



A Brief Behavioral Intervention to Increase Social Connection in College Students: A Randomized Controlled Trial

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Abstract: *Social connection is fundamental to humans' mental and physical well-being. Developed with Functional Analytic Psychotherapy's principles of Awareness, Courage & Love (ACL), a three-week group intervention aimed to increase social connection among undergraduates. This intervention is especially relevant given that students' sense of social isolation and mental health challenges have been magnified during the COVID-19 pandemic. The ACL intervention condition (n=16) engaged in exercises involving self-reflection, self-disclosure, and responsiveness to others. The control group (n=14) took part in a structured study hall. Intervention participants reported increased feelings of belonging on campus and closeness to one another. Results underscore the potential for targeted ACL interventions to help increase college students' feelings of belonging and social connection.*

Keywords: *Social Connection, College Students, Functional Analytic Psychotherapy, Relationships, Vulnerability, Loneliness, Contextual Behavioral Science.*

1. Introduction

It has been well documented that social connection is critical to humans' mental and physical well-being (Cohen, 2004), and that social isolation or loneliness is associated with depression (Buhrmester et al., 1988), and with mortality rates exceeding that of physical inactivity, double the effects of obesity (Holt-Lunstad, Smith & Layton, 2010), and equivalent to that of smoking 15 cigarettes a day (Holt-Lunstad & Smith, 2012). The importance of relationships throughout different social domains has been continuously supported across disciplines (Bugental, 2000). Given that humans seek out social connection and reap many corresponding benefits (Cacioppo, 2008), addressing loneliness has quickly become a top public health priority in response to the COVID-19 pandemic (Killgore et al., 2020). The intense isolation stemming from the COVID-19 pandemic, combined with the general lack of access to mental health treatment (Marsh & Wilcoxon, 2015) has increased mental health challenges in numerous populations (Salimi et al., 2021). College students, the focus of this study, comprise one such vulnerable group (Wang et al., 2020). This article will discuss the impact of an ACL (Awareness, Courage & Love) intervention for increasing interpersonal connection based on the principles of Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991).

Functional Analytic Psychotherapy

Functional Analytic Psychotherapy (FAP) is a process-based therapy rooted in contextual behavioral science and Skinner's radical behaviorism, emphasizing the importance of authentic interpersonal relationships as both a target outcome of therapy and as a therapeutic mechanism of change (Haworth et al., 2015). FAP's principles have been translated into the concepts of "Awareness, Courage & Love" as a way to generalize FAP and increase accessibility to the general public.

Awareness, Courage & Love (ACL) Model

First defined by Tsai et al. (2009), ACL provides mid-level terminology for describing the intimacy-building mechanisms that underlie FAP. "Awareness" is defined as taking mindful consideration of oneself and others' needs, feelings, and history. Awareness can be thought of as being mindful of one's own cognitions and feelings, as well as what another individual may be experiencing. In the ACL model of social connection, "courage" is defined as vulnerable self-disclosure.

Courage includes addressing one's own needs, being authentic in expressing oneself, and taking thoughtful interpersonal risks. Courage also involves stepping outside of one's comfort zone and trying new things. Lastly, "love" focuses on responsiveness and encompasses the ability to both give and receive caring, compassion, support, appreciation, acknowledgment, respect, and encouragement. Love is responding to another's needs, and providing empathetic and caring responses (Haworth et al., 2015). ACL has been shown to have both interpersonal and intrapersonal benefits: decreasing feelings of loneliness, increasing prosocial and positive health behaviors, and increasing feelings of social connection and intimacy (Haworth et al., 2015; Maitland et al., 2017).

Purpose of the Present Study

Since an increasing number of college students have reported feelings of social isolation and mental health concerns aggravated by the COVID-19 pandemic (Salimi et al., 2021; Johnson, 2020), it is hypothesized that the ACL model may serve as an accessible and scalable intervention for decreasing feelings of loneliness and sub-clinical mental health symptomatology while maintaining the efficacy seen in higher-cost treatments with longer wait-lists (Kohlenberg et al., 2015; Kanter, Kuczynski, Tsai, & Kohlenberg 2018; Tsai et al., 2020).

