale (MASQ-GDM) consisted of 15 items that assessed generalized distress as a mixture of anxious and depressive symptoms and scores ranged from 15 to 75. The internal consistency for this subscale, in this sample, was good ($\alpha = 0.83$). The general distress anxious subscale (MASQ-GDA) consisted of 11 items and assessed distressing symptoms of anxiety and scores ranged from 11 to 55. The internal consistency for this

subscale was also good (α = 0.87). The anxious arousal subscale (MASQ-AA) consisted of 17 items and assessed anxious symptoms related to states of arousal and scores ranged from 17 to 85. The internal consistency for this subscale was also good (α = 0.89). The general distress depression subscale (MASQ-GDD) consisted of 12 items and assessed general depressive symptoms and scores ranged from 12 to 60. The internal consistency for this subscale was excellent (α = 0.90). The anhedonic depression subscale (MASQ-AD) consisted of 22 items and assessed depressive symptoms relating to anhedonia (e.g., lower approach motivation, difficulty finding enjoyment in activities) and scores ranged from 22 to 110. The internal consistency for this subscale was acceptable (α = 0.73). Responses to each item were scored and added together according to their subscale. All five subscales were administered at all three timepoints.

Patient Health Questionnaire (PHQ-8)

The Patient Health Questionnaire (PHQ; Kroenke et al, 2009) is a brief screener that measures depressive symptomatology. While the original 9-item version is commonly used, the current study used the 8-item version that excludes the suicidality item (Kroenke et al., 2009). Past research supports that data collected using the PHQ-8 are equivalent to those collected using the PHQ-9 (Wu et al., 2020). Respondents are asked to indicate how often in the past 2 weeks they were bothered by issues such as "Feeling bad about yourself, or that you are a failure, or have let yourself or your family down". They responded on a 4-point Likert Scale ranging from 0 "Not at All" to 3 "Nearly Every day". The 8 items were summed to compute a total score that ranged from 0 to

24. In the current sample, the measure demonstrated acceptable internal consistency (α = 0.74). The PHQ-8 was also administered at all three timepoints.

Oxford Happiness Questionnaire (*OHQ)*

The Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002) is a 29-item scale used to assess wellbeing, happiness, and satisfaction with life. Respondents are asked to respond to statements such as "I am intensely interested in other people". Respondents indicated the extent to which they agree with these statements on a 6-item Likert Scale from 1 "strongly disagree" to 6 "strongly agree". Items are scored either positively or negatively and then added together to compute a total score ranging from 29 to 174. Internal consistency for this measure was in the unacceptable range (α = 0.49), however, analyses were included below for completeness. The OHQ was administered at all three timepoints.

Statistical Analyses

Per-protocol analyses were used to estimate the treatment effects of the current peer-based intervention. We decided to use this analytical approach to determine the effect of the intervention among those that completed both follow-up surveys (i.e., T2 and T3 surveys). In addition, participants were included in the analyses if they completed at least 1 of the 4 peer mentorship sessions. Our primary analyses included separate between-subjects analysis of variance (ANOVA) models (via GLM SPSS 27.0) with group entered as the independent variable, each T2 outcome measure entered as the dependent variable, and each corresponding T1 measure entered as a covariate. This allowed for the comparison of post-intervention group differences in outcome scores

while controlling for scores at baseline. Each MASQ sub-scale was analyzed separately. Change scores (from T1 to T2) were also computed and reported for graphical purposes. For each intervention group, mean differences on each measure were also assessed as a function of time (across all three time points). Specifically, additional ANOVAs were computed for each group separately with time as the independent variable (three-level factor) and each outcome measure entered as the dependent variable.

Results

Descriptive Statistics

In general, all MASQ sub-scales were positively correlated with each other, except for MASQ-AD, which was not significantly related to the anxiety subscales (please see Table 1 for all Pearson's correlations). As expected, PHQ-8 scores were also significantly correlated with each MASQ subscale, such that greater scores on the PHQ-8 were associated with higher scores on the MASQ subscales (all $r > 0.37$). OHQ scores were negatively correlated with each measure of depression and anxiety symptoms, suggesting that those students reporting greater depression and anxiety symptoms also reported lower happiness scores (all $r > -0.33$, see also Table 1). As shown in Table 2, the final sample had a mean age of 19.5 years ($SD = 2.58$). Of those included in the final sample, 48.6% identified as man, 45.7% as woman, 2.9% as non-binary, and 2.9 % as "unspecified". In addition, 82.9% of participants identified as white, 2.9% black, 2.9% Native American, 5.7% multi-racial, and 5.7% Latinx. Finally, 60% were freshmen, 25.7% sophomores, 8.6% juniors, and 5.7% seniors.

