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### Living with awareness, courage, and love: An accessible behavioral intervention to improve well-being

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LIVING WITH AWARENESS, COURAGE, AND LOVE: AN ACCESSIBLE  
BEHAVIORAL INTERVENTION TO IMPROVE WELL-BEING

A Dissertation

Presented to the Faculty of  
Antioch University Seattle

In partial fulfillment for the degree of  
DOCTOR OF PSYCHOLOGY

by

Emerson J Hardebeck

ORCID Scholar No. 0000-0001-7561-6377

April 2023

LIVING WITH AWARENESS, COURAGE, AND LOVE: AN ACCESSIBLE  
BEHAVIORAL INTERVENTION TO IMPROVE WELL-BEING

This dissertation, by Emerson J Hardebeck, has  
been approved by the committee members signed below  
who recommend that it be accepted by the faculty of  
Antioch University Seattle  
in partial fulfillment of requirements for the degree of

DOCTOR OF PSYCHOLOGY

Dissertation Committee:

Melissa Kennedy, PhD, Chairperson

Michael Toohey, PhD

Mavis Tsai, PhD

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## **ABSTRACT**

### **LIVING WITH AWARENESS, COURAGE, AND LOVE: AN ACCESSIBLE BEHAVIORAL INTERVENTION TO IMPROVE WELL-BEING**

Emerson J Hardebeck

Antioch University Seattle

Seattle, WA

Accessing mental healthcare is difficult and has become more so as demand escalated during the ongoing COVID-19 pandemic. In an attempt to address this problem, an established behavior therapy, Functional Analytic Psychotherapy (FAP), has recently been adapted into a group-based format called Living with Awareness, Courage, and Love (ACL), which can be disseminated inexpensively and quickly due to its reliance on laypeople, rather than clinicians, as facilitators. This randomized-controlled trial evaluated the effects of a six-week ACL group on participants' well-being across several domains. Compared to participants in the control group, those in the ACL intervention formed a significantly closer bond with their group and experienced greater improvements in their self-compassion, although there were no significant changes in their anxiety, depression, or psychological flexibility. These results indicate that ACL groups may be a promising new way to improve interpersonal connection and self-compassion when there are barriers to traditional treatments for these struggles.

*Keywords:* Functional Analytic Psychotherapy, dissemination, awareness, courage, love

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## Table of Contents

List of Tables .....	viii
List of Figures .....	ix
CHAPTER I: INTRODUCTION.....	1
Functional Analytic Psychotherapy .....	2
Background on FAP .....	2
Research on FAP Mechanisms and Protocols .....	5
Making FAP Cheaper, More Accessible, and Less Stigmatizing: The ACL Model .....	6
CHAPTER II: METHODOLOGY .....	9
Primary Research Questions .....	9
Secondary Research Questions .....	10
Measures.....	10
Primary Outcomes .....	10
Secondary Outcomes .....	12
Participants .....	13
Intervention Protocol.....	14
Control Protocol .....	15
Ethical Considerations.....	15
CHAPTER III: RESULTS .....	17
Participants .....	17
Attrition .....	18

Primary Outcomes (SSCS, RHI, and AAQ) .....	18
Secondary Outcomes (GAD, PHQ, and ACRS) .....	22
Qualitative Responses .....	25
Reproducibility Statement.....	27
CHAPTER IV: DISCUSSION .....	28
CHAPTER V: CONCLUSION.....	35
References .....	36
APPENDIX A: OUTCOME MEASURES.....	44
APPENDIX B: ACL GROUP CURRICULUM.....	48
APPENDIX C: CONTROL GROUP CURRICULUM.....	62
APPENDIX D: R SCRIPT USED FOR ANALYSES .....	65
APPENDIX E: PERMISSIONS .....	95



## List of Tables

Table 3.1 Sample Characteristics .....	17
Table 3.2 Attendance by Group .....	18
Table 3.3 Common Themes Among Control Group Participants.....	25
Table 3.4 Common Themes Among Intervention Group Participants .....	26
Table 3.5 Many Control Group Participants Felt Group Had Little or No Impact.....	27

## List of Figures

Figure 3.1 Change in Relational Health Indices Scores Over the Intervention Period.....	21
Figure 3.2 Change in State Self-Compassion Scores Over the Intervention Period.....	22
Figure 3.3 Change in Awareness and Action Questionnaire Scores Over the Intervention Period .....	22
Figure 3.4 Change in PHQ-9 Scores From Pre to Post.....	23
Figure 3.5 Change in GAD-7 Scores From Pre to Post .....	24
Figure 3.6 Change in ACRS Scores From Pre to Post.....	24

## CHAPTER I: INTRODUCTION

One of the most significant problems in mental healthcare today is a lack of access to treatment (Cunningham, 2009). In the United States, fewer than half of people with mental health conditions receive treatment in a given year (Wang et al., 2005). Numerous possible reasons have been proposed for this profound gap between widespread need and provided care: stigma may reduce referral rates and treatment-seeking (Corrigan, 2004; Corrigan et al., 2014; Henderson et al., 2014); in some areas and for some specialties, there may be a shortage of adequately trained providers (Cummings et al., 2013; Thomas et al., 2009); and long-standing conflicts between insurance companies and mental health providers may create financial barriers for patients (Bishop et al., 2014; Walker et al., 2015). The preexisting shortage of available behavioral health services has only been exacerbated by the dramatic spike in demand during the ongoing COVID-19 pandemic (Pfefferbaum & North, 2020).

Given the dire potential consequences of insufficient mental healthcare, an alternative approach that addresses these barriers is badly needed. Specifically, when compared to treatment-as-usual, this alternative must be inexpensive, more widely available, and less stigmatizing. Finding accessible, affordable, less stigmatizing, and effective alternatives is a pressing social justice issue, given that structural inequities concentrate access to mental healthcare in the most advantaged groups (Bartram & Stewart, 2019; Cabassa et al., 2006; Kawaii-Bogue et al., 2017; Saxena et al., 2007).

Developing more accessible treatments is not only a moral imperative—it is also harmonious with a key value of modern clinical psychology, namely, disseminating our field's treatments widely. Hayes et al. (2012) have urged the psychological community to develop interventions “with the streets in mind,” and stressed that “there is no reason to delay testing in”

the real world (p. 13). In fact, leaders in contemporary psychotherapy development recommend formulating interventions based on well-established psychological principles, and disseminating the interventions widely without waiting for research validation for each particular application. Acting quickly to help people using the knowledge we already have, rather than delaying dissemination until studies have clarified every detail, is the only way to effectively rise to the current demand for mental healthcare (Gregg & Hayes, 2016). One well-established therapeutic approach, Functional Analytic Psychotherapy (FAP; Holman et al., 2017; Kanter et al., 2010; Kohlenberg & Tsai, 1991; Tsai et al., 2009), has begun to heed this advice, changing its dissemination model significantly. In order to understand recent changes in the FAP community and how they support wider and more accessible dissemination, it is necessary to first understand the basics of FAP.

## **Functional Analytic Psychotherapy**

### **Background on FAP**

FAP is an attempt by Kohlenberg and Tsai (1987, 1991) to provide a behavioral explanation for the observed potency of the therapy relationship itself. FAP proposes that the reason the therapeutic relationship can be responsible for significant change in clients' lives is that therapists provide contingent responding to client behavior. In this model, clients' in-session behavior is classified into two categories of "Clinically Relevant Behavior"—CRB1s and CRB2s. CRB1s are instances of clients' problem behaviors showing up during a session, while CRB2s are instances of clients' growth or improvements showing up in the session. FAP theory postulates that in effective therapeutic relationships, the therapist provides responses that are naturally reinforcing to CRB2, and that are naturally punishing to CRB1. Regardless of their theoretical orientation, all therapists likely do this whether they intend to or not—for instance, by

becoming bored when a client engages in a CRB1 related to avoiding emotional content, or by becoming interested again when the client engages in the CRB2 of letting his guard down.

However, FAP therapists are trained to attend to these CRB deliberately. To facilitate this, Kohlenberg and Tsai (1991) offered five rules that form the backbone of how to practice FAP.

Those rules are:

1. Watch for CRB.
2. Evoke CRB.
3. Reinforce CRB2s.
4. Notice your effect.
5. Facilitate generalization.

Rule 1 is noted to be the most important (Kohlenberg & Tsai, 1991), for in order to do FAP effectively, therapists must be able to recognize when clients' in-session behavior parallels their broader problems or goals. Rule 2 can help the work come alive, since although CRB will often occur naturally in the therapy relationship, deliberate attempts to evoke them may create even more opportunities. For instance, a client who struggles with assertiveness might be invited to identify areas within the therapeutic relationship where she can express a preference (i.e., engage in a behavior that would be CRB2 for her).

Rule 3 is perhaps the most complex of the five rules. In reinforcing CRB2, it is important for therapists to provide reinforcement that is natural, rather than arbitrary—that is, the reinforcement should bear a resemblance to the reinforcement the client could reasonably expect to experience in his or her own life context outside of therapy (Follette et al., 1996). This is important to facilitate generalization; for example, consider a therapist who gives his client \$1 every time she asks for something she wants. Such a therapist might be successful in shaping his

client towards an increase in making requests during the therapy hour, but she is unlikely to exhibit an increase in this behavior in other domains of her life where she is presumably not being paid for it. However, if this therapist instead used a more natural reinforcement scheme (e.g., by responding to the client's request by providing what she asks for), he would have a greater likelihood of promoting a broad increase in instances of this behavior.

Rule 4 also makes an important note about the reinforcement process—namely, that it is critical to pay attention to how one's interventions are actually impacting a client (Kohlenberg & Tsai, 1991). While it may be tempting for a therapist who provides a heartfelt compliment to his client to assume that his response was reinforcing of whatever she did, this may not be the case. No response is inherently reinforcing for all clients; the only way to know if one is successfully reinforcing a client's behavior is to observe that the behavior is increasing in frequency over time.

Finally, Rule 5 underscores the importance of facilitating generalization (Kohlenberg & Tsai, 1991). While generalization may happen naturally in some cases, it is common for clients to protest that somehow the therapist is “different” than others in his or her life, and to avoid implementing these new behaviors elsewhere. The therapist must encourage the client to try the improved behavioral repertoire outside of sessions, and discuss any barriers that may arise.

Beyond these five rules, another important point at the core of FAP is that the spirit of this treatment is perhaps slightly different than one might expect from reading the technical behavioral language above. FAP is sometimes described as “Behaviorism with heart” (Loudon et al., 2021), and this characterization captures an important dialectic at the center of this treatment. Vulnerability and authenticity are paramount in this approach; FAP practitioners do not think of clients as automatons to be treated mechanically. Indeed, the opposite is true: FAP therapists are

trained to have the utmost respect for clients' humanness, and to draw upon the therapists' own most authentic selves in responding to clients. FAP therapists must do this, must have relationships with clients that are authentic and raw; this is the surest way for these therapists to make their reinforcement natural and salient, rather than artificial and arbitrary. The co-creators of FAP caution that "therapy is not just about following rules and adherence measures. Each time you interact with someone, you have an opportunity to reflect what is special and precious about this person, to heal a wound, to co-create closeness, possibilities, and magic" (Tsai et al., 2009, p. vi). In short, FAP holds that the behavioral principles like contingent responding at this treatment's heart can be implemented far more successfully if they arise from a deep and genuine place inside the therapist's true self.

### **Research on FAP Mechanisms and Protocols**

There are hundreds of studies from decades of psychological research validating the central premise of FAP, namely that contingent responding by an experimenter or facilitator can increase the frequency of desired target behaviors from participants (e.g., Browning, 1967; Greenspoon, 1955; Harding et al., 2005; Salzinger & Pisoni, 1958; Samaan & Parker, 1973; Truax, 1968)—this is after all, the essence of operant conditioning.

While this basic finding is well-established, more recent investigations have extended this line of work to test FAP itself, evaluating active treatment components such as the "five rules" and other tenets of FAP (Callaghan et al., 2003; Kanter et al., 2006; Kohlenberg et al., 2002; Landes et al., 2013; Lizarazo et al., 2015; Maitland & Gaynor, 2016; Manduchi & Schoendorff, 2012; Pedersen et al., 2012). Generally, these studies investigating FAP protocols have borne out the expectations set by the earlier basic findings on the effects of the underlying behavioral processes; i.e., the treatment has been found to be helpful in treating depression, interpersonal

difficulties, and personality disorders. These results, while primarily from small studies thus far, nonetheless suggest FAP can generate clinically significant change across a variety of disorders.

### **Making FAP Cheaper, More Accessible, and Less Stigmatizing: The ACL Model**

While FAP has traditionally been practiced in typical outpatient psychotherapy settings, one of its original developers founded a 501(c)(3) nonprofit organization in 2018 called ACL Global that adapts the principles of FAP for use with groups (Tsai, n.d.). True to the spirit of Gregg and Hayes' (2016) recommendations to disseminate treatments, ACL Global is currently operating free FAP-based groups for the general public worldwide, on five continents. Because these groups are available on a pay-what-you-can basis and are hosted outside of clinical settings (e.g., in libraries, cafes, etc.), they do not carry the barriers of cost or stigma that are often associated with traditional talk therapy. They are also facilitated by laypeople, rather than clinicians. This is in order to further reduce stigma, and also to increase access, because removing the need for a trained clinician in the room will allow the groups to penetrate into regions where finding a clinician is difficult. In order to rapidly create an accessible treatment that could be disseminated by laypeople, ACL Global has relied on a more recent model for treatment conceptualization in FAP, the Awareness, Courage, and Love (ACL) model (Maitland et al., 2017).

In this model, the in-session contingent reinforcement provided by FAP therapists encourages one of three general types of target behaviors from the client: awareness, courage, or love. Awareness entails being able to accurately recognize emotions in oneself and another. Courage is the ability to self-disclose vulnerably about one's own emotions, experiences, and needs. Love is often a consequence of another person's courage; it involves responding in an affirming manner to someone else's vulnerable disclosures or requests.



The goal of FAP treatment with the ACL model is no longer to increase merely *any* target behavior from clients, but rather to increase clients' interpersonal functioning by building one or more of these three specific behavioral repertoires. The advantage of this standardized approach is that it no longer necessarily relies on a highly trained and experienced clinician using functional analysis to devise a unique reinforcement schedule for each client's specific goals. Instead, in theory, nearly anyone can be taught to identify these three broad classes of behavior and some general guidelines for reinforcing them, allowing wide, prompt dissemination. While this method of conceptualizing cases in FAP was not introduced until 2009, review of transcripts of FAP sessions predating this model found a high degree of correspondence between the idiographic treatment targets used in those cases and the present ACL categories (Maitland et al., 2017). This suggests that the ACL model's user-friendliness is not at the expense of efficacy.

ACL components have been well-supported by decades of prior research; each of these constructs has been studied under a variety of different names and in disparate literatures. Awareness of the other is similar to established social-psychological constructs such as empathic accuracy (Ickes, 1997; Ickes et al., 1990; Zaki et al., 2008) and perspective-taking (Batson et al., 1997; Lamm et al., 2007; Ruby & Decety, 2004; Vorauer, 2013), while self-awareness has also been shown to carry benefits for relationships (Chang et al., 2021; Saxena & Mehrotra, 2010), as well as workplace functioning and health (Grewal & Salovey, 2006; Richards et al., 2010). The notion that the reciprocal exchange of courage and love engenders connection is supported by a host of literatures, including those on emotional suppression (Gross & John, 1997; Srivastava et al., 2009), capitalization (Gable et al., 2004, 2006), and attentive listening (Itzhakov et al., 2017, 2018; Pasupathi & Rich, 2005; Thoman et al., 2007). Despite the strong empirical support for the ACL model's constituent principles, the entire package of these component parts taken together

(i.e., ACL groups as they are currently being disseminated worldwide) has yet to be evaluated in a randomized controlled trial.

In order to close this knowledge gap, the current study assessed whether a group based on the ACL model has interpersonal benefits above and beyond a typical group gathering. As an initial evaluation of this model, the research design focused on the specific question of whether the ACL model could improve interpersonal functioning more than a control group. To minimize possible confounds, the research groups were run by facilitators who had familiarity with this model, leaving it for follow-up studies to determine whether fidelity or efficacy decrease as facilitation is transitioned to laypeople or professionals with less specialized training. This is in keeping with Fraser and Galinsky's (2010) guidelines for developing novel interventions, which urge researchers to maintain a high degree of control at first to test the model's basic tenets, and then as quickly as feasible to move to testing if effects hold up under more ecologically valid conditions.

Additionally, three measures were selected to serve as primary outcomes for the present study. These measures were identified based on their concordance with the changes reported by participants in exit interviews after a previous qualitative study evaluating a similar protocol (Hardebeck et al., in prep). It was hypothesized that these validated, quantitative measures might detect similar outcomes as those reported in the prior study, but in a more objective and standardized manner. Four secondary outcomes were also included to assess for other possible mental-health-related changes, but these were considered more exploratory. All measures are reviewed extensively in the subsequent section.