The present study investigates the effects of a 3-week ACL intervention on college students' inter/intrapersonal processes, feelings of social connection, and depressive symptomatology. The author hypothesized that ACL intervention participants would demonstrate (1) an increase in feelings of social connection, and (2) a decrease in depressive symptoms, when compared to controls.

2. Materials and Methods

Participants

Thirty-three undergraduates from the University of Washington were recruited through the Psychology Subjects Pool (PSP). Of these, a total of thirty participants took part in the study. No exclusion criteria were used, however, potential participants were asked to not enroll in the study if they were struggling with mental health issues or difficult interpersonal relationships. Participants received extra credit in their introductory psychology class for participation.

Materials

Patient Health Questionnaire - 9 Items

Kroenke et al.'s (2001) PHQ-9 is a 9-item self-report measure used to track participants' depressive symptom severity in response to the study intervention. The PHQ-9 was first adapted from the PRIME-MD to screen for depression more efficiently and to better assess symptom severity. Using a 4-point Likert scale ranging from "0" (not at all) to "3" (nearly every day), each item corresponds to one of the DSM-IV's 9 diagnostic criteria for Major Depressive Disorder. The PHQ-9 has exceptional internal and test-retest reliability, as well as strong construct, criterion, and external validity (Kroenke et al., 2001).

Valuing Questionnaire

The Valuing Questionnaire (VQ; Smout et al., 2014) is a 10-item self-report measure with a strong two-factor structure: Progress and Obstruction of values. The VQ measures how well aligned someone has been living with their personal values, and is rated on a 5-point Likert scale from 1 ("Not at all true") to 5 ("Completely True") regarding how true a statement applied to participants in the past week. The Progress factor refers to self-awareness and values-consistent actions, while Obstruction refers to one's avoidance of their self-determined values or disruption of values-consistent living. Both factors have solid internal consistency. The VQ has demonstrated good concurrent validity, as well as good convergent validity (Smout et al., 2014).

Campus Connectedness Scale

The Campus Connectedness Scale (CCS; Summers et al., 2005) was adapted from the Social Connectedness Scale (Lee & Robins, 1995) to specifically measure college students' feelings of belonging on campus and social connectedness with other students. The CCS is a 14-item self-report measure on a 6-point Likert scale from 1 ("Strongly Disagree") to ("Strongly Agree"). The CCS has demonstrated solid factor structure, predictive validity, and excellent internal consistency (Summers et al., 2005).

Interpersonal Competence Questionnaire - Emotional Support Subscale

The Interpersonal Competence Questionnaire (ICQ; Buhrmester et al. 1988) is a 40-item self-report scale measuring five domains of interpersonal competence, including Emotional Support. The ICQ Emotional Support subscale measures one's ability to provide comfort and make someone else feel understood. The Emotional Support subscale contains 8-items describing different situations and employs a 5-point Likert scale from 1 ("I'm poor at this; I'd feel so uncomfortable and unable to handle this situation, I'd avoid it if possible") to 5 ("I'm extremely good at this; I'd feel very comfortable and could handle this situation very well"). The ICQ has a good internal structure and has been found to be generally reliable. The ICQ has demonstrated satisfactory internal consistency reliability, convergent validity, and high test-retest reliability, specifically in regard to the Emotional Support subscale (Buhrmester et al. 1988).

Compassionate and Self-Image Goals Scale

The Compassionate and Self-Image Goals Scale (CSIGS; Crocker & Canevello, 2008) is a self-report measure including two subscales designed to assess one's interpersonal goals in friendships. The CSIGS employs a 5-point Likert scale from 1 ("Not at all") to 5 ("Extremely") and includes 13-items, which all start with the phrase "In the past week, in friendships, how much did you want to or try to." The self-image goals subscale includes 6-items, while the compassionate goals subscale includes 7-items. Higher scores translate to higher interpersonal goals. The CSIGS has demonstrated high internal consistency on both subscales (Crocker & Canevello, 2008).