T2 Scores

The group means for each outcome variable and corresponding change scores (Δ from T1 to T2) are listed in Table 3. Standardized change scores (from T1 to T2) for both groups are also depicted in Figure 2. Results from the between-subjects tests found that participants in the intervention group had greater reductions in symptom scores on all scales compared to the waitlist control group (Figure 2). That said, those group mean differences were only statistically significant for the PHQ-8 and MASQ-AD. As predicted, the intervention group, compared to the waitlist control group, reported significantly lower post-intervention (T2) depression symptoms as assessed by both the PHQ-8 (intervention group, mean PHQ-8 = 6.3; waitlist group, mean PHQ-8 = 8.5; *F(1, 32)* = 4.20, *p* = .05) and MASQ-AD (intervention group, mean MASQ-AD = 61.3; waitlist group, mean MASQ-AD = 68.6; *F(1, 32)* = 5.53, *p* = .03). These differences were statistically significant while controlling for baseline symptoms levels (T1). As shown in Table 3, PHQ-8 scores decreased by 2.5 points for the treatment group, whereas they increased by 0.1 points for the waitlist control group during that same period (Cohen's *d* = 0.61). Similarly, MASQ-AD scores decreased by 5.6 point for the treatment group, whereas they increased 2.6 points for the waitlist control group (Cohen's *d* = 0.81). In contrast, group differences on other MASQ sub-scales and the OHQ were not statistically significant despite being indicative of small to medium treatment effects. Please refer to Table 3 for all model estimates and effect sizes.

T3 Scores

The mean scores for each scale across all three time points are reported in Figure 3. As with the intervention group above, the waitlist control group reported clinically

meaningful reductions in their PHQ-8 and MASQ-AD scores following the intervention period (i.e., T3 or after the second 4-week interval). Specifically, the waitlist group, on average, reported a 1.5-point decrease on the PHQ-8 and an 11.6-point decrease on the MASQ-AD from T2 to T3 (Figure 3). While these differences were not statistically significant, they did represent small to medium treatment effects (Cohen's *d*, PHQ-8 = 0.32, MASQ-AD = 0.74). In contrast, significant symptom reductions were not observed on any of the other measures or subscales.

Qualitative Feedback Regarding Feasibility and Acceptability of Program

The optional feedback entry received 34 participant responses. These responses were reviewed to identify common themes across responses. Notably, 21 subjects reported that they appreciated the opportunity to openly express how they were feeling to a non-judgmental listener. This was indicated by statements like "It was nice to touch base with someone and discuss my problems without worrying about bothering them" or "I like how my mentor mainly just listened to me. I felt safe and told her most of my troubles/problems. It also helped that it was a random stranger as well; I felt like it was easier to express myself because of this". Seven out of the 34 participants reported that they specifically appreciated being able to talk to a peer. This was indicated by statements such as "it was refreshing to talk to someone my own age. It made my experience more relatable, and I was provided great insight. I felt listened to and respected" or "I liked that we talked with other students close to our age so we could relate more and not feel as awkward". Four out of the 34 participants reported they enjoyed getting to connect with someone. This was indicated by statements such as "[I enjoyed] "getting to know someone that I would not have met otherwise" or "I really loved connecting with my mentor so much! I felt like I gained a friend

throughout this". Five out of the 34 participants mentioned that the program helped them learn about themselves or reflect. This was indicated by statements such as "I liked re-evaluating my mental state periodically to see how it has changed" or "how it made me talk about how I really feel inside." Four participants indicated that they believe they would have preferred to meet in person. One participant indicated that they would have rather spoken to someone of the same gender.