## **CHAPTER II: METHODOLOGY**

The present study investigated the effectiveness of a six-week FAP/ACL training for college undergraduates, compared to a control group that provided peer support around academics. Due to the high prevalence of mental health struggles in undergraduates (Pedrelli et al., 2015), and in particular their notable isolation and loneliness during the COVID-19 pandemic (Elmer et al., 2020) which was at its height during data collection, this group was a convenient and suitable population in which to test such a protocol. A key hypothesis was that participation in the ACL group might provide reinforcement for positive relational and emotional behaviors that could be beneficial in improving participants' relationships and psychological well-being. These outcomes were assessed weekly using a variety of quantitative measures, as well as brief qualitative questions.

### **Primary Research Questions**

1. Does a 6-week, group-based FAP treatment for college undergraduates reporting depression and anxiety symptoms increase their self-compassion (as measured by the State Self-Compassion Scale)?
2. Does group participation increase feelings of connection to this group above and beyond the level that would be expected (as measured by the Relational Health Indices)?
3. Does group participation increase participants' psychological flexibility, i.e., their willingness to accept psychological pain as part of living a fulfilling life, rather than an impediment to it (as measured by the AAQ-II)?

### Secondary Research Questions

1. Does group participation reduce participants' anxiety (as measured by the GAD-7)?
2. Does group participation reduce participants' depressive symptoms (as measured by the PHQ-9)?
3. Does group participation increase participants' self-ratings of awareness, courage, and love behaviors (as measured by the ACRS)?

### Measures

#### Primary Outcomes

*State Self-Compassion Scale (Short Form)*. This 6-item scale (Neff et al., 2021) assesses self-compassion by asking participants to rate the truth of statements like, "I'm remembering there are lots of others in the world feeling like I am." Validated on a racially diverse sample of college undergraduates and used to measure the construct of self-compassion, this scale often is defined as the degree to which individuals offer themselves the same compassion and care they would to a good friend (e.g., Neff, 2011). The newer, "state" version of this scale was selected (rather than the original "trait" version) because (a) this relatively brief intervention seems more likely to facilitate participants' adoption of a self-compassionate mindset when needed than to influence their more global assessment of how self-compassionate they are in general, over time, and (b) this version of the scale is significantly briefer, which became a salient decision-making factor in light of recent findings that state and trait measures of the same construct may overlap far more than previously assumed (see Lance et al., 2021). Across a series of three studies reported by Neff et al. (2021), the state scale demonstrated strong reliability ( $\alpha \geq 0.88$ ) with a unitary factor structure. It also correlated highly with the long-form version of the scale and with positive and negative affect in the expected directions, suggesting strong construct validity.

*Relational Health Indices (Community)*. This 14-item scale (Frey et al., 2005; Liang, 2007; Liang et al., 2002) was developed and validated to measure an individual's sense of connection to a particular community. This measure was originally based on a theory of women's social development, but it has since been validated for use with men as well. It includes subscales for empowerment/zest (e.g., "I feel mobilized to personal action after my interactions with this community"), engagement (e.g., "I feel understood by members of this community"), and authenticity (e.g., "Members of this community are free to just be themselves"). Liang et al. (2002) found the overall scale to have strong reliability in a sample of college-age women ( $\alpha = 0.90$ ), and this result was replicated in a male sample ( $\alpha = 0.88$ ) by Liang et al. (2007). Both of these studies reported strong correlations between this measure and other established measures of social support quality, demonstrating its construct validity.

*Acceptance and Action Questionnaire - II (AAQ-II)*. A validated 7-item measure of psychological flexibility (Bond et al., 2011), the construct commonly understood to be the active ingredient in contextual behavioral therapies. It captures the extent to which people are able to bear their difficult inner experiences and live fulfilling lives even with the presence of emotional upset. (Sample items, reverse coded: "I'm afraid of my feelings" and "My painful experiences and memories make it difficult for me to live a life that I would value"). This scale is one of the most frequently used outcome measures in research on Acceptance and Commitment Therapy (ACT) and related therapies. Bond et al. (2011) reported that across 2,816 participants in six distinct samples, the measure demonstrated good reliability ( $\alpha = 0.84$ ) and was correlated highly in the expected direction with measures of related constructs such as thought suppression, suggesting convergent validity.

## Secondary Outcomes

*Awareness, Courage, and Responsiveness Scale.* A 24-item measure that is being developed by FAP scholars (Kuczynski et al., 2020) to determine its utility for measuring the three essential constructs of the ACL model. It includes subscales for self-awareness, other-awareness, courage, and love/responsiveness. It has been validated in college students, an adult community sample, non-clinical dyads, and a transdiagnostic community sample, with strong internal consistency ( $\alpha = 0.93$ ) and construct validity given that 71% of tested correlations with related measures were in the moderate range, suggesting that the ACRS is related to, but distinct from, existing scales (Kuczynski & Kanter, 2018). However, because this scale is still under development and its sensitivity to intervention is unclear at this point (Hardebeck et al., in preparation; Kuczynski & Kanter, 2018), it was not considered a primary outcome for this study.

*Patient Health Questionnaire – 9.* A 9-item measure of depression severity that is commonly used in clinical settings. Kroenke et al. (2001) found that it has strong internal reliability ( $\alpha = 0.86\text{--}0.89$ ) and the expected high negative correlation with functioning, indicating good construct validity.

*Generalized Anxiety Disorder – 7.* A 7-item measure of anxiety symptomatology that is commonly used in clinical settings. Spitzer et al. (2006) confirmed that despite some overlap with depression, anxiety as measured by this scale loaded onto a distinct factor, solidifying its construct validity. The scale was also found to have very strong internal reliability ( $\alpha = 0.92$ ).

*Qualitative Questions.* The end of the post survey included three qualitative questions designed to capture a more holistic picture of participants' experience in the group. These questions are listed in Appendix A, along with all other measures that I was granted explicit permission from the authors to reproduce in this manuscript.

## **Participants**

Participants were college undergraduates who spoke fluent English and were enrolled in at least one class at the University of Washington during Winter quarter of 2021. They were recruited via flyers and social media posts, which directed them to a pre survey where they completed the GAD-7 and PHQ-9. Those who had severe depression or endorsed suicidality were escalated to more detailed risk assessment conducted by a trained research assistant and a licensed psychologist. Those who were determined to be high risk were excluded from the study, and those at moderate risk were considered on a case-by-case basis. All participants determined to be at any level of risk for suicide were provided with suicide prevention resources and referrals to counseling options offered by their university. Prospective participants who met inclusion criteria were randomized into either the ACL intervention group or the control group using a random number generator. All participants in both conditions completed an informed consent document online with the help of a research assistant, who scheduled a phone call with each participant to walk them through the consent process. As part of this initial consent document, participants completed the initial surveys (consisting of the SSCS, AAQ-II, and ACRS). Subsequently, participants completed a weekly survey at the end of each group meeting containing all primary outcomes, and a final survey containing all outcomes (primary and secondary) in the final week. Both groups consisted of six weekly 90-minute meetings, taking place in the Winter of 2021 in a classroom on the University of Washington campus. The intervention group was led by a doctoral student in clinical psychology, a postbaccalaureate research assistant, and an undergraduate research assistant, all from the UW's FAP lab. The control group was led by the two research assistants.

### **Intervention Protocol**

The ACL intervention condition was designed to didactically and experientially introduce participants to basic principles from FAP, using approachable, middle-level terms (i.e., awareness, courage, and love) to refer to behavioral phenomena. During the initial session, participants discussed the idea that receiving love when you do something courageous can make you even more courageous going forward (i.e., that reinforcement strengthens behavioral repertoires). Participants were then given time to reflect about what being courageous and going outside their comfort zones towards something important might look like for them in each of their lives right now.

During each subsequent session, participants were encouraged to enact their courageous behaviors during their interactions with other group members, and the group was encouraged to provide enthusiastic interpersonal reinforcement when this happened. To provide a context in which this reciprocal exchange of courage and love was likely to happen, each session began with a meditation focused on deepening self-awareness, after which participants shared reflections about their experience of the meditation.

The remainder of the intervention meetings consisted of structured conversational exercises that participants completed in dyads or triads. Within their small groups, participants were encouraged to share vulnerably in response to various prompts (e.g., “What is a truth about yourself that feels vulnerable to admit?” and “What do you like about the person you are talking with?”). The sharing process was first modeled in front of the whole group in each session by study personnel. A complete, week-by-week curriculum for the ACL group is included in Appendix B. This curriculum is adapted from the ACL protocols currently used for ongoing facilitator training by the nonprofit organization ACL Global. This organization holds a monthly



worldwide meeting via Zoom for ACL facilitators, who first experience the protocol themselves during the meeting, then use that month's protocol to host their own groups in their home cities. Six recent protocols were selected from the past year by the author of this manuscript based on their hypothesized suitability for college undergraduates. These six protocols were then lightly edited to suit the six-week format and college student population (e.g., some wordings of the meditations were changed to be friendlier to young people, etc).

### **Control Protocol**

In the control condition, participants gathered for a weekly academic support group. The facilitator encouraged some structured conversation, as in the intervention group, but it was focused on more everyday topics of the kind that might more regularly come up in a college class (e.g., sharing about one's major, explaining the pros and cons of one's dorm building, or discussing how college has been different from high school). A complete, week-by-week curriculum for the control group is included in Appendix C.

### **Ethical Considerations**

All study procedures obtained prior approval by the Antioch University Institutional Review Board (IRB) and the University of Washington IRB. Participants had the right to withdraw from this study at any time and for any reason. Before participating in the research, they read and signed a detailed consent form explaining their rights. The risks associated with participation were primarily related to the sensitive and personal nature of some of the topics that might be discussed during the group. Participants were asked to answer questions about their emotions, behaviors, relationships, and quality of life, and were asked to engage in conversations with openness and vulnerability. Such exercises might have caused psychological distress or been viewed as an intrusion of privacy. To minimize potential harm, we explicitly asked all

participants up front to keep the material discussed during the group confidential. While participants did not complete standardized anxiety or depression measures each week, any individual who reported a notable increase in distress during the whole group would be followed up with by the research assistant and referred to a phone call with the licensed psychologist supervisor if there were safety concerns.

## CHAPTER III: RESULTS

### Participants

Participants ranged in age from 18 to 26 ( $M = 19.22$ ,  $SD = 1.57$ ). Most were White (55.56%), Asian (30.56%) or both (11.11%), and the majority were female (66.67%). All were current undergraduate students at the University of Washington. The chi-squared test of independence found no significant differences between the groups on demographic variables (age, race, income, or gender). See Table 3.1 for a more detailed account of sample demographics.

**Table 3.1**

#### *Sample Characteristics*

Characteristic	Total sample ( $n = 36$ )	ACL ( $n = 18$ )	Control ( $n = 18$ )
Mean age ( $SD$ )	19.22 (1.57)	19.11 (1.23)	19.33 (1.88)
Family's household income			
\$20,000-\$30,000	2 (5.56%)	0 (0.00%)	2 (11.11%)
\$30,000-\$50,000	2 (5.56%)	2 (11.11%)	0 (0.00%)
\$50,000-\$75,000	9 (25%)	5 (27.78%)	4 (22.22%)
\$75,000-\$100,000	7 (19.44%)	2 (11.11%)	5 (27.78%)
Over \$100,000	12 (33.33%)	8 (44.44%)	4 (22.22%)
Did not disclose	4 (11.11%)	1 (5.56%)	3 (16.67%)
Race			
White	20 (55.56%)	11 (61.11%)	9 (50.00%)
Asian	11 (30.56%)	5 (27.78%)	6 (33.33%)
White and Asian	4 (11.11%)	2 (11.11%)	2 (11.11%)
Other	1 (2.78%)	0 (0.00%)	1 (5.56%)
Gender			
Male	8 (22.22%)	4 (22.22%)	4 (22.22%)
Female	24 (66.67%)	13 (72.22%)	11 (61.11%)
Non-binary	4 (11.11%)	1 (5.56%)	3 (16.67%)

### Attrition

While there were slight differences between the two groups each week in terms of how many participants were in attendance, a chi-squared test of independence found no relationship between condition and the number of participants not in attendance during a given week ( $p = 0.99$ ). See Table 3.2 for a complete record of participant attendance by week. Because the values missing from the dataset due to attrition were determined to be missing at random (i.e., missingness was not related to condition), these values were imputed using group means, by condition. All primary analyses were also re-run using listwise deletion (i.e., deletion of all data from participants with less than perfect attendance) instead to handle missing values, and there were no notable differences in the results obtained using this method compared to mean-value imputation.

**Table 3.2**

*Attendance by Group*

Week	Participants Attending ACL	Participants Attending Control
1	16	17
2	15	16
3	15	15
4	10	13
5	12	14
6	14	14

### Primary Outcomes (SSCS, RHI, and AAQ)

First, each group's mean score on each measure was calculated per week. These scores were plotted over time (see Figures 3.1–3.3), and the plots were visually inspected to assess

trajectories for possible group-by-time interactions. Next, in order to determine whether the two groups' slopes were indeed significantly different over time as suggested by some of the visualizations, several methods were considered. Repeated measures ANOVA is commonly used to compare group changes over three or more timepoints (or in three or more groups); however, in a case like this study where (a) there are only two groups and (b) participants have been randomly assigned, ANOVA is roughly equivalent to "end-point analysis" using a *t*-test on the two slopes (Bishop, 2017; Gueorguieva & Krystal, 2004; Wright, 2006). Critically, end-point analysis is not the same thing as using several *t*-tests to compare two groups' scores at several different timepoints, which is a common statistical error that compounds the risk of both Type I and II error and is undesirable compared with ANOVA (Leppink et al., 2017). Instead, end-point analysis involves using a single *t*-test to compare the two slopes, calculated by the difference between each group's post score and its pre score. The primary disadvantage of this method for the current study is that, unlike repeated measures ANOVA, it considers only the pre and post scores, rather than all six timepoints that were measured, and is therefore a somewhat rougher calculation than the ANOVA (but nonetheless a technically correct one).

Critically, a much more precise and robust method than either of these was determined to be feasible for the present dataset: Linear mixed modeling. This approach generates an individualized slope value for each participant based on their scores at each timepoint, and is preferred over the *t*-test or ANOVA due to its ability to avoid listwise deletion, control for individual differences, and incorporate multiple levels (Gueorguieva & Krystal, 2004). Because the author of this manuscript is a graduate student in a Doctor of Psychology program that is clinically focused rather than statistics-focused, it was decided that he would conduct the simplest analysis of the data that could reasonably answer the core research questions.

Concurrently, the data would also be analyzed by a doctoral-level statistics consultant from the University of Washington, using linear mixed models. The results from both analyses would be compared to determine if the same overall conclusions were reached, and if discrepancies arose between the outcomes of the two analyses, these would be investigated. This is consistent with current best practices in statistics, which urge scientists to conduct analyses in multiple different ways or even to have colleagues analyze the same dataset and then compare the results, to help correct for the significant error and bias that can be introduced through individual researchers' decisions about which statistical procedures to use (Botvinik-Nezer et al., 2020; Harder, 2020; Schweinsberg et al., 2021; Steegen et al., 2016).

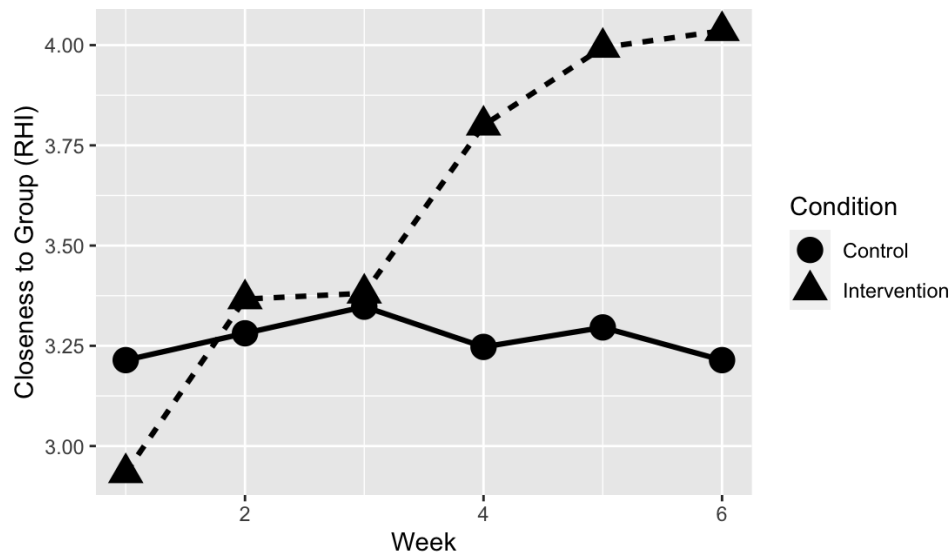
Thus, the first author used Welch's *t*-tests to compare the change in means across the 6-week study period between the two groups. Welch's *t*-tests were used rather than Student's (parametric) *t*-tests because they require fewer assumptions about variance and demonstrate similar robustness even when necessary assumptions are met for a parametric test (Delacre et al., 2017); however, again in keeping with statistical best practice of openly comparing the results of multiple analytic procedures, all tests were also run again as parametric *t*-tests and did not show meaningfully different results in any case. In the initial analyses, changes in means were calculated by subtracting each group's mean score for the initial week from that group's mean score for the final week. The intervention group had significantly greater changes over time for the RHI ( $t = -5.21$ ;  $p < 0.0001$ ) and the SSCS ( $t = -2.89$ ;  $p < 0.01$ ), but not the AAQ ( $t = -0.87$ ;  $p = 0.39$ ). Visual inspection revealed the results for the RHI held for each of its individual subscales.