Design

A two-armed, randomized controlled trial compared an ACL intervention with a study hall control condition. Assessments took place at baseline and post-intervention. Primary outcome variables included self-report measures of depression, social connection, and inter/intrapersonal competence. This study (STUDY00009155) was approved by the Human Subjects Division Institutional Review Board of the University of Washington.

Procedure

Thirty participants were randomly assigned to the ACL intervention (n=16) and control (n=14) conditions. Both conditions took part in group sessions spanning one hour and 45 minutes once a week for three weeks. Participants completed demographic and baseline pre-measures through the University of Washington's REDCap system prior to the first session. Informed consent was obtained at the first in-person session. Following the final session, participants completed post-measures identical to the battery administered at baseline.

Control Condition

The control group control consisted of a realistically simulated study hall. Participants were invited to spend their time productively on schoolwork. Participants were told they could use their laptops or read. To mimic real-life study hall conditions, similar to studying at the library, students were not given explicit instructions on whether or not they could work together or talk. Similarly, the co-facilitators of this condition focused on their own school work.

ACL Intervention Condition

Each ACL session began with a guided meditation, followed by a large group check-in during which members shared a feeling word or phrase that the meditation evoked. Next, participants were given contemplation questions to journal on individually (See Appendix A). After the brief journaling session, a vulnerable sharing and deep listening exercise was modeled by two undergraduate research assistants. Participants then formed dyads to engage in the previously modeled reciprocal sharing procedure. In these closeness-generating exercises, participants were asked to authentically share their

vulnerable thoughts and feelings, and to respond compassionately to their partner's vulnerable disclosure in return. Two to three reciprocal sharing exercises were completed in each session. Next, the whole group came back together to share their biggest takeaways or what felt most important to them closing the session.

Participants then chose a personal homework goal for the week, along with one step they could take to accomplish it. At the next session, participants were asked to share how the previous week's step or goal was going, including any struggles they faced or progress they made. Session one. "Introduction to Awareness, Courage, and Love" the meditation, contemplation questions and sharing exercise all surrounded the core concepts of ACL (See Appendix A). Group members began to create connections with one another, and practiced new habits of thinking and communicating with ACL skills.

Session two. "Creating What Your Heart Desires" group members explored what was most personally meaningful for them to create, manifest, and experience in life, as well as how to increase the likelihood of living with intention

(See Appendix A).

Session three. "Listening Deeply to Self and Others" group members noticed, explored, and practiced various aspects of the power of listening to oneself and others, and how intentional listening can forge deeper connections (See Appendix A).

3. Results

Interpersonal Outcomes

Campus Connectedness Scale

In order to test the effect of the ACL intervention on Campus Connectedness Scale scores, an unequal variances t-test was conducted to compare the amount of change from pre-test to post-test across conditions.

This test was found to be statistically significant, $t(24.32) = 4.34$, $p < .001$, $g = 1.58$, 95% CI [0.74, 2.09]. These results indicate that students in the ACL intervention condition ($M = 0.6$, $SD = 1.0$) increased their Campus Connectedness Scale scores significantly more than the students in the control condition ($M = -0.8$, $SD = 0.7$), and that the ACL intervention had a significant positive change in CCS scores over time. These results support the researchers' hypothesis.

Interpersonal Competence Questionnaire - Emotional Support Subscale

As a means to analyze the effect of the ACL intervention on participant's Interpersonal Competence Questionnaire scores, an unequal variances t-test was performed to compare the amount of change from pre-test to post-test across conditions. This test was found to be statistically non-significant, $t(26.53) = -0.28$, $p = .779$, 95% CI [-0.61, 0.47]. These results indicate that students in the ACL intervention condition did not change their ICQ scores significantly more than the students in the control condition. Means and standard deviations for ACL and control participants on ICQ are presented in Table 1.