Discussion

In general, results from the present study support the use of a peer-based program for treating depression among college students with mild to moderate symptoms. In this case, meeting with a peer for four weeks led to a reduction in depressive symptoms as measured by the PHQ-8, and in particular, a significant reduction in anhedonic depressive symptoms. When comparing the intervention group to the waitlist control group, the data support that the pre-to-post intervention changes in scores were indicative of a medium to large effect size. These data show a great deal of promise considering the circumstances of the study. Firstly, four weeks is a brief period to see marked improvement when only meeting once a week. Additionally, only participants with mild to moderate symptoms were recruited to participate. This means a more modest improvement in symptoms is expected because there is less absolute potential for improvement overall. Moreover, in instances of moderate psychopathological symptoms such improvement has clinical relevance in potentially preventing the worsening of symptoms or the development of more serious illnesses. The aim of the type of intervention could be in some ways seen as preventative (from worsening or more severe psychopathology). For example, the anhedonic depressive subscale of the MASQ has been demonstrated to be uniquely effective as a means of screening for early signs of depressive disorders, as compared to other subscales on the MASQ (Bredemeier, 2010). The results found in MASQ-AD and PHQ-8 scores, alongside

general trends observed in the other subscales, indicate the intervention had a greater effect on depressive symptoms than anxious symptoms. This may in part be explained by the episodic nature of depression (Liu, 2020). Depressive symptoms tend to be situational and increase in response to increased demand or stress in a person's life. In contrast, while anxiety too can ebb and flow, most studies suggest that anxiety symptoms are more stable over time and/or have a more significant trait-based component (Endler, 2001). This would suggest that it would be difficult or unlikely to see significant changes in anxiety symptoms over a short time interval (e.g., 4 weeks). It may also suggest that interventions involving a semi-trained individual, such as peer mentoring, are able to reduce the occurrence of state-based psychopathological symptoms with greater ease than trait-based symptomology. However, further research is required to confirm whether this is a delineating factor.

The statical trends (e.g., effect sizes reported in Table 3) seen among the other measures are indicative that further research may reveal more definitive results. All measures indicated a possible potential benefit to be further explored, meaning that the patterns within the data skewed toward beneficial results in the case of treatment groups as compared to control groups. However, given the small sample size and pilot nature of the study, these results alone are not enough to suggest a positive impact of the intervention. Moreover, some of these results were likely affected by the limitations of the given study, not the limitations of the intervention (see below).

Limitations of the Present Study

The primary limitation of the study was the small sample size. Due to the nature of coordination and a high level of volunteer commitment required only having 35 subjects for final analysis significantly reduced the power of the statistical analyses conducted. This is an important limitation to consider in the evaluation of the intervention. That said, even with such

a small sample size, the data generally support the use of a peer-based program to reduce depression on college campuses. Further research, including direct replications utilizing a larger sample size, are needed to support the full potential of such a treatment program.

An additional limitation on the ability of this study to depict the full impact of the intervention was the length of time the intervention was applied for. Further research including a longer timeline is critical for the assessment of the intervention. Firstly, it could reveal further positive effects or a potentially "leveling off" of the possible benefit to be gained. And secondly, extended exposure to a peer could potentially lead to difficulties in maintaining the beneficial nature of the relationship between the mentor and mentee. Such possible occurrences should be studied further in order to inform the application of the intervention in the future.

The homogeneity of the sample also limits the broader applicability of this study. Significant cultural, social, and emotional differences in students could lead to broadly different types of responses to the intervention. Homogeneity is a vulnerability of studies evaluating the efficacy of interventions, such as this one. Certain identities or backgrounds of individuals could lead to unique or unexpected concerns or issues. A more heterogeneous sample could reveal a greater need for more robust training of peer mentors to ensure they can respond to a greater range of experiences. Furthermore, a more heterogeneous sample of both mentors and participants would allow further research into the importance of demographic match or similarity between the mentor and the students. The findings of such research could be critical in informing the recruitment of mentors and implementation of the intervention in other settings.

Applications

The data presented within this study is enough to suggest that such peer mentoring programs have the potential to beneficially impact the mental health of individuals. Most

relevantly this study indicated that this could be achieved over a relatively short time scale and with relatively minimal training to the mentors. This is important because it demonstrates that it is likely feasible for many counseling centers to adopt such a program with little cost of time or resources. This would directly expand the capacity of care for counseling centers without the need for hiring more clinicians or counselors. Furthermore, the data from sensitive screening questionnaires (MASQ-AD and PHQ) indicates that this intervention could potentially serve as a system of triage or tiered care for overwhelmed counseling centers. These programs could take on the large numbers of students who express mild to moderate mental health struggles that would have otherwise been turned away due to the prioritization of severe cases. The fact that the data here indicated this intervention is effective for such mild to moderate instances is important, as preventing the condition of these individuals to worsen while on a waitlist or be outright turned away could serve as a preventative step in reducing the strain on college counseling centers. So even in instances where a counseling center is struggling to meet the demands of many students with symptoms too severe for a program like this, the establishment of such a program could serve as a preventative form of reducing the strain in the future.