In the statistics consultant's variation on this analysis, the change scores were instead calculated using fixed linear effects models, with condition incorporated as a factor variable.

There were no notable differences in the results obtained using either method for calculating slopes; i.e., the author of this manuscript and the statistics consultant drew the same conclusions about which outcomes were significant despite using very different processes for analyzing the data.

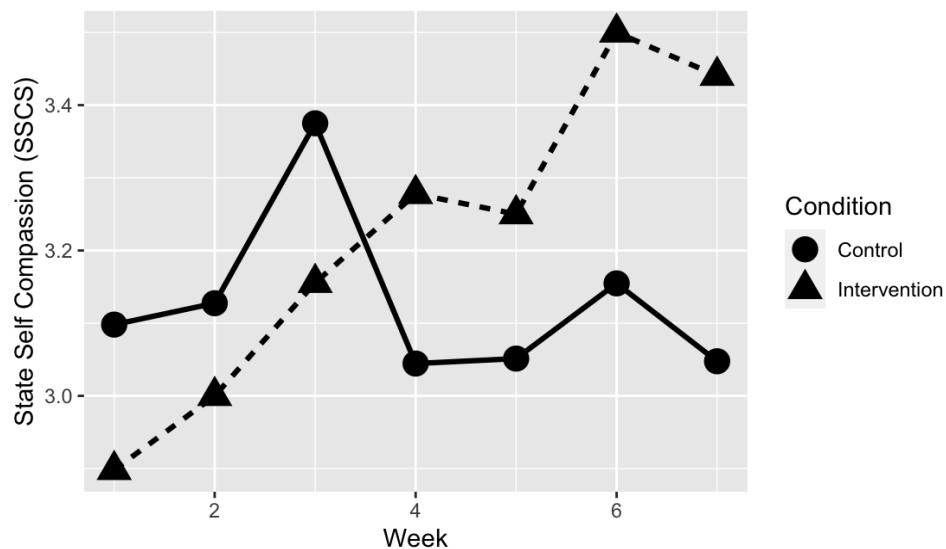
**Figure 3.1**

*Change in Relational Health Indices Scores Over the Intervention Period*

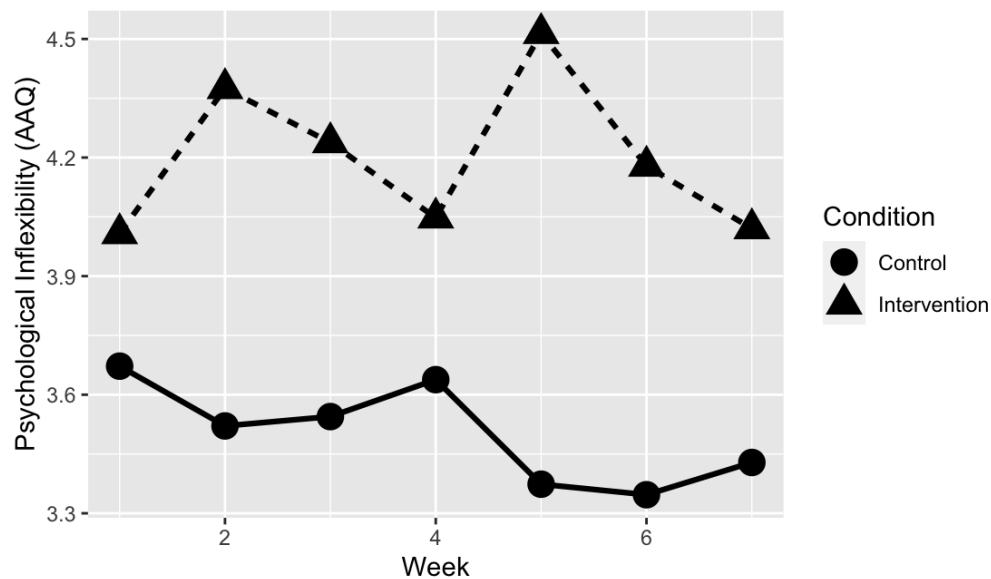


**Figure 3.2**

*Change in State Self-Compassion Scores Over the Intervention Period*

**Figure 3.3**

*Change in Awareness and Action Questionnaire Scores Over the Intervention Period*



### Secondary Outcomes (GAD, PHQ, and ACRS)

First, each group's mean score on each measure was calculated at pre and post.

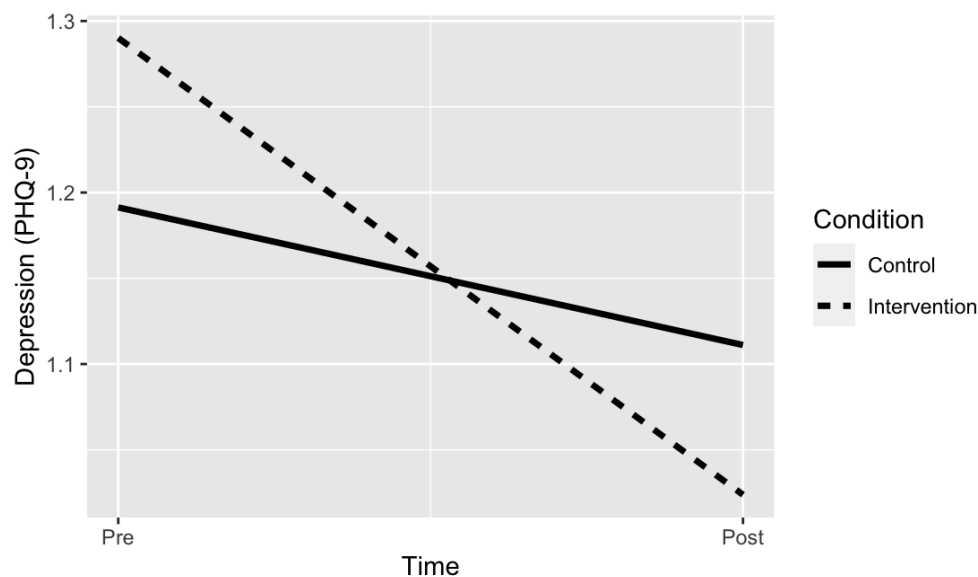
Subsequently, Welch's  $t$ -tests were used to compare the change in means from pre to post



between the two groups. There was no significant difference in the amount of change between groups on the PHQ-9; although visual inspection (see Figure 3.4) revealed that the intervention group did decline more steeply than the control group, this difference was not significant ( $t = 1.50$ ;  $p = 0.14$ ). There was also no significant difference between group slopes on the GAD-7 ( $t = -0.10$ ;  $p = 0.92$ ; see Figure 3.5). The ACRS (see Figure 3.6) displayed a similar pattern to the PHQ-9, such that the intervention group had a steeper increase than the control group as predicted, but again this difference was not significant ( $t = -0.52$ ;  $p = 0.61$ ). Moreover, when looking at the subscales of the ACRS, there was no significant difference between the groups' trajectories on other-awareness ( $t = -0.14$ ;  $p = 0.89$ ), self-awareness ( $t = -0.69$ ;  $p = 0.50$ ), courage ( $t = -0.93$ ;  $p = 0.36$ ), or love/responsiveness ( $t = -0.14$ ;  $p = 0.89$ ). There were also no significant differences found between the groups on any of these secondary measures at post.

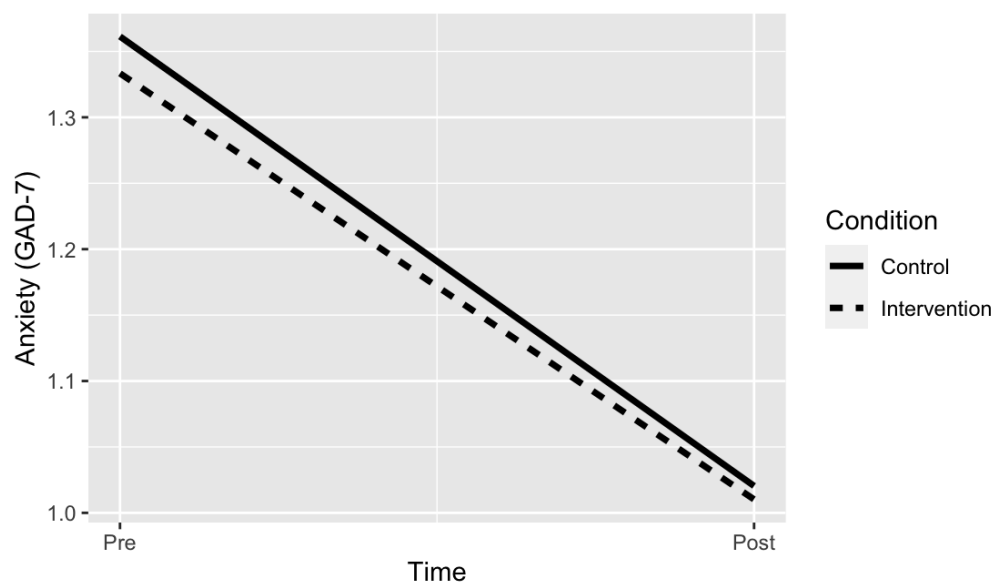
**Figure 3.4**

*Change in PHQ-9 Scores From Pre to Post*

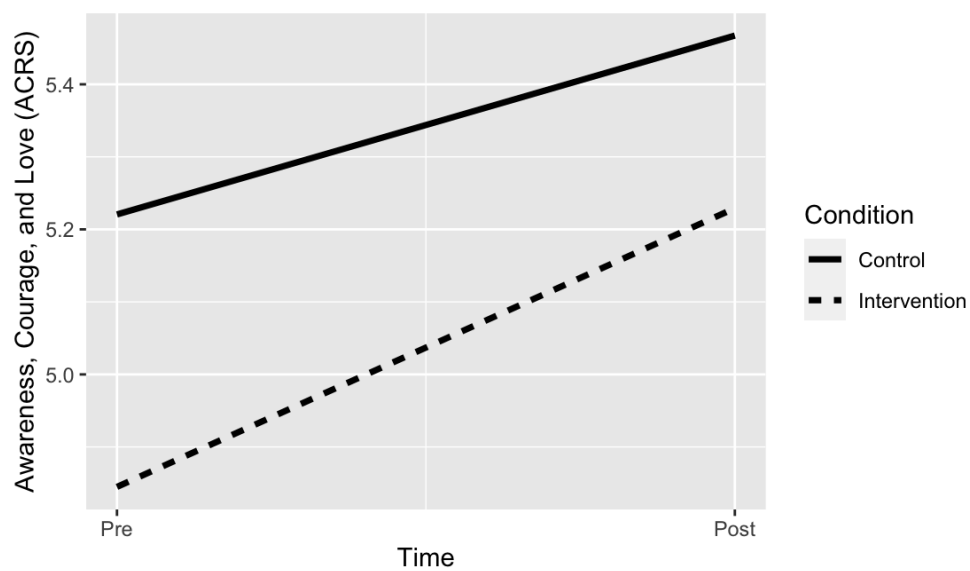


**Figure 3.5**

*Change in GAD-7 Scores From Pre to Post*

**Figure 3.6**

*Change in ACRS Scores From Pre to Post*



### Qualitative Responses

Qualitative responses were examined independently by the first author and a research assistant to code them as either positive or negative, and then to determine general themes. These two researchers' impressions of the qualitative data were then compared to one another and were found to be essentially identical, indicating that there was high interrater reliability between the two researchers analyzing the qualitative data. Results showed that participants' experiences in the study were favorable overall regardless of condition, with each group recording one participant response that was coded as negative, while the rest were coded as positive.

Two key themes that were identified among participants in the control group were "Appreciation of opportunity to socialize" and "Appreciation of opportunity to study." Examples of these themes are presented in Table 3.3.

**Table 3.3**

*Common Themes Among Control Group Participants*

<b>Appreciation of Opportunity to Socialize</b>	<b>Appreciation of Opportunity to Study</b>
"It was a good opportunity to meet new people."	"It was a relaxing space to get a little work done."
"I met some really nice people and I looked forward to having people to socialize with."	"It was nice forced studying and reflection time."
"I got to chat with nice people."	"I looked forward to coming here and getting things done."
"It was nice and fun to connect and talk with other people."	"It gave me a good space to be very productive."

In the intervention group, participants also seemed to appreciate the social connections they had formed; indeed, "Appreciation of opportunity to socialize" was also the most prevalent theme in the intervention group. However, an additional theme commonly expressed by

intervention participants was a sense of personal growth due to their participation in the group; this theme was labeled “Personal growth.” Examples of both of these themes are presented below in Table 3.4.

**Table 3.4**

*Common Themes Among Intervention Group Participants*

<b>Appreciation of Opportunity to Socialize</b>	<b>Personal Growth</b>
“It was really heartwarming and meaningful to talk and connect with people.”	“[I] feel less afraid and intimidated by people and interacting with them.”
“Given the pandemic, I feel like everyone has been craving connection and this group gave us the opportunity to fulfill that desire.”	“I felt like everyone has really helped make me want to be a better person and friend, really thank you guys for doing something like this.”
“[This group] provided me with a lot of emotional support.”	“This group taught me that vulnerability is indeed scary, but at the same time, being vulnerable is such a meaningful and beautiful experience when you are in the right space with someone who truly validates and listens to how you feel. I have learned that connecting with people can be so impactful!”
“I felt heard and appreciated in each session.”	“This group was more effective for me than going to actual one-on-one therapy has been in the past, ngl.”
“i wish there wasn’t a pandemic so i could give you all a hug, if you like hugs haha.”	“I think this made me a lot more open and willing to share my issues, [rather] than just help others. It also helped me better socially [sic] and talk to people.”

Of note, several control participants also expressed sentiments about having undergone personal growth. One control participant stated, “The form of studying we did in the group helped me focus really well, and I’ll continue doing so outside of this group.” Interestingly, two control participants appeared to have experienced growth related to their social functioning as a

result of their participation. One of these individuals stated, “I’m more aware of my ability to make friends and have connections with others.” The other noted that “I needed to regain confidence in myself as a person and this group helped me do so.” However, such comments were noticeably less common in responses from control participants; a much more frequent theme among these participants was the group’s overall “Lack of impact.” Sample responses that comprised this theme are presented in Table 3.5.

**Table 3.5**

*Many Control Group Participants Felt Group Had Little or No Impact*

<b>Lack of Impact</b>
“I don’t think this group had a big enough impact on me for me to remember a lot of it.”
“It’s a small chunk of time and isn’t all that important in my daily life.”
“It’s not a very big impact but I found it interesting that interacting with people could affect my mood.”
“On my mental health, this study had little to no effect.”
“Very little impact, but it was still enjoyable.”

### **Reproducibility Statement**

In keeping with the principles of open science (Open Science Collaboration, 2015; Simmons et al., 2011) and to make this research as replicable as possible, all R code used to conduct these analyses is included in Appendix D. The original data is available upon request from the first author.

## CHAPTER IV: DISCUSSION

The present study evaluated the effects of a 6-week intervention for college undergraduates based on the ACL model of FAP, compared to a study skills control group that incorporated similar activities but without the proposed active ingredients of vulnerability or reinforcement. Key outcomes measured weekly were interpersonal closeness, self-compassion, and psychological flexibility, while secondary outcomes (measured only at pre and post) included depression, anxiety, and ACL (awareness, courage, and love). A brief set of qualitative questions about participants' experience were also administered at the conclusion of the study.

Results were promising overall, with the ACL intervention demonstrating significant effects on participants' level of interpersonal closeness to other members of their group. It also significantly increased participants' state self-compassion. These two results provide support for two of the primary hypotheses of this project, namely, that participants' behavior can be shaped over time towards greater vulnerability and self-kindness in a group setting by using ACL intervention protocols.