Compassionate and Self-Image Goals Scale

Means and standard deviations for ACL and control participants on CSIGS are presented in Table 1. To examine the effect of the ACL intervention on Compassionate and Self-Image Goals Scale scores, an unequal variances t-test was conducted to compare the amount of change from pre-test to post-test across conditions. This test was found to be statistically nonsignificant $t(26.35) = -0.17$, $p = .868$, 95% CI [-0.36, 0.31]. These results indicate that students in the ACL intervention condition did not change their CSIGS scores significantly more than the students in the control condition.

Intrapersonal Outcomes

Patient Health Questionnaire - 9 Items

To discern the effect of the ACL intervention on PHQ-9 scores, an unequal variances t-test was performed to compare the amount of change from pre-test to post-test across conditions. This test was found to be statistically non-significant $t(26.54) = .861$, $p = .397$, 95% CI [-0.27, 0.65]. Means and standard deviations for ACL and control participants on PHQ-9 are presented in Table 1. These

results indicate that students in the ACL intervention condition did not change their PHQ-9 scores significantly more than the students in the control condition.

Valuing Questionnaire

In order to observe the effect of the ACL intervention on Valuing Questionnaire scores, an unequal variances t-test was conducted to compare the amount of change from pre-test to post-test across conditions. This test was found to be statistically non-significant $t(17.35) = .14$, $p = .892$, 95% CI [0.07, 0.04]. These results indicate that students in the ACL intervention condition did not change their VQ scores significantly more than control condition participants. Means and standard deviations for ACL and control participants on VQ are presented in Table 1.

4. Discussion

The literature demonstrates that social connection is vital to our general mental and physical well-being and health, and that college students appear to be experiencing increased feelings of loneliness. This study examined the effects of a targeted ACL treatment on college students' levels of social connection, depression, and inter/intrapersonal abilities. Intervention participants took part in three weekly ACL sessions, and when compared to controls, demonstrated a highly significant increase in feelings of social connectedness and belonging on campus. Consistent with previous findings in relationship science literature, these results support the intervention's underlying notion that sharing vulnerably and being met with responsiveness increases feelings of connection and builds closer relationships. In addition, this study focused specifically on how college students can increase their sense of belonging on campus and feelings of connection with other students.

A variety of measures comparing the intervention and control groups allowed assessment of depression and intrapersonal processes as well as interpersonal competence and social connection amongst participants. Specifically, inclusion of the Campus Connectedness Scale allowed for an evaluation of how the ACL model may potentially improve students' overall college experiences. From this study, we learned that targeted ACL interventions have the demonstrated capacity to improve feelings of social connection amongst students.

While social activities and other university-initiated events mirroring the control condition of the present study may prove helpful, results suggest an empirical basis for ACL specific interventions in facilitating a greater sense of social connection and belonging across campus. Particularly, in light of the COVID-19 pandemic, the implications of these findings indicate a need for accessible, campus-wide interventions utilizing these skills as mechanisms for resilience against aggravated levels of student isolation and disconnect.

Interventions such as the one in the present study could be implemented both within and outside of research settings, providing students with transferable skills geared towards improving interpersonal relationships and connection to the larger student body. Policy implications might suggest training and initiation of spaces for students to safely gather, practice, and utilize ACL skills.

The results, however, did not find support for the ACL intervention having a greater decrease in depressive symptoms than the control, which may be due to the small sample size and insufficient power. Future studies should distribute this intervention more widely, and examine depression as a construct in larger samples. It was beyond the scope of this study to follow up with participants after the intervention; future studies should examine longer-term treatment effects, as well as potential benefits in members of students of historically exclude groups, including people of color and LGBTQ+ (Lesbian, Gay, Bisexual, Transgendered, Queer+) individuals. Specifically, young Asian American International students have been left feeling unwanted and unsafe on college campuses due to anti-Asian hate sentiment associated with the pandemic, indicating a need for a particular focus on this population in future research (Koo, Yao, & Gong, 2021) Overall, this study advances knowledge of the ACL model and its efficacy as a targeted intervention in college students, suggesting exciting new pathways for research.

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