This study can be applied to future research as a benchmark for the kind of training required to give to mentors and still see significant benefit to participants. With this established, it may be easier for researchers to coordinate the infrastructure of future studies that could answer the open questions discussed in the limitations section.

As a preliminary study into the effectiveness and feasibility of peer mentoring as a program, this study showed that these programs have remarkable promise and the potential to have clinically relevant positive effects. We hope these findings open the door for further research into this exciting new type of intervention and encourage counseling centers to consider adopting programs similar to those presented here.

Bibliography

Abrams, Z. (2020, September). A crunch at college counseling centers. *Monitor on Psychology*, *51*(6). http://www.apa.org/monitor/2020/09/crunch-college-counseling

academic adjustment. [Masters Dissertation, Utah State University].

AUCCCD. (2019). AUCCCD Annual Survey. Association for University and College Counseling Center Directors. https://www.aucccd.org/director-surveys-publicAUCCCD. (2021).

AUCCCD Annual Survey. Association for University and College Counseling Center Directors. https://www.aucccd.org/director-surveys-public

Bredemeier, K., Spielberg, J. M., Silton, R. L., Berenbaum, H., Heller, W., & Miller, G. A. (2010). Screening for depressive disorders using the Mood and Anxiety Symptoms Questionnaire Anhedonic Depression Scale: a receiver-operating characteristic analysis. *Psychological assessment*, *22*(3), 702–710. https://doi.org/10.1037/a0019915

Carandang, R. R., Shibanuma, A., Kiriya, J., Vardeleon, K. R., Asis, E., Murayama, H., & Jimba, citizens. *PloS one, 15*(4), e0230770.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396.

Collin Binkley & Larry Fern. (2019, November 19). As stigma ebbs, college students seek mental health help. AP NEWS. https://apnews.com/article/nv-state-wire-ap-top-news-ut-state-wire-mental-health-health-08e5c195bf04471e9c4a127abe831d91

D'Andrea, V. J. (1987). Peer Counseling in Colleges and Universities: *Journal of College Student Psychotherapy*, *1*(3), 39–55. https://doi.org/10.1300/J035v01n03_04

DeAngelis, T. (2009, November). New insights on college mental health. *Monitor on Psychology*, *40*(10).http://www.apa.org/monitor/2009/11/college-d

DigitalCommons.usu

distress in college students. [Doctoral Dissertation, University of Idaho]. eLibrary.ru

Duggan, Maeve. (2022). Peer Counseling in College Mental Health. *Journal of First Generation Student Success*. https://firstgen.naspa.org/report/peer-counseling-in-college-mental-health

Elizabeth Gold. (2007). Where can college students turn for counseling?

Wtsp.Com.https://www.wtsp.com/article/news/where-can-college-students-turn-for-counseling/67-393275065

Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, *15*(3), 231–245. https://doi.org/10.1016/S0887-6185(01)00060-3

Gallagher, R. P. (2007). National Survey of Counseling Center Directors 2006 (Monograph No. 8P). The International Association of Counseling Services (IACS).

http://www.collegecounseling.org/pdf/2006_survey.pdf

Gradidge, D. H., & de Jager, A. C. (2011). Psychometric Properties of the Wellness Questionnaire for Higher Education. *South African Journal of Psychology*, *41*(4), 517–527.

https://doi.org/10.1177/008124631104100410

Graybill, B. T. (1979). The effectiveness of a comprehensive peer counseling program on

health help. Associated Press News. Retrieved from

health-college-examples.html

Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and Individual Differences, 33*(7), 1071–1082. https://doi.org/10.1016/S0191-8869(01)00213-6

https://apnews.com/08e5c195bf04471e9c4a127abe831d91

interventions in improving depressive symptoms of community-dwelling Filipino senior Issues. Retrieved from

https://www.nytimes.com/2019/02/21/education/learning/mental-

Kosyluk, K. A., Al-Khouja, M., Bink, A., Buchholz, B., Ellefson, S., Fokuo, K., Goldberg, D., Kraus, D., Leon, A., Michaels, P., Powell, K., Schmidt, A., & Corrigan, P. W. (2016). Challenging the Stigma of Mental Illness Among College Students. *Journal of Adolescent Health*, *59*(3), 325–331. https://doi.org/10.1016/j.jadohealth.2016.05.005

Kra Kruisselbrink Flatt, A. (2013). A Suffering Generation: Six Factors Contributing to the Mental Health Crisis in North American Higher Education. College Quarterly, 16(1), n1.ft, D. P. (2011). One hundred years of college mental health. *Journal of American College Health, 59*(6), 477-481.

Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of internal medicine*, *146*(5), 317–325. https://doi.org/10.7326/0003-4819-146-5-200703060-00004

Kroenke, K., Strine, T. W., Spitzer, R. L., Williams, J. B., Berry, J. T., & Mokdad, A. H. (2009). The PHQ-8 as a measure of current depression in the general population. *Journal of affective disorders*, *114*(1-3), 163–173. https://doi.org/10.1016/j.jad.2008.06.026

Liu, B., Sun, J., Qin, X., Wang, M., Lu, X., Dong, Q., Zhang, L., Liu, J., Ju, Y., Wan, P., Guo, H., Zhao, F., Zhang, Y., & Li, L. (2020). State-Dependent and Trait-Like Characteristics of Dysfunctional Attitudes in Patients With Major Depressive Disorder. *Frontiers in Psychiatry*, *11*. https://doi.org/10.3389/fpsyt.2020.00645

M. (2020). Effectiveness of peer counseling, social engagement, and combination

Malchodi, C. S., Oncken, C., Dornelas, E. A., Caramanica, L., Gregonis, E., & Curry, S. L. (2003). The effects of peer counseling on smoking cessation and reduction. *Obstetrics & Gynecology*, *101*(3), 504–510. https://doi.org/10.1016/S0029-7844(02)03070-3

meet-soaring-student-needs-mental-health-care/

mental health care. Retrieved from https://namiswwa.org/dangerous-wait-colleges-cant-

Morin, CM., Belleville, G., Bélanger, L., Ivers, H. (2011). The insomnia severity index: psychometric indicators to detect insomnia cases and evaluate treatment response. *SLEEP* 2011;34(5):601-608.

O'Connor, R. (2001). *Active Treatment of Depression* (First Edition). WW. Norton & Company.

Pitts, M. A. (1997). The effectiveness of peer counseling for resolving interpersonal problem prevention program on a diverse college campus: Examining the effectiveness of a peer-

Salovey, P., & D'Andrea, V. J. (1984). A Survey of Campus Peer Counseling Activities. *Journal of American College Health*, *32*(6), 262–265. https://doi.org/10.1080/07448481.1984.9939581

Suresh, R., Karkossa, Z., Richard, J. et al. Program evaluation of a student-led peer support service at a Canadian university. Int J Ment Health Syst 15, 54 (2021). https://doi.org/10.1186/s13033-021-00479-7

Thielking, M. (2017, March 2). A dangerous wait: Colleges can't meet soaring student needs for to-peer model. Journal of college student psychotherapy, 33(2), 131-144.

Tsong, Y., Young, J. T., Killer, J. D., Takemoto, M. A., & Compliment, B. (2019). Suicide

Van Beljouw, I. M., Verhaak, P. F., Cuijpers, P., van Marwijk, H. W., & Penninx, B. W. (2010). The course of untreated anxiety and depression, and determinants of poor one-year outcome: A one-year cohort study. *BMC Psychiatry*, *10*(1), 86. https://doi.org/10.1186/1471-244X-10-86

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. Journal of personality and social psychology, 54(6), 1063.

Watson, D., Weber, K., Assenheimer, J. S., Clark, L. A., Strauss, M. E., & McCormick, R. A. (1995). Testing a tripartite model: I. Evaluating the convergent and discriminant validity of anxiety and depression symptom scales. Journal of abnormal psychology, 104(1), 3.

Weissman, M. M., Markowitz, J. C., & Klerman, G. L. (2017). *The Guide to Interpersonal Psychotherapy: Updated and Expanded Edition* (Expanded,Updated ed.). Oxford University Press.

Wolverton, B. (2019, February 21). Colleges Expand Their Reach to Address Mental Health

Wu, Y., Levis, B., Riehm, K. E., Saadat, N., Levis, A. W., Azar, M., ... & Thombs, B. D. (2020). Equivalency of the diagnostic accuracy of the PHQ-8 and PHQ-9: a systematic review and individual participant data meta-analysis. Psychological medicine, 50(8), 1368-1380.