Results for psychological flexibility, however, were not in the expected direction; participants in the intervention group consistently reported lower psychological flexibility than those in the control group, and both groups' trajectories over time were flat. One possible explanation for this unexpected result on the AAQ-II may be that this measure is not specific enough. Indeed, although it is the most widely used assessment of psychological flexibility, in recent years several authors have criticized it for demonstrating an inappropriate degree of overlap with psychological distress, a construct that should theoretically be distinct from flexibility (Doorley et al., 2020; Rochefort et al., 2018; Tyndall et al., 2019; Wolgast, 2014). If this measure is detecting distress, rather than flexibility, then the trend displayed by the data may

make more sense; intervention participants, who were asked to share vulnerably about their struggles, could reasonably be expected to report a slightly higher amount of psychological distress than those in the control group. Another possibility is that psychological flexibility simply did not change over time in either group; in this case, perhaps the processes of reinforcement that encourage someone to connect with others over shared vulnerabilities are different than those that might promote greater willingness to act in valued directions in the face of those vulnerabilities.

Interpretation of all quantitative findings from this study should be done with caution, considering the relatively small sample size compared to a full-scale randomized-controlled trial. The present study is most properly considered a pilot study, and quantitative results should be replicated in future trials with significantly larger samples before drawing strong conclusions about the effectiveness of this intervention on any of the outcomes studied.

The qualitative responses largely followed anticipated patterns, with participants in the intervention group reporting personal growth as a result of the study. It was surprising and unexpected that a few participants in the control group also reported experiencing personal growth; while one of these participants appeared to be referring to increased academic motivation, two others felt their social confidence had increased. Relatedly, it was also notable that participants in both the control and intervention groups commented about how much they had enjoyed getting to connect with one another. These results are an important reminder that even interventions lacking obvious theoretically-driven “active ingredients” can engender growth and development in individuals who happen to be primed for it.

Overall, however, participants’ reports about their experiences seem to indicate that the ACL intervention more reliably and strongly produced personal growth, particularly along

interpersonal domains. Both members of the study team who coded qualitative responses noted that although the theme “Appreciation of opportunity to socialize” was present in both groups, participants in the intervention condition seemed to be more effusive in their expressions of feeling connected and inspired by the group. It is certainly possible that this observation reveals true group differences in the degree to which participants experienced social connectedness, but it is also possible that there may be demand effects or experimenter bias acting as a confound. A more thorough analysis using blind, objective raters of the qualitative data to get more clarity on this point was beyond the scope of this primarily quantitative study but would be advisable in future research.

For the secondary outcomes, there was no significant difference between the groups’ change scores for depression, anxiety, or ACL (or any of its subscales). It is somewhat surprising that the intervention group did not demonstrate steeper increases than the control group in their self-ratings of ACL, given that these were the skills they were actively practicing each week. However, as noted earlier in this manuscript, the ACRS is a fairly new measure whose sensitivity to intervention is unclear. It may be the case that this measure is capturing something more like “trait” versions of these qualities, which are innate and tied to personality, rather than “state” versions that are easily changed through simple skill-building. Alternatively, it is also possible that participants either did not build these skills during the intervention or were not aware they were building these skills. While several participants commented on the qualitative portions of the survey that they enjoyed how the intervention helped them practice being self-aware and interpersonally courageous, they may have considered these to be behaviors that were already in their repertoires, believing that the intervention setting merely provided them an opportunity to engage in these behaviors, rather than shifting their willingness to do so in any major way. In



other words, the fact that they engaged in these behaviors regularly during the intervention does not necessarily mean they became more proficient at doing so. This would not have been detected by the ACRS, which focuses primarily on participants' willingness or ability to engage in behaviors related to ACL.

For depression and anxiety, the lack of improvement may be because these constructs were not primary targets of this intervention; indeed, participants are unlikely to have experienced this intervention as intending to reduce their depression or anxiety, since the intervention content was never directly tied to these experiences or to any expectation that specific mental health diagnoses would improve as a result of participation. Furthermore, participants were not provided with coping skills or other tools with which to respond to psychological suffering such as anxiety or depression. The only reference to such conditions that was made during the intervention sessions was to provide reinforcement for the disclosure when participants disclosed experiences related to their own mental health struggles. It is even possible that this process of reinforcing open disclosure about mental health struggles may have caused participants in the intervention group to respond more honestly about psychological pain on the surveys than they otherwise would have, obscuring any active healing process that may have been taking place.

Given that the ACL intervention appeared to generate significant increases in participants' closeness and self-compassion, but not decreases in their psychological suffering, it is reasonable to wonder whether it makes sense to position this intervention as a mental health treatment. Is it, in fact, a more accessible and less stigmatizing alternative to traditional talk therapy, or does it occupy an altogether different position in the landscape of available support resources?

A full answer to this question is beyond the scope of the present research, and will depend somewhat on one's philosophical views, but it is worth considering Seligman et al.'s (2005) point that "Psychotherapy as defined now is where you go to [reduce] your troubles and your weaknesses; perhaps in the future it will also be where you go to build your strengths ... Few people are wholly content with just being less depressed and less anxious and less angry" (pp. 420–421). Indeed, this prediction was already coming true by the time it was made. The modern contextual-behavioral suite of therapies, including FAP, as well as ACT, DBT, and other related approaches, are fundamentally designed "to help a client live a rich and meaningful life in and with the suffering that will surely come to all of us... to relinquish this [often counter-productive] struggle [to eliminate suffering] in order to live a life in pursuit of their most deeply held values" (Wilson et al., 2004, p. 8). In other words, an intervention that generates strong interpersonal bonds and heightens self-care may be thought of as doing some of the important work of therapy for some people, even if it does not immediately lead to reductions in their psychological pain. Thus, while significant caution should still be exercised in making generalizations about the impact of ACL groups based on the results of a single randomized-controlled trial, those invested in this work should find it more illuminating than discouraging that the current study demonstrated only improvements in positive aspects of functioning (as opposed to also demonstrating reductions in suffering, which this study did not do).

A notable limitation of the present research is its small and relatively homogenous sample, particularly compared to the broad global reach of ACL groups disseminated by ACL Global, which are especially prevalent in South America and Europe (Tsai, n.d.). In contrast, participants in the present study were all undergraduate students from the Western United States.

Because of the salient demographic similarities shared by all participants in this study, it is difficult to know whether ACL processes would lead to similar increases in connection among participants whose identities were more different from one another. It is thus imperative for follow-up research to make attempts to replicate the effects shown here in global samples, to more closely approximate the real-world conditions in which ACL interventions are typically disseminated.

Another limitation of the present research is that the measures used had two significant shortcomings. First, no longitudinal measurements were taken. This means it is impossible to determine, from the current study, whether participants derived any long-term benefits from their participation in the ACL group, an important consideration if it is intended to be disseminated as an intervention to boost mental health. Furthermore, the specific processes of change were not parsed out in the current design. In other words, while it is clear that the intervention demonstrated effects on participants' interpersonal closeness and self-compassion, it is not known whether these effects were in fact mediated by the hypothesized processes of change, namely that participants experienced reinforcement for closeness- and compassion-generating behaviors from other group members. While the current results are consistent with such a mediational model, it was not directly tested in this work, so doing so will be important in the future.

It is also important to note the possibility of experimenter bias as another limitation of this trial. The present research was conducted at the University of Washington, where FAP was developed, and one of the lead investigators is the co-developer of FAP. It is possible that conscious or unconscious expectations that the treatment would work may have influenced experimenter behavior during the design, implementation, or analysis stages in some way that

affected the eventual outcome. It would be helpful to have this study replicated by another laboratory that is unaffiliated with FAP research, to control for this limitation.

Furthermore, some of the proposed advantages of ACL groups in comparison to traditional talk therapy were not examined in the current study. For example, the level of stigma participants associated with the groups was not measured, so the present research cannot speak to whether ACL groups are, in fact, less stigmatizing than treatment as usual. Similarly, another key advantage of ACL groups is that they can be led by laypeople with only weeks of training in facilitation; however, the intervention group in the current study was run by a doctoral student with years of related training and professional experience. As ease with which leaders can be trained is a critical argument for ACL groups' existence, it is of the utmost importance that future studies test whether the beneficial effects shown here continue to hold up when the groups are facilitated by true laypeople with less training and experience.

## **CHAPTER V: CONCLUSION**

This project was a response to the severe shortage of available mental healthcare worldwide, which has only accelerated as demand has increased during the COVID-19 pandemic. One tool that has emerged in an attempt to help address this shortage is the ACL group, an informal, layperson-led adaptation of FAP that aims to expose participants to repeated reinforcement from peers for behaviors related to awareness, courage, and love (all of which are constructs associated with well-being). The present study tested a six-week ACL group for undergraduates against a control group focusing on study skills and academic adjustment. Compared to participants in the control group, those in the intervention condition formed a significantly closer bond with their group and experienced greater improvements in their self-compassion. There were no significant differences by group in psychological flexibility, anxiety, or depression. These initial findings suggest that ACL groups may be a promising new intervention for individuals who would benefit from greater interpersonal connection and compassion for themselves during difficult times. Additional research is needed to follow up on the replicability of these findings in more diverse and ecologically valid samples, as well as to unpack the relevant processes of change.

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## **APPENDIX A: OUTCOME MEASURES**

### **State Self-Compassion Scale**

Think about a situation you are experiencing right now that is painful or difficult. It could be some challenge in your life, or perhaps you are feeling inadequate in some way. Please indicate (1-5, Not At All True For Me to Very True For Me) how well each statement applies to how you are feeling toward yourself right now as you think about this situation.

1. I'm giving myself the caring and tenderness I need.
2. I'm obsessing and fixating on everything that's wrong.
3. I'm remembering that there are lots of others in the world feeling like I am.
4. I feel intolerant and impatient toward myself.
5. I'm keeping things in perspective.
6. I feel like I'm struggling more than others right now.

**Acceptance and Action Questionnaire (AAQ-II)**

Please rate (1-7, Never True to Always True) how true each statement is for you.

1. My painful experiences and memories make it difficult for me to live a life that I would value.
2. I'm afraid of my feelings.
3. I worry about not being able to control my worries and feelings.
4. My painful memories prevent me from having a fulfilling life.
5. Emotions cause problems in my life.
6. It seems like most people are handling their lives better than I am.
7. Worries get in the way of my success.

### **Awareness, Courage, and Responsiveness Scale (ACRS)**

Please rate (1-7, Never True to Always True) how true each statement is for you.

1. I am aware of the times when I could be caring, supportive, and loving towards others.
2. I am able to listen deeply to others.
3. I ask questions of others to help me understand exactly what is happening for them in the moment.
4. I am aware of times when others are trying to be caring, supportive, or loving toward me.
5. I can anticipate people's wants and needs.
6. I notice how other people affect how I feel.
7. I know when I am doing what matters to me.
8. I notice how what I feel affects what I do.
9. I am aware of what makes me feel vulnerable.
10. I am aware of my reactions or responses to others as they occur.
11. I am aware of my feelings as they happen.
12. I will not back down from conflict if it leads me towards what I value.
13. If there is an important reason to face something that's uncomfortable for me, I will face it.
14. I will risk feeling uncomfortable in the service of improving my relationships with others.
15. I will act for something I believe in even if I feel fear or doubt.
16. I persevere when moving forward is difficult.
17. I am willing to be vulnerable in relationships.
18. I engage in compassionate actions towards others when they are in need.
19. I express love towards those I care about.
20. I support others when they need it.
21. I create moments of warmth and connection with others.
22. I let other people know that I understand how they feel when they are struggling.
23. When people close to me share that they love me, I share my love back to them.
24. I am able to express love and caring to others just with my eyes and face in key moments.



### **Qualitative Questions**

Please write a brief response to each question below.

1. What impact, if any, did this group have on you?
2. Did you enjoy participating in this group? Why or why not?
3. What else is important for us to know about your experience in this group?

## APPENDIX B: ACL GROUP CURRICULUM

### 6-Session FAP/ACL Group for Undergraduates

#### Session 1: Contacting a Best Self

Adapted from Mavis Tsai, Ph.D.

#### Introduction

- Leader/co-leader briefly introduces themselves
  - Background and training
  - Why this project is personally important
    - E.g., *“This group is important to me because creating spaces where people can be real with one another is my life’s work. And I’m nervous about if we will be able to make that kind of space here together, but I trust that we will, and if we can, I know it will be very special.”*
- Review confidentiality
  - E.g., *“Before we start I would like to mention that your participation in this group is confidential. That means I will not discuss what happens in group with anybody else but members of the research team. I would like to ask that each and every one of you also commit to keeping whatever information is disclosed in this group to yourselves. You can describe your own experience in as much detail as you want, and you can describe general themes of what was discussed, but it is important that you not reveal anything about anyone else in this group. Do you agree?”*
  - Ask everyone to go around and state that they agree
- Group introduces themselves to each other
  - Ask everyone to go around and state their name and something most people don’t know about them.

#### Meditation

- Introduction
  - General discussion of meditation for those new to it
- Actual meditation script
  - *“Go ahead and get settled in your chair. (pause) See if you can breathe with all the thoughts, feelings and bodily sensations you are experiencing at the moment (pause). As you inhale and exhale, allow yourself to be more present, to feel more grounded and relaxed, just knowing whatever you are thinking and feeling is ok. (pause) Notice the air coming through your nose and leaving through your mouth, notice there’s a part of you that can observe that breath coming in and going out through you. (pause)*
  - *Let your attention come more fully into your body, feel your feet on the ground, in contact with your chair, feel the support of the chair beneath you. (pause) Notice when your mind wanders and gently bring your attention back to your body. (pause)*

- *Now focus more deeply on your sensations, thoughts and feelings in this moment. Notice and listen to what's going on inside you—places of discomfort, anxiety, fear, longing, sorrow, places of joy, excitement, anticipation and wonder. (pause) Allow whatever you're experiencing to be. (pause) Breathe with it and make loving space for it. (pause)*
- *Now I'd like you to imagine what you are like when you are the best, boldest, most loving version of yourself.*
  - *How do you act? (pause)*
  - *What do you feel? (pause)*
  - *How do you carry yourself?*
  - *What energy do you exude? (pause)*
  - *How do you interact? (pause)*
  - *How can you bring this version of yourself to this group today? (pause)*
- *Lock in these images and bodily sensations, and gradually open your eyes when you feel ready."*
- Debrief
  - Ask for people's brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.

### **Video**

- Explanation of the exercise
  - *"Each week, someone will share a brief video clip that is related to something important you are working on in your life. You will know you have arrived at the right clip when something about it feels a little bit scary to talk to our group about."*
- Show a clip I have personally chosen, to model the exercise

### **Journaling**

- Put up the Session 1 contemplation questions
  - *What are you struggling with most in your life recently?*
  - *When you feel you are being your best self, what actions are you taking? What actions could you take that would bring you closer to your best self?*
  - *What do you like/appreciate about yourself?*
- Give participants 5 minutes to write in response to the questions

### **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

**Closing**

- Ask everyone to go around and share one thing they are taking away from this meeting

**6-Session FAP/ACL Group for Undergraduates**  
**Session 2: The Power of Values**  
**Adapted from Mavis Tsai, Ph.D. and Fabiana Ramos, Ph.D.**

**Meditation**

- Introduction
  - Welcome back to meditation practice
- Actual meditation script
  - *Go ahead and get into any position that feels comfortable in this moment and that will allow you to remain as relaxed as possible over the next 10 minutes or so. Gently let your eyes close if that's comfortable, and, if it's not, invite your eyes to focus softly downward in one location.*
  - *Start by coming back to your breath. Notice the sensation of your inhales and exhales; maybe you feel the air moving through your nostrils, or maybe you're more tuned in to the rise and fall of your chest. Let your mind notice what it feels like to be in your body, right now, breathing.*
  - *You may notice thoughts coming up that are about something else, that is okay :) Just notice that some thoughts are coming up, and then practice letting your attention move back onto your breathing. Your mind may keep moving back and forth between other thoughts and the sensation of your breath - that is what this practice is. Each time, noticing those other thoughts that are present, whatever they are, and gently returning your focus to your breathing. That is the right way to be doing this.*
  - *As you breathe, also notice that there's a "you" here now who is doing this noticing. It's the same person who was breathing earlier today when you woke up and got out of bed. You were breathing different breaths in a different location at a different time, and yet it was the very same you that is sitting here now. The same you who will leave this group in an hour and a half, the same you who will eat dinner tonight and go to sleep tonight and wake up tomorrow. See if you can get in touch with that part of you that is constant, that's been with you your whole life and that will be with you until you take your very last breath.*
  - *Now, start to imagine this you traveling forward in time beyond today, and tomorrow, and the day after that. Traveling forward through many seasons, noticing all kinds of things until it's sometime in the 2080s when you yourself are in your 80s. See if you can call to mind an image of an older you, maybe your face is a little wrinkly, maybe your body feels a bit different. Imagine you are sitting in a comfortable chair with a photo album resting in your lap. This album is full of photos taken of you throughout your life. This 80-something you pauses for a moment, and you notice yourself feeling deeply satisfied and grateful for the life you have lived. It's not that everything was always perfect - there were painful moments in your life, too, and maybe some of them are in these pictures too. But your overall sense as you review these photos of your life is that you have lived a rich and fulfilling life, the kind of life you might have hoped for.*
  - *If you notice you're having thoughts right now along the lines of "That's not possible," pause to acknowledge those thoughts, come back to your body and*

*breath, and then return to imagining a future you who is feeling grateful about the life you have lived.*

- *This older you opens the photo album in your lap and begins looking through the pages, and remembering the moments captured in the photos. So, right now, begin inviting your imagination to fill the pages of the album with the experiences that your heart most longs to see there. The photos span the course of your whole life and may include both the big moments and the little ones too. If anything were possible, what kinds of photos would you find?*
  - *What are you doing in the photos?*
  - *Who's in the photos with you?*
  - *Where are the different photos taken?*
  - *What images do you really want to see in the album that are scary to even let yourself imagine? Invite yourself to take that risk, to let those images be there in your imagination right now, and then observe what they are and how they impact you.*
- *Now, letting your vision of the photo album and a future you get a bit fuzzy and shifting your attention back to your breath as it comes and goes in this moment. Notice how your breath has been here this whole time, wherever your mind may have taken you.*
- *Whenever you're ready, invite your eyes to open."*
- Debrief
  - Ask for people's brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.

### **Video**

- Play the video clip participant has sent to me for today's group
- Allow ~1 minute for participant to speak to what vulnerable feelings this clip stirs up for them
- Respond, and invite 1-2 participants to respond

### **Journaling**

- Put up the Session 2 contemplation questions
  - *Which photos were most meaningful to you? Why?*
  - *What did this exercise reveal about you that feels scary to admit?*
  - *If you were to set an intention for the near future that would bring you closer to the life you envisioned, what would that intention be?*
- Give participants 5 minutes to write in response to the questions

### **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

**Closing**

- Ask everyone to go around and share one thing they are taking away from this meeting

**6-Session FAP/ACL Group for Undergraduates**  
**Session 3: Sustaining Happiness**  
**Adapted from Mavis Tsai, Ph.D. and Valerie Freilich**

**Meditation**

- Introduction
  - Welcome back to meditation practice
- Actual meditation script
  - *Gently close your eyes or shift into a soft focus, and with each breath, allow yourself to sink down into the center of your being. (pause) As you slowly inhale and exhale, see if you can feel into the place deep within that is boundless and still.*
  - *Allow yourself to relax into this place and open to all of your experience (pause), the rise and fall of your breath (pause), the images and thoughts in your mind (pause), the sounds you hear (pause), the sensations in your body (pause).*
  - *If you can, bring tenderness to everything that you are feeling. (pause) whether it's positive or negative, (pause) whether it's joyful or painful, (pause) welcome and embrace all that you are feeling, (pause) and all of who you are (pause).*
  - *I now invite you to be with some of your happiest memories, what has brought you joy in your life (pause). Just let them arise as images or sensations, and notice how your heart feels as you re-experience what has brought you happiness. (long pause)*
  - *As you keep focusing on your heart, what are the dreams, longings and yearnings that call for your attention? (pause) What does it mean to be true to yourself? (pause) Are there any truths that are hard for you to express? (pause) Notice if there are any fears that that prevent you from fully pursuing what your heart desires or from speaking your truth. (pause). See if you can imagine what your life would be like if you lived a dream, pursued a longing, or expressed a truth you've been withholding. (pause)*
  - *Allow your breath to be full, strong, and tender. This moment is as open as you are willing to be. (pause) Think about how guarded moments may be life wasted (pause). See if you can open more deeply to whatever you are experiencing in this moment, (pause) embrace all that you are feeling without judgment (pause). If it feels right in this moment, you can breathe in your dreams and thoughts that bring you joy, and breathe out your fears (pause.) Breathing in joy, breathing out whatever is limiting you. Take 3 more deep breaths, offering tenderness to whatever your experience is in this moment. Slowly, as you are ready, gradually bring your attention back to this room.*
- Debrief
  - Ask for people's brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.



### **Video**

- Play the video clip participant has sent to me for today's group
- Allow ~1 minute for participant to speak to what vulnerable feelings this clip stirs up for them
- Respond, and invite 1-2 participants to respond

### **Journaling**

- Put up the Session 3 contemplation questions
  - *What are some of your most joyful memories?*
  - *If you were fearless, what would you do to move towards a life that includes more happy moments?*
  - *How do these questions make you feel? Are there truths you are holding back from expressing? If so, what are they?*
- Give participants 5 minutes to write in response to the questions

### **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

### **Closing**

- Ask everyone to go around and share one thing they are taking away from this meeting

**6-Session FAP/ACL Group for Undergraduates**  
**Session 4: Sharing Our Humanity**  
**Adapted from Mavis Tsai, Ph.D. and Reimer Bierhals**

**Meditation**

- Introduction
  - Welcome back to meditation practice
- Actual meditation script
  - *“Gently close your eyes or rest your eyes softly on a spot, and go inward with your attention. (pause) Notice the movement that your breath creates in your body. If you’d like, you can place your hand where you feel the movement, and feel each in-breath and out breath. (pause). I invite you to let arise a compassionate observation space that allows awareness of your vulnerability, a space where you can look with curiosity to vulnerable stories your mind may tell about you. (pause)*
  - *Then, if you can, let one vulnerable sentence about yourself emerge, a self-critical sentence that others may not know, one that you may prefer to hide from others. A sentence that begins with “I” or “I am” (pause) Gently open up to the feelings that are connected with this sentence. (long pause)*
  - *Now, I encourage you to recall a moment in your life when you were fused with this sentence and believed it to be true.*
  - *Notice what was painful about that moment for your younger self (pause) Notice how other people may have reacted in that moment. Hold all feelings that show up with tenderness.(pause) Take time to experience what your younger would ideally have needed in that moment. (long pause)*
  - *You can fade out that scene by returning to the rise and fall of your breath (pause) Now remember another moment in your life where you acted contrary to your sentence.(pause) Let this moment arise in front of your inner eye and stay with the image. (pause) Look also at other people in this moment and how they reacted. Notice the feelings that show up. (pause) And notice what is valuable about the way you courageously acted (long pause).*
  - *What do you notice when you hold your vulnerable, self-critical story with more tenderness and compassion? (pause) When you detach yourself from it, what do you do differently? (pause) How would you act towards important people in your life? (pause) What would you say to them? (pause) How would you speak to yourself? (pause) How would you speak today in this meeting? (pause)*
  - *Once again, gently bring your attention back to the flow of your breath, to your inhale and exhale (pause). Whenever you are ready, softly open your eyes and gradually turn your attention outward, into our space, into the present moment.”*
- Debrief
  - Ask for people’s brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.

### **Video**

- Play the video clip participant has sent to me for today's group
- Allow ~1 minute for participant to speak to what vulnerable feelings this clip stirs up for them
- Respond, and invite 1-2 participants to respond

### **Journaling**

- Put up the Session 4 contemplation questions
  - *A vulnerable, self-critical sentence about me that I would prefer to hide from others is...*
  - *A version of this sentence pops up in my mind during this group when...*
  - *If I could hold this sentence with more compassion, what I would do differently in my life is...*
- Give participants 5 minutes to write in response to the questions

### **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

### **Closing**

- Ask everyone to go around and share one thing they are taking away from this meeting

**6-Session FAP/ACL Group for Undergraduates**  
**Session 5: Experiences in the Group**  
**Adapted from Mavis Tsai, Ph.D.**

**Meditation**

- Introduction
  - Welcome back to meditation practice
- Actual meditation script
  - *“Get settled in your chair. Get comfortable to sit here for a few moments. If you want, you can gently close your eyes.*
  - *For a moment, let your awareness settle onto your breath. Find a place where you can notice the breath coming in, and going out.*
  - *Now, bring your attention to your relationship with this group. Notice that you are here, in this same chair, surrounded by these same people, listening to my same voice. By now you have some idea what to expect when you come here.*
  - *As you notice that you are here, ask yourself:*
    - *How have you held yourself back so far in our group?*
    - *If you really trusted yourself, how would you act differently here?*
    - *What are you afraid to do or say in our group?*
    - *Are you willing to be a little bit braver today than you have been so far?*
    - *If so, what would it look like to move towards your fear today? What would it look like to be a little bit more brave in here today?*
  - *Once again, gently bring your attention back to the flow of your breath, to your inhale and exhale (pause). Whenever you are ready, softly open your eyes and gradually turn your attention outward, into our space, into the present moment.”*
- Debrief
  - Ask for people’s brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.

**Video**

- Play the video clip participant has sent to me for today’s group
- Allow ~1 minute for participant to speak to what vulnerable feelings this clip stirs up for them
- Respond, and invite 1-2 participants to respond

**Journaling**

- Put up the Session 5 Contemplation Questions
  - *If I were really brave in this group, I would...*
  - *Something about my experience here in this group that is hard to say out loud is...*
  - *The thing I haven’t been able to do in this group yet is...*
  - *It’s scary to say, but something I feel towards you is...*

- Give participants 5 minutes to write in response to the questions

### **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

### **Closing**

- Ask everyone to go around and share one thing they are taking away from this meeting

**6-Session FAP/ACL Group for Undergraduates**  
**Session 6: Good Goodbyes**  
**Adapted from Mavis Tsai, Ph.D. and Rich Nobles**

**Meditation**

- Introduction
  - Welcome back to meditation practice
  - Note in an evocative way that this is our last group meeting
- Actual meditation script
  - *Please get comfortable in your chair. Please close your eyes. Ground your feet into the floor.*
  - *Now please join hands like this. Take a breath or two and draw yourself to your inner core. Today is today. A day where we're sure to bustle about, a day chock full of mundanities. A Tuesday with our Tuesday routine. And today could also be a clear new day. A day of consequence, a day where we learn something new, a day where we have nothing to lose. A day that we share together for just a little while.*
  - *And what if this were your last day here on earth? What if this were your last clear new day?*
    - *What would you say to your loved ones?*
    - *Whom or what would you have to accept?*
    - *Who would you need to stop avoiding?*
    - *Whom would you have to forgive?*
    - *What if you had to spend part of your last clear new day, here in this circle, in this exact formation? What would you say to the person to your left? To your right? And the rest?*
  - *This is a clear new day of lasts. This is our last day together for a while. Our last day for meditations. Our last group of two hours. All I would like for you to do is to recognize the importance of this clear new day of lasts.*
  - *So, when you're ready come back into the room, take a breath with each person with a purpose, as if you'll never breathe with them again. And when you take your breath, think of this: If you wish to accept someone here more fully, do so with your heart. If you're ready to take a step at forgiving someone here, forgive them with your heart. If you are ready to approach someone here that you've avoided, do so with your heart. And if there's a loved one here, tell them with your heart.*
  - *And very importantly, take a breath with that person. Take your breath as if you'll never breathe with them again.*
- Debrief
  - Ask for people's brief responses to the meditation, what it was like for them, what it brought up for them, and/or how they feel as a result of listening to it.

## **Video**

- Play the video clip participant has sent to me for today's group
- Allow ~1 minute for participant to speak to what vulnerable feelings this clip stirs up for them
- Respond, and invite 1-2 participants to respond

## **Journaling**

- Put up the Session 6 Contemplation Questions
  - *What thoughts and feelings are you having about the end of this group? What is important to say?*
  - *How have your feelings about the person you are talking to changed? When have you felt closest to them? When have you felt farthest away?*
  - *What are you proud of yourself for doing in this group?*
- Give participants 5 minutes to write in response to the questions

## **Sharing**

- Put up the [3-2-1 sharing instructions](#)
- Demo the sharing process with a volunteer or co-leader
- Divide participants into pairs
- Give participants 20-25 minutes to complete this process

## **Closing**

- Ask everyone to go around and share one thing they are taking away from being in this group
  - *"This is your last chance to speak to this group all together — what feels scary or important to say?"*

## APPENDIX C: CONTROL GROUP CURRICULUM

### Session 1 (90 mins)

- Introduction
  - Introduce yourself
  - Appreciation
    - *Thank you for making the effort to follow through on phone calls and emails. I appreciate everyone being here. Your participation is personally important to me and the Center for the Science of Social Connection in the UW Dept of Psych because we know that having a space to regularly be in groups improves health, and many college students feel they lack that space. So, I hope our 6 weeks together will be enjoyable. I want you to feel comfortable making these sessions part of your routine. If anything starts to bother you, or you need to drop out of the study for any reason, please talk to me about it.*
  - What the next 6 weeks will look like
    - *Attending each session is highly encouraged*
    - *These 90 minutes will be for you to use to your own advantage. It will be kind of like a study hall, similar to Odegaard library's first floor. Set your own rules, do whatever you need to do. We'll have breaks that include facilitated discussions about college life and study skills, and watch videos about study skills!*
    - *So how does regular attendance here in this space benefit you, if you could get the same thing done at Odegaard library?*
    - *By participating in our research you are helping further science! You are helping us answer questions about how studying in a group like this impacts students, especially college students. Thank you so much for coming every week to study here!*
  - Group introduces themselves to each other
    - Name, year, major, favorite soup
- Pomodoro (25 min)
- Talk in a pair
  - *We've been intentional on selecting these Qs so we'd prefer you to focus the content of your conversations on these Qs*
  - How did your last 25 minute session go?
  - What do you plan to work on in the next 20 minutes?
- Pomodoro (25 min)
- Talk in a different pair
  - What's your favorite class this quarter?
  - What's your favorite class you've taken at the UW?
  - What's your favorite class within and out of your major?
- Closing
  - Go around in big group and share what you worked on this session
  - Exit surveys
    - Ask if everyone has their ID code



**Session 2 (90 mins)**

- Welcome back + [Video on note-taking](#)
- Introduce group discussion questions (next bullet point) and silent thinking time
- Group discussion in groups of 3
  - Note-taking tools: Do you take notes on paper, laptop, or other?
  - Note-taking content: Think about a subject or class you have mastered note-taking in. What about your note-taking in that subject/class helps you do well on the exam?
  - Note-taking systems: Outline, Cornell, Mind-Mapping - Have you tried any of these systems? What do you like/not like about them?
- Pomodoro (25 min)
- Talk in a pair
  - Favorite place to get work done on or off campus?
  - What are some essential features you think a study space should have?
- Pomodoro (20 min)
- Closing
  - Go around in a big group and share what you worked on this session
  - Exit surveys

**Session 3 (90 mins)**

- Welcome back, silent thinking time for what you want to get done during pomodoro (4:30-4:35)
- Pomodoro (25 min)
- Introduce discussion questions and talk in pair
  - What did you work on?
  - Have you changed the way you study at all since last weeks video? Why or why not?
- Pomodoro (25 min)
- Talk in a pair
  - Have you tried the pomodoro technique outside of this group? Why or why not?
  - Have you made progress on the stuff you wanted to get done during work time?
- Pomodoro (20 min)
- Closing
  - Exit surveys

**Session 4 (90 mins)**

- Welcome back, silent thinking time for what you want to get done during pomodoro
- Pomodoro (25 min)
- Introduce discussion questions and talk in pair
  - Do you go to office hours? Why or why not? Are they helpful?
  - How often do you meet with academic advisors? Are they helpful?
- Pomodoro (25 min)
- Talk in a pair
  - What have you been working on?
  - Do you go to to any study groups / CLUE sessions / any of the learning centers e.g. math learning center? Why or why not? Are they helpful?