Yalom, I. D. (2017). *Gift of Therapy : An Open Letter to a New Generation of Therapists and Their Patients* (Harper Perennial Edition). HarperCollins.

Table 1. Pearson's *r* correlations for **baseline** measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) MASQ General Distress Mixed	--						
(2) MASQ General Distress Anxiety	0.74***	--					
(3) MASQ Anxious Arousal	0.54***	0.81***	--				
(4) MASQ General Distress Depressive	0.63***	0.66***	0.53***	--			
(5) MASQ Anhedonic Depression	0.45**	0.18	0.25	0.61***	--		
(6) PHQ-8	0.65***	0.63***	0.46**	0.68***	0.37*	--	
(7) OHQ	-0.45**	-0.37*	-0.33*	-0.60***	-0.82***	-0.49***	--

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 2. Demo data for whole sample and by group.

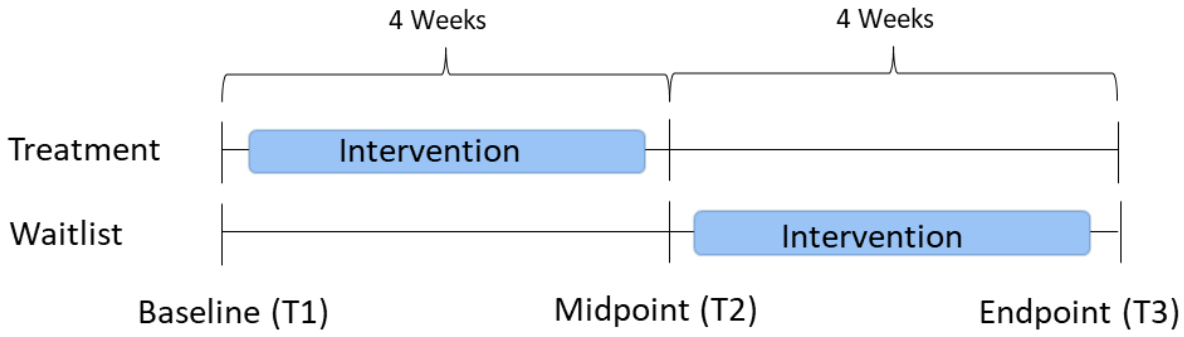
		Total	Intervention (*n* = 16)	Waitlist (*n* = 19)
Age (*M, SD*)		19.5, 2.59	19.07, 1.22	19.84, 3.29
Gender (%)				
	Women	45.7%	56.3 %	36.8 %
	Men	48.6%	47.5%	57.9%
	Non-Binary	2.9%	6.3%	0%
	Unspecified	2.9%	0%	5.3%
Race (%)				
	White	82.9%	81.3 %	84.2 %
	Black	2.9%	6.3%	0%
	Native	2.9%	6.3%	0%
	Latinx	5.7%	0%	10.5%
	Multi-racial	5.7%	6.3%	5.3%
Year (%)				
	Freshman	60.0%	62.5%	57.9%
	Sophomore	25.7%	12.5%	36.8%
	Junior	8.6%	12.5%	5.3%
	Senior	5.7%	12.5%	0%

Table 3. Group means and change scores for all outcome variables. F-value's represent means comparisons at T2 while controlling for T1. Effect size calculations were based on Δ scores to factor in mean differences at baseline (T1).

	T1		**T2**		**Δ**		***F*-value**	***Effect Size***
	Treatment	Waitlist	Treatment	Waitlist	Treatment	Waitlist		
Variable	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
PHQ-8	8.8 (4.8)	8.4 (3.9)	6.3 (2.9)	8.5 (4.3)	-2.5 (4.2)	0.1 (4.3)	4.19*	0.61
MASQ - GDM	43.3 (11.1)	39.0 (8.9)	37.3 (8.9)	37.0 (9.0)	-6.0 (9.5)	-2.0 (7.0)	0.74	0.48
MASQ - GDA	24.8 (9.2)	23.5 (8.1)	22.8 (7.8)	22.6 (7.6)	-2.0 (9.0)	-0.9 (7.3)	0.04	0.13
MASQ – AA	30.8 (12.5)	27.8 (9.3)	29.0 (9.9)	29.2 (10.1)	-1.8 (11.2)	1.3 (10.3)	0.22	0.29
MASQ - GDD	28.6(10.2)	30.3 (10.0)	25.9 (8.2)	30.0 (8.5)	-2.7 (10.6)	-0.4 (8.2)	1.76	0.24
MASQ – AD	66.9 (11.1)	66.1 (12.5)	61.3 (14.2)	68.6 (15.6)	-5.6 (10.7)	2.6 (9.4)	5.53*	0.81
OHQ	107.6 (16.2)	105.9 (18.4)	112.2 (19.5)	105.2 (23.6)	4.6 (13.0)	-0.7 (16.0)	1.18	0.36