- Do you use a tutor?
- Pomodoro (20 min)
- Closing
  - Exit surveys

### **Session 5 (90 mins)**

- Welcome back, silent thinking time for what you want to get done during pomodoro
- Pomodoro (25 min)
- Introduce discussion questions and talk in pair
  - How many credits / courses are you taking this quarter? Is this your usual courseload?
  - How much time do you spend studying for your current courses per week? How much time are you studying this quarter compared to previous quarters?
- Pomodoro (25 min)
- Talk in a pair
  - What formats are your classes this quarter? E.g. Lecture, lab, seminar, discussion section, or mixed format? Do you have a preference?
  - Do you prefer online / hybrid / or in-person classes?
- Pomodoro (20 min)
- Closing
  - Exit surveys

### **Session 6 (90 mins)**

- Pomodoro (15 min)
- Introduce discussion questions and talk in pair
  - Have you finished all your gen ed requirements?
  - What are you currently working on?
- Pomodoro (25 min)
- Talk in a pair
  - What is your preferred class schedule e.g time of day / length of class / days per week
  - How many finals do you have?
- Pomodoro (25 min)
- Closing / Debriefing
  - Exit surveys

## APPENDIX D: R SCRIPT USED FOR ANALYSES

```
# title: "Analyses for Dissertation"
# author: Emerson Hardebeck
# date: "03/23/2022"

##### Installing packages and loading data #####
# install.packages("dplyr")
# install.packages("psych")
# install.packages("plyr")
# install.packages("ggplot2")
# install.packages("packHV")
# install.packages("zoo")
# install.packages("car")
# install.packages("heplots")
# install.packages("tidyverse")
library(plyr)
library(dplyr)
library(psych)
library(ggplot2)
library(packHV)
library(zoo)
library(stats)
library(car)
library(heplots)
library(tidyverse)

# Set working directory
setwd("~/Downloads")

# Load data
ACLdata <- read.csv("./Dissertation_Data_Cleaned.csv",
stringsAsFactors = FALSE)

# Loading in the data and storing it into "data"
# ACLdata_withNAs <- read.csv("./Dissertation_Data_Cleaned.csv",
stringsAsFactors = FALSE)

# Removes any data with "NA" count values
# ACLdata <- na.omit(ACLdata_withNAs)

##### Imputing missing values #####
```

```

# We are imputing missing values with column means BY CONDITION
(i.e., so that a control participant who missed a survey has her
values filled in with the control mean for that item)
# Once we've done this, we can check that we did it correctly
lol, so manually check means of a variable by condition and then
compare that to the value that is automatically filled in by our
function, e.g., below
# mean(ACLdata$PHQ1_Post[ACLdata$Condition == 1], na.rm=TRUE)
# mean(ACLdata$PHQ1_Post[ACLdata$Condition == 2], na.rm=TRUE)

# Impute missing values, Pre survey
ACLdata[37:88] <- with(ACLdata, ave(ACLdata[37:88],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 1
ACLdata[89:117] <- with(ACLdata, ave(ACLdata[89:117],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 2
ACLdata[120:148] <- with(ACLdata, ave(ACLdata[120:148],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 3
ACLdata[151:179] <- with(ACLdata, ave(ACLdata[151:179],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 4
ACLdata[182:210] <- with(ACLdata, ave(ACLdata[182:210],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 5
ACLdata[213:241] <- with(ACLdata, ave(ACLdata[213:241],
ACLdata$Condition, FUN = na.aggregate))

# Impute missing values, Week 6 (Post)
ACLdata[244:322] <- with(ACLdata, ave(ACLdata[244:322],
ACLdata$Condition, FUN = na.aggregate))

##### Sample characteristics
#####

### TOTAL SAMPLE: ###

# Race proportions
RaceTable <- table(ACLdata$Race)

```

```

rownames(RaceTable) = c("White", "White and Asian", "Asian",
"Other")
prop.table(RaceTable)*100

# SES proportions
Incometable <- table(ACLdata$Income)
rownames(Incometable) = c("20k-30k", "30k-50k", "50k-75k", "75k-
100k", "100k or more", "Won't say")
prop.table(Incometable)*100

# Gender
Gendertable <- table(ACLdata$Gender)
rownames(Gendertable) = c("Male", "Female", "Non-binary")
prop.table(Gendertable)*100

### CONTROL CONDITION: ###

Control_only <- subset(ACLdata, Condition == 1)

# SES
Incometable <- table(Control_only$Income)
rownames(Incometable) = c("20k-30k", "50k-75k", "75k-100k",
"100k or more", "Won't say")
prop.table(Incometable)*100

# Race
RaceTable <- table(Control_only$Race)
rownames(RaceTable) = c("White", "White and Asian", "Asian",
"Other")
prop.table(RaceTable)*100

# Gender
Gendertable <- table(Control_only$Gender)
rownames(Gendertable) = c("Male", "Female", "Non-binary")
prop.table(Gendertable)*100

### ACL CONDITION: ###

ACL_only <- subset(ACLdata, Condition == 2)

# SES
Incometable <- table(ACL_only$Income)
rownames(Incometable) = c("30k-50k", "50k-75k", "75k-100k",
"100k or more", "Won't say")
prop.table(Incometable)*100

```

```

# Race
RaceTable <- table(ACL_only$Race)
rownames(RaceTable) = c("White", "White and Asian", "Asian")
prop.table(RaceTable)*100

# Gender
Gendertable <- table(ACL_only$Gender)
rownames(Gendertable) = c("Male", "Female", "Non-binary")
prop.table(Gendertable)*100

#### PRETREATMENT DIFFERENCES BY GROUP IN DEMOGRAPHIC VARIABLES?
####

# Gender
Gender_freq <- table(ACLdata$Gender, ACLdata$Condition)
chisq.test(Gender_freq)

# Race
Race_freq <- table(ACLdata$Race, ACLdata$Condition)
chisq.test(Race_freq)

# Income
Income_freq <- table(ACLdata$Income, ACLdata$Condition)
chisq.test(Income_freq)

# Age
Age_freq <- table(ACLdata$Age, ACLdata$Condition)
chisq.test(Age_freq)

### Attrition
ACLdata <- read.csv("../Dissertation_Data_Cleaned.csv",
stringsAsFactors = FALSE)

NAtable <- data.frame(
  Control_NAs = c(
    sum(is.na(ACLdata$RHI1_Week1[ACLdata$Condition == 1])),
    sum(is.na(ACLdata$RHI1_Week2[ACLdata$Condition == 1])),
    sum(is.na(ACLdata$RHI1_Week3[ACLdata$Condition == 1])),
    sum(is.na(ACLdata$RHI1_Week4[ACLdata$Condition == 1])),
    sum(is.na(ACLdata$RHI1_Week5[ACLdata$Condition == 1])),
    sum(is.na(ACLdata$RHI1_Post[ACLdata$Condition == 1]))
  ),
  ACL_NAs = c(

```

```

    sum(is.na(ACLdata$RHI1_Week1[ACLdata$Condition == 2])),
    sum(is.na(ACLdata$RHI1_Week2[ACLdata$Condition == 2])),
    sum(is.na(ACLdata$RHI1_Week3[ACLdata$Condition == 2])),
    sum(is.na(ACLdata$RHI1_Week4[ACLdata$Condition == 2])),
    sum(is.na(ACLdata$RHI1_Week5[ACLdata$Condition == 2])),
    sum(is.na(ACLdata$RHI1_Post[ACLdata$Condition == 2]))
  )
)

chisq.test(NAtable)

##### PHQ-9 Scale #####

# Create a single composite score out of all the pre phq items
Pre_PHQItems <- c("PHQ1_Pre", "PHQ2_Pre", "PHQ3_Pre",
"PHQ4_Pre", "PHQ5_Pre", "PHQ6_Pre", "PHQ7_Pre", "PHQ8_Pre",
"PHQ9_Pre")
Pre_PHQKey <- c(1,1,1,1,1,1,1,1,1)
Pre_PHQTotal <- scoreItems(keys = Pre_PHQKey, items =
ACLdata[Pre_PHQItems],
                           totals = FALSE, missing = FALSE, min
= 0,
                           max = 3)

Pre_PHQ_Score <- Pre_PHQTotal$score

# Create a single composite score out of all the post phq items
Post_PHQItems <- c("PHQ1_Post", "PHQ2_Post", "PHQ3_Post",
"PHQ4_Post", "PHQ5_Post", "PHQ6_Post", "PHQ7_Post", "PHQ8_Post",
"PHQ9_Post")
Post_PHQKey <- c(1,1,1,1,1,1,1,1,1)
Post_PHQTotal <- scoreItems(keys = Post_PHQKey, items =
ACLdata[Post_PHQItems],
                           totals = FALSE, missing = FALSE, min
= 0,
                           max = 3)

Post_PHQ_Score <- Post_PHQTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_PHQ_Score,
Post_PHQ_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("PHQ.1", "PHQ.2")

```

```

ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = PHQ,
linetype = Condition)) +
  stat_summary(fun = mean, geom = "line", size = 1.25) +
  labs(x = "Time", y = "Depression (PHQ-9)") +
  scale_x_continuous(breaks = 1:2, labels = c("Pre", "Post")) +
  scale_linetype_discrete(
    name = "Condition",
    breaks = c("1", "2"),
    labels = c("Control", "Intervention")
  )

```

```

#Check which condition has a bigger mean at post1
mean(Post_PHQ_Score[ACLdata$Condition == 1])
mean(Post_PHQ_Score[ACLdata$Condition == 2], na.rm=TRUE)

```

```

# T-test comparing phq at post (For fun)
t.test(x = (Post_PHQ_Score)[ACLdata$Condition == 1],
       y = (Post_PHQ_Score)[ACLdata$Condition == 2])

```

```

#Check which condition has a bigger change from pre to post
mean((Post_PHQ_Score - Pre_PHQ_Score)[ACLdata$Condition == 1])
mean((Post_PHQ_Score - Pre_PHQ_Score)[ACLdata$Condition == 2])

```

```

# T-test comparing phq from pre to post by group
t.test(x = (Post_PHQ_Score - Pre_PHQ_Score)[ACLdata$Condition ==
1],
       y = (Post_PHQ_Score - Pre_PHQ_Score)[ACLdata$Condition ==
2])

```

```

# T-test comparing phq from pre to post without including group
t.test(x = (Pre_PHQ_Score),
       y = (Post_PHQ_Score))

```

```

##### GAD-7 Scale #####

```

```

# Create a single composite score out of all the pre GAD items
Pre_GADItems <- c("GAD1_Pre", "GAD2_Pre", "GAD3_Pre",
"GAD4_Pre", "GAD5_Pre", "GAD6_Pre", "GAD7_Pre")
Pre_GADKey <- c(1,1,1,1,1,1,1)

```



```

Pre_GADTotal <- scoreItems(keys = Pre_GADKey, items =
ACLdata[Pre_GADItems],
                                totals = FALSE, missing = FALSE, min
= 0,
                                max = 3)

Pre_GAD_Score <- Pre_GADTotal$score

# Create a single composite score out of all the post GAD items
Post_GADItems <- c("GAD1_Post", "GAD2_Post", "GAD3_Post",
"GAD4_Post", "GAD5_Post", "GAD6_Post", "GAD7_Post")
Post_GADKey <- c(1,1,1,1,1,1,1)
Post_GADTotal <- scoreItems(keys = Post_GADKey, items =
ACLdata[Post_GADItems],
                                totals = FALSE, missing = FALSE, min
= 0,
                                max = 3)

Post_GAD_Score <- Post_GADTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_GAD_Score,
Post_GAD_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("GAD.1", "GAD.2")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = GAD,
linetype = Condition)) +
  stat_summary(fun = mean, geom = "line", size = 1.25) +
  labs(x = "Time", y = "Anxiety (GAD-7)") +
  scale_x_continuous(breaks = 1:2, labels = c("Pre", "Post")) +
  scale_linetype_discrete(
    name = "Condition",
    breaks = c("1", "2"),
    labels = c("Control", "Intervention")
  )

#Check which condition has a bigger mean at post
mean(Post_GAD_Score[ACLdata$Condition == 1])
mean(Post_GAD_Score[ACLdata$Condition == 2], na.rm=TRUE)

```

```

# T-test comparing GAD at post (For fun)
t.test(x = (Post_GAD_Score)[ACLdata$Condition == 1],
       y = (Post_GAD_Score)[ACLdata$Condition == 2])

#Check which condition has a bigger change from pre to post
mean((Post_GAD_Score - Pre_GAD_Score)[ACLdata$Condition == 1])
mean((Post_GAD_Score - Pre_GAD_Score)[ACLdata$Condition == 2])

# T-test comparing GAD from pre to post
t.test(x = (Post_GAD_Score - Pre_GAD_Score)[ACLdata$Condition ==
1],
       y = (Post_GAD_Score - Pre_GAD_Score)[ACLdata$Condition ==
2])

##### Awareness and Action Questionnaire (AAQ)
#####

# Create a single composite score out of all the pre AAQ items
Pre_AAQItems <- c("AAQ1_Pre", "AAQ2_Pre", "AAQ3_Pre",
"AAQ4_Pre", "AAQ5_Pre", "AAQ6_Pre", "AAQ7_Pre")
Pre_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Pre_AAQTotal <- scoreItems(keys = Pre_AAQKey, items =
ACLdata[Pre_AAQItems],
                           totals = FALSE, missing = FALSE, min
= 1,
                           max = 7)

Pre_AAQ_Score <- Pre_AAQTotal$score

# Create a single composite score out of all the Week1 AAQ items
Week1_AAQItems <- c("AAQ1_Week1", "AAQ2_Week1", "AAQ3_Week1",
"AAQ4_Week1", "AAQ5_Week1", "AAQ6_Week1", "AAQ7_Week1")
Week1_AAQKey <- c(1,1,1,1,1,1,1)
Week1_AAQTotal <- scoreItems(keys = Week1_AAQKey, items =
ACLdata[Week1_AAQItems],
                           totals = FALSE, missing = FALSE, min
= 1,
                           max = 7)

Week1_AAQ_Score <- Week1_AAQTotal$score

```

```

# Create a single composite score out of all the Week2 AAQ items
Week2_AAQItems <- c("AAQ1_Week2", "AAQ2_Week2", "AAQ3_Week2",
"AAQ4_Week2", "AAQ5_Week2", "AAQ6_Week2", "AAQ7_Week2")
Week2_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Week2_AAQTotal <- scoreItems(keys = Week2_AAQKey, items =
ACLdata[Week2_AAQItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Week2_AAQ_Score <- Week2_AAQTotal$score

# Create a single composite score out of all the Week3 AAQ items
Week3_AAQItems <- c("AAQ1_Week3", "AAQ2_Week3", "AAQ3_Week3k2",
"AAQ4_Week3", "AAQ5_Week3", "AAQ6_Week3", "AAQ7_Week3")
Week3_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Week3_AAQTotal <- scoreItems(keys = Week3_AAQKey, items =
ACLdata[Week3_AAQItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Week3_AAQ_Score <- Week3_AAQTotal$score

# Create a single composite score out of all the Week4 AAQ items
Week4_AAQItems <- c("AAQ1_Week4", "AAQ2_Week4", "AAQ3_Week4",
"AAQ4_Week4", "AAQ5_Week4", "AAQ6_Week4", "AAQ7_Week4")
Week4_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Week4_AAQTotal <- scoreItems(keys = Week4_AAQKey, items =
ACLdata[Week4_AAQItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Week4_AAQ_Score <- Week4_AAQTotal$score

# Create a single composite score out of all the Week5 AAQ items
Week5_AAQItems <- c("AAQ1_Week5", "AAQ2_Week5", "AAQ3_Week5",
"AAQ4_Week5", "AAQ5_Week5", "AAQ6_Week5", "AAQ7_Week5")
Week5_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Week5_AAQTotal <- scoreItems(keys = Week5_AAQKey, items =
ACLdata[Week5_AAQItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

```

```

Week5_AAQ_Score <- Week5_AAQTotal$score

# Create a single composite score out of all the post (Week 6)
AAQ items
Post_AAQItems <- c("AAQ1_Post", "AAQ2_Post", "AAQ3_Post",
"AAQ4_Post", "AAQ5_Post", "AAQ6_Post", "AAQ7_Post")
Post_AAQKey <- c(-1,-1,-1,-1,-1,-1,-1)
Post_AAQTotal <- scoreItems(keys = Post_AAQKey, items =
ACLdata[Post_AAQItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 7)

Post_AAQ_Score <- Post_AAQTotal$score

# Visualize changes in means over all 7 weeks
ACL_data_frame <- data.frame(ACLdata, Pre_AAQ_Score,
Week1_AAQ_Score, Week2_AAQ_Score, Week3_AAQ_Score,
Week4_AAQ_Score, Week5_AAQ_Score, Post_AAQ_Score)
colnames(ACL_data_frame)[c(328:334)] <- c("AAQ.1", "AAQ.2",
"AAQ.3", "AAQ.4", "AAQ.5", "AAQ.6", "AAQ.7")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:334, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = AAQ, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Psychological Flexibility (AAQ)") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

# A different way to make the B&W plot
gg <- ggplot(ACL_data_frame_long, aes(x=time, y=AAQ, group =
Condition, shape = Condition))
gg <- gg + stat_summary(fun="mean", geom="line", size=1.1,
                        aes(linetype = Condition),
show.legend=FALSE)
gg <- gg + stat_summary(fun="mean", geom="point", size=5,
                        aes(shape = Condition), fill="white")
gg <- gg + scale_shape_discrete(name="Condition",
                                breaks=c("1", "2"),

```

```

                                labels=c("Control",
"Intervention"))
gg <- gg + labs(x="Week", y="Psychological Inflexibility (AAQ)")
gg

# T-test comparing AAQ from pre to post
t.test(x = (Post_AAQ_Score - Pre_AAQ_Score)[ACLdata$Condition ==
1],
      y = (Post_AAQ_Score - Pre_AAQ_Score)[ACLdata$Condition ==
2])

# Student's (parametric) T-test comparing AAQ from pre to post
t.test(x = (Post_AAQ_Score - Pre_AAQ_Score)[ACLdata$Condition ==
1],
      y = (Post_AAQ_Score - Pre_AAQ_Score)[ACLdata$Condition ==
2],
      var.equal = TRUE)

# T-test comparing AAQ at post
t.test(x = (Post_AAQ_Score)[ACLdata$Condition == 1],
      y = (Post_AAQ_Score)[ACLdata$Condition == 2])

##### Relational Health Indices (RHI)
#####

# Create a single composite score out of all the Week1 RHI items
Week1_RHIItems <- c("RHI1_Week1", "RHI2_Week1", "RHI3_Week1",
"RHI4_Week1", "RHI5_Week1", "RHI6_Week1", "RHI7_Week1",
"RHI8_Week1", "RHI9_Week1", "RHI10_Week1", "RHI11_Week1",
"RHI12_Week1", "RHI13_Week1", "RHI14_Week1")
Week1_RHIKey <- c(1,1,1,-1,1,1,-1, 1, 1, -1, 1, 1, 1, 1)
Week1_RHITotal <- scoreItems(keys = Week1_RHIKey, items =
ACLdata[Week1_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week1_RHI_Score <- Week1_RHITotal$score

# Create a single composite score out of all the Week2 RHI items
Week2_RHIItems <- c("RHI1_Week2", "RHI2_Week2", "RHI3_Week2",
"RHI4_Week2", "RHI5_Week2", "RHI6_Week2", "RHI7_Week2",

```

```

"RHI8_Week2", "RHI9_Week2", "RHI10_Week2", "RHI11_Week2",
"RHI12_Week2", "RHI13_Week2", "RHI14_Week2")
Week2_RHIKey <- c(1,1,1,-1,1,1,-1, 1, 1, -1, 1, 1, 1, 1)
Week2_RHITotal <- scoreItems(keys = Week2_RHIKey, items =
ACldata[Week2_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week2_RHI_Score <- Week2_RHITotal$score

# Create a single composite score out of all the Week3 RHI items
Week3_RHIItems <- c("RHI1_Week3", "RHI2_Week3", "RHI3_Week3",
"RHI4_Week3", "RHI5_Week3", "RHI6_Week3", "RHI7_Week3",
"RHI8_Week3", "RHI9_Week3", "RHI10_Week3", "RHI11_Week3",
"RHI12_Week3", "RHI13_Week3", "RHI14_Week3")
Week3_RHIKey <- c(1,1,1,-1,1,1,-1, 1, 1, -1, 1, 1, 1, 1)
Week3_RHITotal <- scoreItems(keys = Week3_RHIKey, items =
ACldata[Week3_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week3_RHI_Score <- Week3_RHITotal$score

# Create a single composite score out of all the Week4 RHI items
Week4_RHIItems <- c("RHI1_Week4", "RHI2_Week4", "RHI3_Week4",
"RHI4_Week4", "RHI5_Week4", "RHI6_Week4", "RHI7_Week4",
"RHI8_Week4", "RHI9_Week4", "RHI10_Week4", "RHI11_Week4",
"RHI12_Week4", "RHI13_Week4", "RHI14_Week4")
Week4_RHIKey <- c(1,1,1,-1,1,1,-1, 1, 1, -1, 1, 1, 1, 1)
Week4_RHITotal <- scoreItems(keys = Week4_RHIKey, items =
ACldata[Week4_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week4_RHI_Score <- Week4_RHITotal$score

# Create a single composite score out of all the Week5 RHI items
Week5_RHIItems <- c("RHI1_Week5", "RHI2_Week5", "RHI3_Week5",
"RHI4_Week5", "RHI5_Week5", "RHI6_Week5", "RHI7_Week5",
"RHI8_Week5", "RHI9_Week5", "RHI10_Week5", "RHI11_Week5",
"RHI12_Week5", "RHI13_Week5", "RHI14_Week5")
Week5_RHIKey <- c(1,1,1,-1,1,1,-1, 1, 1, -1, 1, 1, 1, 1)
Week5_RHITotal <- scoreItems(keys = Week5_RHIKey, items =
ACldata[Week5_RHIItems],

```



```

# A different way to make the B&W plot
gg <- ggplot(ACL_data_frame_long, aes(x=time, y=RHI, group =
Condition, shape = Condition))
gg <- gg + stat_summary(fun="mean", geom="line", size=1.1,
                        aes(linetype = Condition),
show.legend=FALSE)
gg <- gg + stat_summary(fun="mean", geom="point", size=5,
                        aes(shape = Condition), fill="white")
gg <- gg + scale_shape_discrete(name="Condition",
                                breaks=c("1", "2"),
                                labels=c("Control",
"Intervention"))
gg <- gg + labs(x="Week", y="Closeness to Group (RHI)")
gg

# T-test comparing RHI from pre to post
t.test(x = (Post_RHI_Score - Week1_RHI_Score)[ACLdata$Condition
== 1],
      y = (Post_RHI_Score - Week1_RHI_Score)[ACLdata$Condition
== 2])

# Student's (parametric) T-test comparing RHI from pre to post
t.test(x = (Post_RHI_Score - Week1_RHI_Score)[ACLdata$Condition
== 1],
      y = (Post_RHI_Score - Week1_RHI_Score)[ACLdata$Condition
== 2],
      var.equal = TRUE)

##### RHI - empowerment/zest subscale
#####

# Create a single composite score out of all the Week1 RHI items
Week1_RHIItems <- c("RHI2_Week1", "RHI6_Week1", "RHI11_Week1",
"RHI12_Week1", "RHI13_Week1")
Week1_RHIKey <- c(1,1,1,1,1)
Week1_RHITotal <- scoreItems(keys = Week1_RHIKey, items =
ACLdata[Week1_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

```



```

Week1_RHI_Score <- Week1_RHITotal$score

# Create a single composite score out of all the Week2 RHI items
Week2_RHIItems <- c("RHI2_Week2", "RHI6_Week2", "RHI11_Week2",
  "RHI12_Week2", "RHI13_Week2")
Week2_RHIKey <- c(1,1,1,1,1)
Week2_RHITotal <- scoreItems(keys = Week2_RHIKey, items =
  ACLdata[Week2_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week2_RHI_Score <- Week2_RHITotal$score

# Create a single composite score out of all the Week3 RHI items
Week3_RHIItems <- c("RHI2_Week3", "RHI6_Week3", "RHI11_Week3",
  "RHI12_Week3", "RHI13_Week3")
Week3_RHIKey <- c(1,1,1,1,1)
Week3_RHITotal <- scoreItems(keys = Week3_RHIKey, items =
  ACLdata[Week3_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week3_RHI_Score <- Week3_RHITotal$score

# Create a single composite score out of all the Week4 RHI items
Week4_RHIItems <- c("RHI2_Week4", "RHI6_Week4", "RHI11_Week4",
  "RHI12_Week4", "RHI13_Week4")
Week4_RHIKey <- c(1,1,1,1,1)
Week4_RHITotal <- scoreItems(keys = Week4_RHIKey, items =
  ACLdata[Week4_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week4_RHI_Score <- Week4_RHITotal$score

# Create a single composite score out of all the Week5 RHI items
Week5_RHIItems <- c("RHI2_Week5", "RHI6_Week5", "RHI11_Week5",
  "RHI12_Week5", "RHI13_Week5")
Week5_RHIKey <- c(1,1,1,1,1)
Week5_RHITotal <- scoreItems(keys = Week5_RHIKey, items =
  ACLdata[Week5_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

```

```

Week5_RHI_Score <- Week5_RHITotal$score

# Create a single composite score out of all the Post RHI items
Post_RHIItems <- c("RHI2_Post", "RHI6_Post", "RHI11_Post",
"RHI12_Post", "RHI13_Post")
Post_RHIKey <- c(1,1,1,1,1)
Post_RHITotal <- scoreItems(keys = Post_RHIKey, items =
ACLdata[Post_RHIItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 5)

Post_RHI_Score <- Post_RHITotal$score

# Visualize changes in means over all 6 weeks
ACL_data_frame <- data.frame(ACLdata, Week1_RHI_Score,
Week2_RHI_Score, Week3_RHI_Score, Week4_RHI_Score,
Week5_RHI_Score, Post_RHI_Score)
colnames(ACL_data_frame)[c(328:333)] <- c("RHI.1", "RHI.2",
"RHI.3", "RHI.4", "RHI.5", "RHI.6")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:333, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = RHI, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Empowerment/zest") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

##### RHI - Engagement subscale
#####

# Create a single composite score out of all the Week1 RHI items
Week1_RHIItems <- c("RHI1_Week1", "RHI3_Week1", "RHI5_Week1",
"RHI8_Week1", "RHI14_Week1")
Week1_RHIKey <- c(1,1,1,1,1)
Week1_RHITotal <- scoreItems(keys = Week1_RHIKey, items =
ACLdata[Week1_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,

```

```

max = 5)

Week1_RHI_Score <- Week1_RHITotal$score

# Create a single composite score out of all the Week2 RHI items
Week2_RHIItems <- c("RHI1_Week2", "RHI3_Week2", "RHI5_Week2",
"RHI8_Week2", "RHI14_Week2")
Week2_RHIKey <- c(1,1,1,1,1)
Week2_RHITotal <- scoreItems(keys = Week2_RHIKey, items =
ACldata[Week2_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week2_RHI_Score <- Week2_RHITotal$score

# Create a single composite score out of all the Week3 RHI items
Week3_RHIItems <- c("RHI1_Week3", "RHI3_Week3", "RHI5_Week3",
"RHI8_Week3", "RHI14_Week3")
Week3_RHIKey <- c(1,1,1,1,1)
Week3_RHITotal <- scoreItems(keys = Week3_RHIKey, items =
ACldata[Week3_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week3_RHI_Score <- Week3_RHITotal$score

# Create a single composite score out of all the Week4 RHI items
Week4_RHIItems <- c("RHI1_Week4", "RHI3_Week4", "RHI5_Week4",
"RHI8_Week4", "RHI14_Week4")
Week4_RHIKey <- c(1,1,1,1,1)
Week4_RHITotal <- scoreItems(keys = Week4_RHIKey, items =
ACldata[Week4_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week4_RHI_Score <- Week4_RHITotal$score

# Create a single composite score out of all the Week5 RHI items
Week5_RHIItems <- c("RHI1_Week5", "RHI3_Week5", "RHI5_Week5",
"RHI8_Week5", "RHI14_Week5")
Week5_RHIKey <- c(1,1,1,1,1)
Week5_RHITotal <- scoreItems(keys = Week5_RHIKey, items =
ACldata[Week5_RHIItems],

```

```

                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week5_RHI_Score <- Week5_RHITotal$score

# Create a single composite score out of all the Post RHI items
Post_RHIItems <- c("RHI1_Post", "RHI3_Post", "RHI5_Post",
"RHI8_Post", "RHI14_Post")
Post_RHIKey <- c(1,1,1,1,1)
Post_RHITotal <- scoreItems(keys = Post_RHIKey, items =
ACLdata[Post_RHIItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 5)

Post_RHI_Score <- Post_RHITotal$score

# Visualize changes in means over all 6 weeks
ACL_data_frame <- data.frame(ACLdata, Week1_RHI_Score,
Week2_RHI_Score, Week3_RHI_Score, Week4_RHI_Score,
Week5_RHI_Score, Post_RHI_Score)
colnames(ACL_data_frame)[c(328:333)] <- c("RHI.1", "RHI.2",
"RHI.3", "RHI.4", "RHI.5", "RHI.6")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:333, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = RHI, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Engagement") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

##### RHI - Authenticity subscale
#####

# Create a single composite score out of all the Week1 RHI items
Week1_RHIItems <- c("RHI4_Week1", "RHI7_Week1", "RHI9_Week1",
"RHI10_Week1")
Week1_RHIKey <- c(1,1,1,1)

```

```

Week1_RHITotal <- scoreItems(keys = Week1_RHIKey, items =
ACldata[Week1_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week1_RHI_Score <- Week1_RHITotal$score

# Create a single composite score out of all the Week2 RHI items
Week2_RHIItems <- c("RHI4_Week2", "RHI7_Week2", "RHI9_Week2",
"RHI10_Week2")
Week2_RHIKey <- c(1,1,1,1)
Week2_RHITotal <- scoreItems(keys = Week2_RHIKey, items =
ACldata[Week2_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week2_RHI_Score <- Week2_RHITotal$score

# Create a single composite score out of all the Week3 RHI items
Week3_RHIItems <- c("RHI4_Week3", "RHI7_Week3", "RHI9_Week3",
"RHI10_Week3")
Week3_RHIKey <- c(1,1,1,1)
Week3_RHITotal <- scoreItems(keys = Week3_RHIKey, items =
ACldata[Week3_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week3_RHI_Score <- Week3_RHITotal$score

# Create a single composite score out of all the Week4 RHI items
Week4_RHIItems <- c("RHI4_Week4", "RHI7_Week4", "RHI9_Week4",
"RHI10_Week4")
Week4_RHIKey <- c(1,1,1,1)
Week4_RHITotal <- scoreItems(keys = Week4_RHIKey, items =
ACldata[Week4_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week4_RHI_Score <- Week4_RHITotal$score

# Create a single composite score out of all the Week5 RHI items
Week5_RHIItems <- c("RHI4_Week5", "RHI7_Week5", "RHI9_Week5",
"RHI10_Week5")

```

```

Week5_RHIKey <- c(1,1,1,1)
Week5_RHITotal <- scoreItems(keys = Week5_RHIKey, items =
ACLdata[Week5_RHIItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week5_RHI_Score <- Week5_RHITotal$score

# Create a single composite score out of all the Post RHI items
Post_RHIItems <- c("RHI4_Post", "RHI7_Post", "RHI9_Post",
"RHI10_Post")
Post_RHIKey <- c(1,1,1,1)
Post_RHITotal <- scoreItems(keys = Post_RHIKey, items =
ACLdata[Post_RHIItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 5)

Post_RHI_Score <- Post_RHITotal$score

# Visualize changes in means over all 6 weeks
ACL_data_frame <- data.frame(ACLdata, Week1_RHI_Score,
Week2_RHI_Score, Week3_RHI_Score, Week4_RHI_Score,
Week5_RHI_Score, Post_RHI_Score)
colnames(ACL_data_frame)[c(328:333)] <- c("RHI.1", "RHI.2",
"RHI.3", "RHI.4", "RHI.5", "RHI.6")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:333, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = RHI, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Authenticity") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

##### State Self Compassion Scale Short Form
(SSCS-S) #####

# Create a single composite score out of all the pre SSCS items
Pre_SSCSItems <- c("SSCS1_Pre", "SSCS2_Pre", "SSCS3_Pre",
"SSCS4_Pre", "SSCS5_Pre", "SSCS6_Pre")

```

```

Pre_SSCKey <- c(1,-1,1,-1,1,-1)
Pre_SSCTotal <- scoreItems(keys = Pre_SSCKey, items =
ACLdata[Pre_SSCTotal$score],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 5)

```

```
Pre_SSCTotal_Score <- Pre_SSCTotal$score
```

```

# Create a single composite score out of all the Week1 SSCTotal
items
Week1_SSCTotal <- c("SSCTotal1_Week1", "SSCTotal2_Week1",
"SSCTotal3_Week1", "SSCTotal4_Week1", "SSCTotal5_Week1", "SSCTotal6_Week1")
Week1_SSCKey <- c(1,-1,1,-1,1,-1)
Week1_SSCTotal <- scoreItems(keys = Week1_SSCKey, items =
ACLdata[Week1_SSCTotal$score],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

```

```
Week1_SSCTotal_Score <- Week1_SSCTotal$score
```

```

# Create a single composite score out of all the Week2 SSCTotal
items
Week2_SSCTotal <- c("SSCTotal1_Week2", "SSCTotal2_Week2",
"SSCTotal3_Week2", "SSCTotal4_Week2", "SSCTotal5_Week2", "SSCTotal6_Week2")
Week2_SSCKey <- c(1,-1,1,-1,1,-1)
Week2_SSCTotal <- scoreItems(keys = Week2_SSCKey, items =
ACLdata[Week2_SSCTotal$score],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

```

```
Week2_SSCTotal_Score <- Week2_SSCTotal$score
```

```

# Create a single composite score out of all the Week3 SSCTotal
items
Week3_SSCTotal <- c("SSCTotal1_Week3", "SSCTotal2_Week3",
"SSCTotal3_Week3", "SSCTotal4_Week3", "SSCTotal5_Week3", "SSCTotal6_Week3")
Week3_SSCKey <- c(1,-1,1,-1,1,-1)
Week3_SSCTotal <- scoreItems(keys = Week3_SSCKey, items =
ACLdata[Week3_SSCTotal$score],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