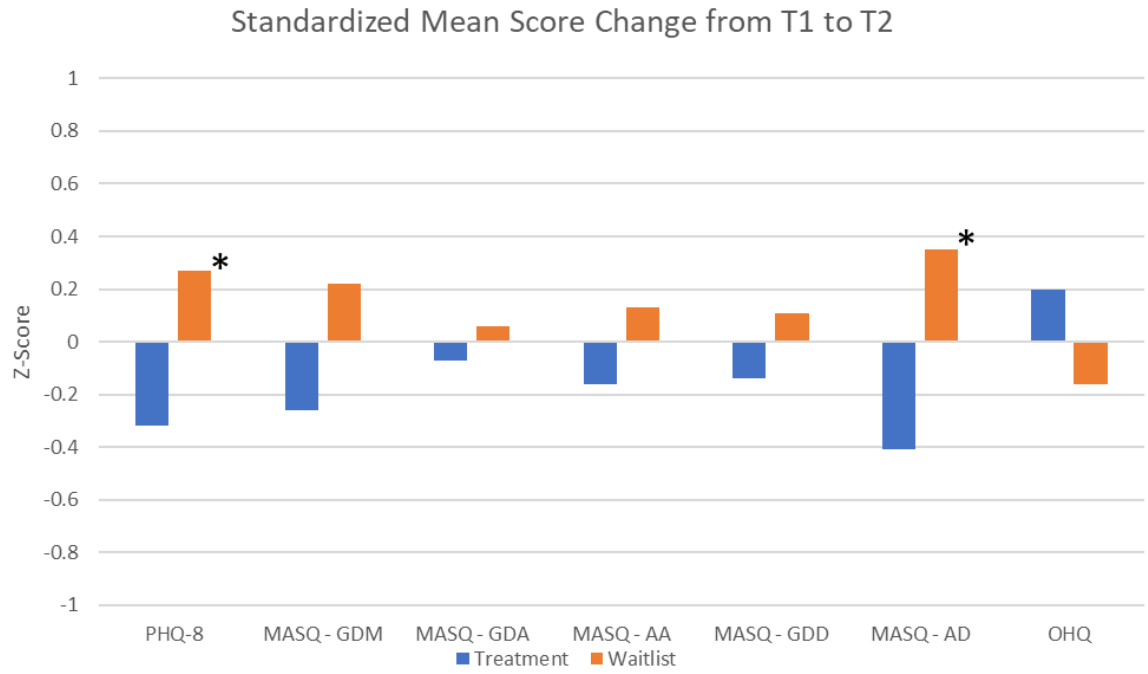
* Indicates a significance of $p < .05$

Figure 1. *Treatment Procedure – Study Timeline*



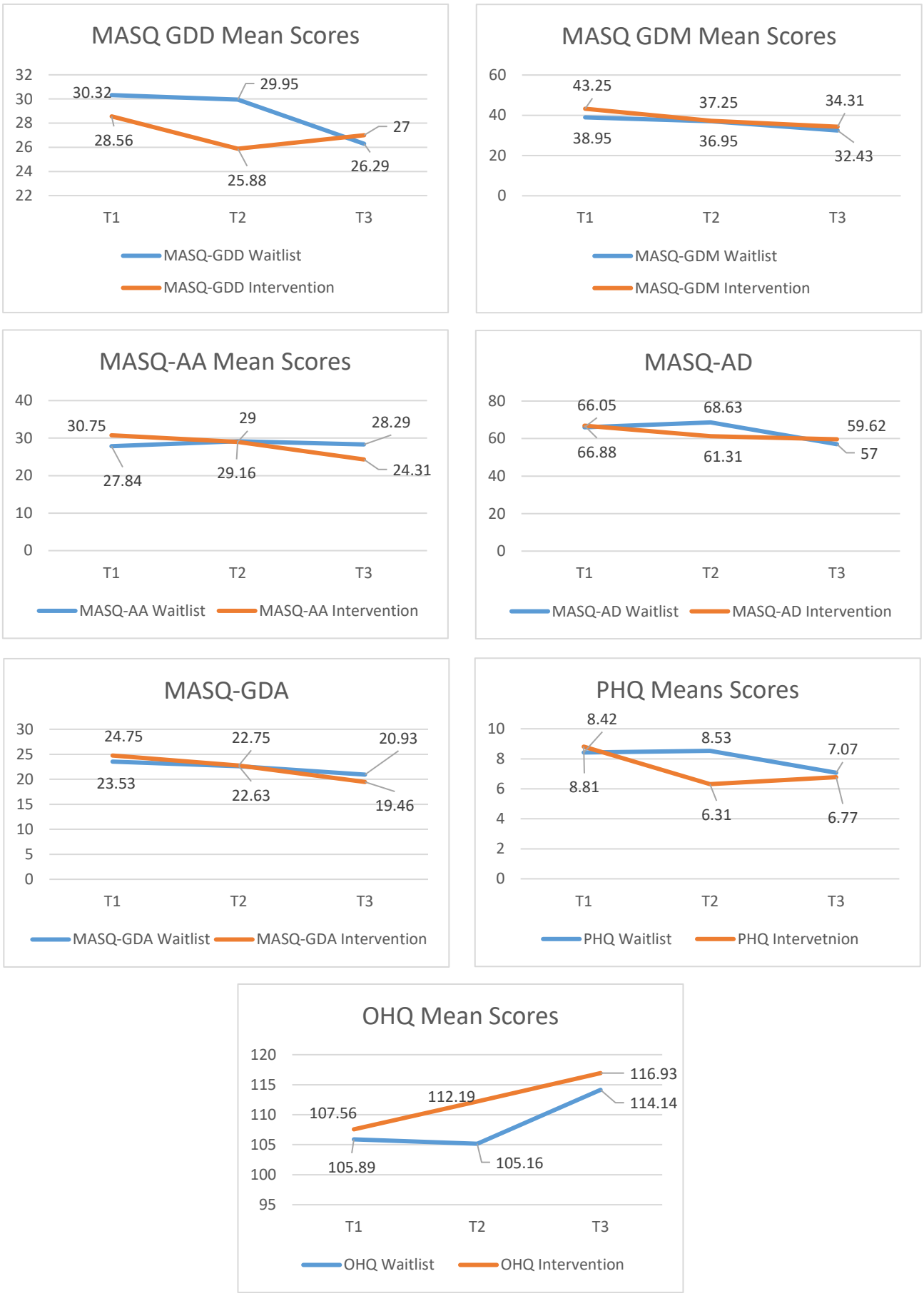
* Both groups received the same intervention.

Figure 2. Standardized mean score changes for each outcome variable (i.e., change from T1 to T2). Mean change scores were converted to standardized scores to facilitate comparisons across measures.



* $p < 0.05$

Figure 3. Mean scores for Waitlist and Control across T1, T2, and T3



Appendix A. Training Syllabus

Peer Mentorship Training – Course Schedule (Study Version)

Day One:	**Basic Skills**
	• Reading: Section 1: Basic skills (20 pages) o Chapters 1 AND 2 of the Peer Support Manual
	• Presentation: o Program Design o Mentorship fundamentals o Emotional/Feeling Support Techniques
Day Two	**Diverse Experiences**
	• Practice: Review of basic skills o Roleplaying o Scenario Response exercises
	• Reading: All of Section 2: Diverse experiences (20 pages) o chapters 3, 4, and 5
	• Presentation: o Disability Experiences o Multicultural Experiences o Sexuality Experiences o Inter-identity communication and intersectionality
Day Three	**Mental illness**
	• Reading: Section 3: Mental illness overviews (13 pages) o Chapter 6 (mental health issues prevalent on college campuses)
	• Presentation: o Mood Disorders o Trauma-Related Disorders o Substance Use Disorders o Eating Disorders
Day Four	**Crisis Safety and Contingency Plans**
	• Reading: Section 4: Crisis intervention (13 pages) o Chapter 9, Chapter 10 and Chapter 11
	• Presentation: o Crisis signs and dangers o Crisis response procedures o Emergency Resources
	QPR certification