```

```

Week3_SSCS_Score <- Week3_SSCSTotal$score

# Create a single composite score out of all the Week4 SSCS
items
Week4_SSCSItems <- c("SSCS1_Week4", "SSCS2_Week4",
"SSCS3_Week4", "SSCS4_Week4", "SSCS5_Week4", "SSCS6_Week4")
Week4_SSCSKey <- c(1,-1,1,-1,1,-1)
Week4_SSCSTotal <- scoreItems(keys = Week4_SSCSKey, items =
ACLdata[Week4_SSCSItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week4_SSCS_Score <- Week4_SSCSTotal$score

# Create a single composite score out of all the Week5 SSCS
items
Week5_SSCSItems <- c("SSCS1_Week5", "SSCS2_Week5",
"SSCS3_Week5", "SSCS4_Week5", "SSCS5_Week5", "SSCS6_Week5")
Week5_SSCSKey <- c(1,-1,1,-1,1,-1)
Week5_SSCSTotal <- scoreItems(keys = Week5_SSCSKey, items =
ACLdata[Week5_SSCSItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Week5_SSCS_Score <- Week5_SSCSTotal$score

# Create a single composite score out of all the post (Week 6)
SSCS items
Post_SSCSItems <- c("SSCS1_Post", "SSCS2_Post", "SSCS3_Post",
"SSCS4_Post", "SSCS5_Post", "SSCS6_Post")
Post_SSCSKey <- c(1,-1,1,-1,1,-1)
Post_SSCSTotal <- scoreItems(keys = Post_SSCSKey, items =
ACLdata[Post_SSCSItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 5)

Post_SSCS_Score <- Post_SSCSTotal$score

# Visualize changes in means over all 7 weeks

```



```

ACL_data_frame <- data.frame(ACLdata, Pre_SSCS_Score,
Week1_SSCS_Score, Week2_SSCS_Score, Week3_SSCS_Score,
Week4_SSCS_Score, Week5_SSCS_Score, Post_SSCS_Score)
colnames(ACL_data_frame)[c(328:334)] <- c("SSCS.1", "SSCS.2",
"SSCS.3", "SSCS.4", "SSCS.5", "SSCS.6", "SSCS.7")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:334, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = SSCS, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="State Self Compassion") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention")) +
  ylim(3, 3.5)

```

```

# A different way to make the B&W plot
gg <- ggplot(ACL_data_frame_long, aes(x=time, y=SSCS, group =
Condition, shape = Condition))
gg <- gg + stat_summary(fun="mean", geom="line", size=1.1,
                        aes(linetype = Condition),
show.legend=FALSE)
gg <- gg + stat_summary(fun="mean", geom="point", size=5,
                        aes(shape = Condition, fill="white"))
gg <- gg + scale_shape_discrete(name="Condition",
                                breaks=c("1", "2"),
                                labels=c("Control",
"Intervention"))
gg <- gg + labs(x="Week", y="State Self Compassion (SSCS)")
gg <- gg + coord_cartesian(ylim=c(2.8, 3.6))
gg

```

```

# T-test comparing SSCS from pre to post
t.test(x = (Post_SSCS_Score - Pre_SSCS_Score)[ACLdata$Condition
== 1],
       y = (Post_SSCS_Score - Pre_SSCS_Score)[ACLdata$Condition
== 2])

```

```

# Student's (parametric) T-test comparing SSCS from pre to post
t.test(x = (Post_SSCS_Score - Pre_SSCS_Score)[ACLdata$Condition
== 1],

```

```

      y = (Post_SSACS_Score - Pre_SSACS_Score)[ACLdata$Condition
== 2],
      var.equal = TRUE)

# T-test comparing SSACS at pre
t.test(x = (Pre_SSACS_Score)[ACLdata$Condition == 1],
      y = (Pre_SSACS_Score)[ACLdata$Condition == 2])

# T-test comparing SSACS at post
t.test(x = (Post_SSACS_Score)[ACLdata$Condition == 1],
      y = (Post_SSACS_Score)[ACLdata$Condition == 2])

##### Awareness Courage and Responsiveness Scale
(ACRS) #####

# Create a single composite score out of all the pre ACRS items
Pre_ACRSItems <- c("ACRS1_Pre", "ACRS2_Pre", "ACRS3_Pre",
"ACRS4_Pre", "ACRS5_Pre", "ACRS6_Pre", "ACRS7_Pre", "ACRS8_Pre",
"ACRS9_Pre", "ACRS10_Pre", "ACRS11_Pre", "ACRS12_Pre",
"ACRS13_Pre", "ACRS14_Pre", "ACRS15_Pre", "ACRS16_Pre",
"ACRS17_Pre", "ACRS18_Pre", "ACRS19_Pre", "ACRS20_Pre",
"ACRS21_Pre", "ACRS22_Pre", "ACRS23_Pre", "ACRS24_Pre")
Pre_ACRSKey <-
c(1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1)
Pre_ACRSTotal <- scoreItems(keys = Pre_ACRSKey, items =
ACLdata[Pre_ACRSItems],
                        totals = FALSE, missing = FALSE, min
= 1,
                        max = 7)

Pre_ACRS_Score <- Pre_ACRSTotal$score

# Create a single composite score out of all the Post ACRS items
Post_ACRSItems <- c("ACRS1_Post", "ACRS2_Post", "ACRS3_Post",
"ACRS4_Post", "ACRS5_Post", "ACRS6_Post", "ACRS7_Post",
"ACRS8_Post", "ACRS9_Post", "ACRS10_Post", "ACRS11_Post",
"ACRS12_Post", "ACRS13_Post", "ACRS14_Post", "ACRS15_Post",
"ACRS16_Post", "ACRS17_Post", "ACRS18_Post", "ACRS19_Post",
"ACRS20_Post", "ACRS21_Post", "ACRS22_Post", "ACRS23_Post",
"ACRS24_Post")
Post_ACRSKey <-
c(1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1)
Post_ACRSTotal <- scoreItems(keys = Post_ACRSKey, items =
ACLdata[Post_ACRSItems],

```

```

                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Post_ACRS_Score <- Post_ACRSTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_ACRS_Score,
Post_ACRS_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("ACRS.1", "ACRS.2")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = ACRS,
linetype = Condition)) +
  stat_summary(fun = mean, geom = "line", size = 1.25) +
  labs(x = "Time", y = "Awareness, Courage, and Love (ACRS)") +
  scale_x_continuous(breaks = 1:2, labels = c("Pre", "Post")) +
  scale_linetype_discrete(
    name = "Condition",
    breaks = c("1", "2"),
    labels = c("Control", "Intervention")
  )

# T-test comparing ACRS from pre to post
t.test(x = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 1],
      y = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 2])

# T-test comparing ACRS total at pre
t.test(x = (Pre_ACRS_Score)[ACLdata$Condition == 1],
      y = (Pre_ACRS_Score)[ACLdata$Condition == 2])

##### Other-awareness subscale of ACRS
#####

# Create a single composite score out of all the other awareness
items
Pre_ACRSItems <- c("ACRS1_Pre", "ACRS2_Pre", "ACRS3_Pre",
"ACRS4_Pre", "ACRS5_Pre")

```

```

Pre_ACRSKey <- c(1,1,1,1,1)
Pre_ACRSTotal <- scoreItems(keys = Pre_ACRSKey, items =
ACLdata[Pre_ACRSItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 7)

Pre_ACRS_Score <- Pre_ACRSTotal$score

# Create a single composite score out of all the Post ACRS items
Post_ACRSItems <- c("ACRS1_Post", "ACRS2_Post", "ACRS3_Post",
"ACRS4_Post", "ACRS5_Post")
Post_ACRSKey <- c(1,1,1,1,1)
Post_ACRSTotal <- scoreItems(keys = Post_ACRSKey, items =
ACLdata[Post_ACRSItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Post_ACRS_Score <- Post_ACRSTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_ACRS_Score,
Post_ACRS_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("ACRS.1", "ACRS.2")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = ACRS, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Other awareness") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

# T-test comparing ACRS from pre to post
t.test(x = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 1],
        y = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 2])

##### Self-awareness subscale of ACRS
#####

```

```

# Create a single composite score out of all the pre ACRS items
Pre_ACRSItems <- c("ACRS6_Pre", "ACRS7_Pre", "ACRS8_Pre",
"ACRS9_Pre", "ACRS10_Pre", "ACRS11_Pre")
Pre_ACRSKey <- c(1,1,1,1,1,1)
Pre_ACRSTotal <- scoreItems(keys = Pre_ACRSKey, items =
ACLdata[Pre_ACRSItems],
                                totals = FALSE, missing = FALSE, min
= 1,
                                max = 7)

Pre_ACRS_Score <- Pre_ACRSTotal$score

# Create a single composite score out of all the Post ACRS items
Post_ACRSItems <- c("ACRS6_Post", "ACRS7_Post", "ACRS8_Post",
"ACRS9_Post", "ACRS10_Post", "ACRS11_Post")
Post_ACRSKey <- c(1,1,1,1,1,1)
Post_ACRSTotal <- scoreItems(keys = Post_ACRSKey, items =
ACLdata[Post_ACRSItems],
                                totals = FALSE, missing = FALSE,
min = 1,
                                max = 7)

Post_ACRS_Score <- Post_ACRSTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_ACRS_Score,
Post_ACRS_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("ACRS.1", "ACRS.2")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = ACRS, color
= Condition)) +
  stat_summary(fun=mean, geom="line", size=1.25) +
  labs(x="Week", y="Self awareness") +
  scale_color_discrete(name="Condition",
                        breaks=c("1", "2"),
                        labels=c("Control", "Intervention"))

# T-test comparing ACRS from pre to post
t.test(x = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 1],

```



```

# T-test comparing ACRS from pre to post
t.test(x = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 1],
       y = (Post_ACRS_Score - Pre_ACRS_Score)[ACLdata$Condition
== 2])

##### Love/responsiveness subscale of ACRS
#####

# Create a single composite score out of all the pre ACRS items
Pre_ACRSItems <- c("ACRS18_Pre", "ACRS19_Pre", "ACRS20_Pre",
"ACRS21_Pre", "ACRS22_Pre", "ACRS23_Pre", "ACRS24_Pre")
Pre_ACRSKey <- c(1,1,1,1,1,1,1)
Pre_ACRSTotal <- scoreItems(keys = Pre_ACRSKey, items =
ACLdata[Pre_ACRSItems],
                           totals = FALSE, missing = FALSE, min
= 1,
                           max = 7)

Pre_ACRS_Score <- Pre_ACRSTotal$score

# Create a single composite score out of all the Post ACRS items
Post_ACRSItems <- c("ACRS18_Post", "ACRS19_Post", "ACRS20_Post",
"ACRS21_Post", "ACRS22_Post", "ACRS23_Post", "ACRS24_Post")
Post_ACRSKey <- c(1,1,1,1,1,1,1)
Post_ACRSTotal <- scoreItems(keys = Post_ACRSKey, items =
ACLdata[Post_ACRSItems],
                           totals = FALSE, missing = FALSE,
min = 1,
                           max = 7)

Post_ACRS_Score <- Post_ACRSTotal$score

# Plot change from pre to post
ACL_data_frame <- data.frame(ACLdata, Pre_ACRS_Score,
Post_ACRS_Score)
colnames(ACL_data_frame)[c(328:329)] <- c("ACRS.1", "ACRS.2")
ACL_data_frame_long <- reshape(ACL_data_frame, direction="long",
varying=328:329, sep=".")
ACL_data_frame_long$Condition <-
factor(ACL_data_frame_long$Condition)
ggplot(data = ACL_data_frame_long, aes(x = time, y = ACRS, color
= Condition)) +

```

```

stat_summary(fun=mean, geom="line", size=1.25) +
labs(x="Week", y="Responsiveness") +
scale_color_discrete(name="Condition",
                      breaks=c("1", "2"),
                      labels=c("Control", "Intervention"))

# T-test comparing ACRS from pre to post
t.test(x = (Post_ACRS_Score - Pre_ACRS_Score)[ACldata$Condition
== 1],
       y = (Post_ACRS_Score - Pre_ACRS_Score)[ACldata$Condition
== 2])

```



## APPENDIX E: PERMISSIONS

### Permission to reproduce the ACRS

On Mon, Mar 20, 2023 at 9:59 AM Michael Levin wrote:

Hi Emerson, our understanding is that it's public domain. You can go ahead and include it and that shouldn't be an issue in general for scales unless the authors specifically have a copyright and limited distribution requirement for a scale.

-Mike

From: Emerson Hardebeck  
Sent: Monday, March 20, 2023 9:43:19 AM  
To: Michael Levin  
Subject: Reproduce scale published in JCBS?

Hi Dr. Levin,

I am an active ACBS member and doctoral student at Antioch University in Seattle. In my dissertation, I collected data using the Awareness, Courage, and Responsiveness Scale, which was published in JCBS in 2019.

I am writing to you, as editor-in-chief of JCBS, to request your permission to reproduce the full text of this scale in my dissertation, as an appendix. I've already received permission from Adam Kuczynski, the developer of the scale and lead author of the publication - but he suggested also reaching out to you since JCBS may own the copyright on the article.

I do not currently intend to publish my dissertation in an academic journal, but it will be published electronically in the following places:

ProQuest Dissertations and Theses Database, a print on demand publisher,

<http://www.proquest.com/products-services/pqdt.html>

OhioLINK Electronic Theses and Dissertations center, an open access archive,

<https://etd.ohiolink.edu>

AURA: Antioch University Repository and Archive, an open access archive,

<http://aura.antioch.edu>

If you grant permission, I will acknowledge JCBS' ownership of the instrument in my dissertation and cite it appropriately. I will also include a copy of this email as evidence of your permission.

Please let me know if you agree to grant me permission to reproduce this instrument in my dissertation. If you have any questions or concerns, please do not hesitate to contact me.

Thank you for your time and consideration.

-Emerson

--

Emerson Hardebeck, MA  
 Doctoral Student  
 Antioch University Seattle  
 2400 3rd Ave. Suite 200  
 Seattle, WA 98121

### **Permission to reproduce the AAQ-2**

From: Steven C. Hayes  
 Date: Sun, Mar 19, 2023 at 2:31 PM  
 Subject: Re: Reproduce the AAQ in dissertation?  
 To: Emerson Hardebeck

Sure

- S

Steven C. Hayes  
 Foundation Professor  
 Behavior Analysis Program  
 Department of Psychology /298  
 University of Nevada  
 Reno, NV 89557-0062

On Sun, Mar 19, 2023 at 1:43 PM Emerson Hardebeck <ehardebeck@antioch.edu> wrote:  
 Hi Steve,

I am an active ACBS member and doctoral student at Antioch University in Seattle. I have been working with Mavis on my dissertation, investigating how FAP can be used to increase well-being in college undergraduates. For this project, I collected data using the AAQ-2 as one of my outcome measures. I am requesting your permission to reproduce the full text of this scale in my dissertation, as an appendix.

I do not currently intend to publish my dissertation in an academic journal, but it will be published electronically in the following places:

ProQuest Dissertations and Theses Database, a print on demand publisher,

<http://www.proquest.com/products-services/pqdt.html>

OhioLINK Electronic Theses and Dissertations center, an open access archive,

<https://etd.ohiolink.edu>

AURA: Antioch University Repository and Archive, an open access archive,

<http://aura.antioch.edu>

If you grant permission, I will acknowledge your authorship and ownership of the instrument in my dissertation and cite it appropriately. I will also include a copy of this email as evidence of your permission.

Please let me know if you agree to grant me permission to reproduce your instrument in my dissertation. If you have any questions or concerns, please do not hesitate to contact me.

Thank you for your time and consideration.

-Emerson

--

Emerson Hardebeck, MA  
 Doctoral Student  
 Antioch University Seattle  
 2400 3rd Ave. Suite 200  
 Seattle, WA 98121

### **Permission to reproduce the SSCS**

When I inquired about permissions for reproduction via email to lead author Dr. Kristen Neff, her assistant directed me to a publicly available page on her website ([www.self-compassion.org](http://www.self-compassion.org)) where the following statement is posted:

To Whom It May Concern:

Dr. Kristin Neff grants permission to use the State Self-Compassion Scales (Neff et al., 2021) for any purpose whatsoever, including research, clinical work, teaching, etc. Please cite:

Neff, K. D., Tóth-Király, I., Knox, M. C., Kuchar, A., & Davidson, O. (2021). The Development and Validation of the State Self-Compassion Scale (Long-and Short Form). *Mindfulness*, 12(1), 121-140.

Permission is also given to translate the State Self-Compassion Scale using the analytic approach to validate the factor structure that was established in:

Neff, K. D., Tóth-Király, I., Yarnell, L., Arimitsu, K., Castilho, P., Ghorbani, N.,... Mantios, M. (2019). Examining the Factor Structure of the Self-Compassion Scale using exploratory SEM bifactor analysis in 20 diverse samples: Support for use of a total score and six subscale scores. *Psychological Assessment*, 31 (1), 27-45.

Best wishes,  
 Kristin Neff, PhD