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Stat 211 - Problem Set #4

Current Study.

Underserved youth often face barriers to learning emotion regulation (ER) strategies, which contributes to psychopathology. We developed an app-based mentorship program to improve youth ER, in which mentors guide youth to achieve success and wellness goals using the app’s chat, video call, reflection, and goal tracker tools. Mentees and mentors completed a baseline survey that evaluated intrapersonal ER strategy use using the 18-item Difficulties in Emotion Regulation Scale Short Form (DERS; Kaufman et al, 2015), resilience using the 14-item Resilience Scale (RS-14; Wagnild, 2009), and mental health using the 4-item Patient Health Questionnaire (PHQ-4; Löwe et al, 2010) for depression and anxiety symptoms. For brevity, items of each scale are not included.

The purpose of this preliminary cross-sectional analysis is to evaluate the pre-intervention baseline data of participants. Specifically, we conducted a factorial analysis of variance (ANOVA) to determine the effects of participant type and gender on difficulties in emotion regulation or DERS score. We hypothesize that participant type will significantly affect DERS scores, because of the differences in motivations and experiences of participants.

Method.

We selected the two categorical variables of participant type and gender, along with the continuous variable of difficulties in emotion regulation for analysis. Participant type has two levels, either “mentee” or “mentor”. Participants designate their type upon signing up for the app or applying to be a mentor. Gender has three levels: “female”, “male”, and “non-binary”. Participants designate their gender while completing the baseline survey.

We used the DERS to measure difficulties in emotion regulation. The DERS loads onto six subscales: Lack of Access to Strategies (Strategies), Non-acceptance of Emotional Responses (Non-acceptance), Impulse Control Difficulties (Impulse), Difficulty Engaging in Goal-Directed Behavior (Goals), Lack of Emotional Awareness (Awareness), and Lack of Emotional Clarity (Clarity). Respondents indicate how often each item applies to them, with the options ranging from “*Almost Never (0-10%)”* scoring as a 1 to “*Almost Always (91-100%)”* scoring as a 5. The DERS is scored by summing all items for a total score, and by summing each subscale for subscale scores.

The sample includes 42 adult mentors (76% female, 19% male, 5% non-binary; *M* age = 24.5 years, *SD* = 5.3) and nine youth mentees (67% female, 33% male). Six mentees are rural high school students, and three are first-year college students. Descriptive statistics are shown in Table 1. Data collection is ongoing, but at the conclusion of the pilot study, we will evaluate within-person change in ER over time as a function of participation in the mentorship program. All analyses were conducted in R Version 4.2.1 (R Development Core Team., 2022) and R Studio (2022). Because of the small sample size of mentees, the results should be interpreted with care.

Results.

A factorial ANOVA was computed using the “stats” package version 4.2.1 (R Development Core Team, 2022). The ANOVA revealed a significant effect of participant type on DERS score, *F*(1, 46) = 6.37, *p* = 0.015, partial *η2* = 0.122. There was no significant effect of gender on DERS score, *F*(2, 46) = 1.23, *p* = 0.303, partial *η2* = 0.051. The interaction effect of participant type and gender on DERS score was not significant, *F*(1, 46) = 1.77, *p* = 0.190, partial *η2* = 0.04.

Simple effect analyses revealed nonsignificant effects of gender on DERS for each participant type. The mentor model had female as the reference level, with an intercept of 41.78 [38.54, 45.02] and coefficients of 6.72 for males [-0.53, 13.96], -5.78 for non-binary mentors [-19.14, 7.58], *F*(2, 39) = 2.35, *p* = 0.109, partial *η2* = 0.11. The mentee model had female as the reference level with an intercept of 53.33 [39.96, 66.71] and a coefficient for male mentees of -4.00 [-27.17, 19.17], *F*(1, 7) = 0.167, *p* = 0.695,partial *η2* = 0.23. This effect was selected because of the significant differences between mentor and mentee baseline variables revealed with two-sample t-tests. Compared to mentors, youth mentees reported higher total DERS scores, more non-acceptance of emotional responses, lack of emotional awareness, lack of emotional clarity, less resilience, and more depression and anxiety symptoms (Table 1). Thus, we are interested in how variables affect the participant types differently.

Discussion.

In line with our hypothesis, the factorial ANOVA revealed a significant effect of participant type on DERS score, indicating with a moderate to large effect size that participant type accounts for a higher proportion of variance in the DERS than gender. Mentees self-identify as benefiting from the program, meaning that they acknowledge that they can further develop their emotion regulation skills. Mentors are volunteering because they desire to share what they have learned from their experiences with youth. Thus, our mentors would be expected to have less difficulties in emotion regulation compared to the mentees. The t-tests show this directionality.

In contrast, we did not expect gender to significantly affect DERS score, because learning to regulate emotions is a central part of development regardless of gender. This hypothesis was supported by nonsignificant main and simple effect analyses. Gender is important to consider, since our sample has a higher proportion of female to male participants for mentors and mentees. This difference in proportions is hypothesized to be due to factors other than emotion regulation, such as stereotypes around which careers and opportunities that women are best suited for.

Overall, evaluating the baseline data of participants demonstrated the need for emotion regulation interventions for youth. The results indicate the *potential* for the youth to improve ER, resilience, and mental health through social modeling mechanisms. Whether this potential is actualized will be revealed at the end of the pilot.

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| **Table 1.** Mean differences between mentor and mentee baseline variables | | | | | | | |
| Variable and Subscale | | Mentors *M* (*SD*) | | Mentees *M* (*SD*) | Est. Difference [95% CI] | *p* | Cohen’s *d* |
| Difficulty in Emotion Regulation | | | 42.79 (9.35) | 52.00 (13.11) | -9.21 [-16.64, -1.785] | < 0.05\* | -0.92 |
|  | Strategies | | 5.17 (2.17) | 8.56 (4.45) | -3.39 [ -6.840, 0.059] | 0.053 | -0.97 |
|  | Non-acceptance | | 6.95 (2.67) | 9.56 (3.84) | -2.60 [-4.739, 0.468] | < 0.05\* | -0.90 |
|  | Impulse | | 4.14 (1.87) | 5.67 (3.81) | -1.52 [-4.476, 1.429] | 0.272 | -0.51 |
|  | Goals | | 8.45 (3.58) | 10.11 (2.67) | -1.66 [-4.476, 1.429] | 0.196 | -0.48 |
|  | Awareness | | 2.52 (2.29) | 4.33 (2.35) | -1.52 [-3.505, -0.114] | < 0.05\* | -0.79 |
|  | Clarity | | 5.60 (2.14) | 7.44 (2.13) | -1.85 [-3.429, -0.270] | < 0.05\* | -0.86 |
| Resilience | | | 86.48 (9.06) | 70.44 (7.58) | 16.03 [9.510, 22.55] | < 0.001 | 1.81 |
| Anxiety and Depression Symptoms | | | 2.57 (2.24) | 6.89 (3.48) | -4.32 [-6.154, -2.481] | < 0.001 | -1.74 |
|  | Anxiety | | 1.69 (1.52) | 4.33 (1.66) | -2.64 [-3.783, -1.502] | < 0.001 | -1.71 |
|  | Depression | | 0.88 (1.21) | 2.56 (2.13) | -1.67 [-3.330, -0.019] | < 0.05 | -0.97 |
|  | *Note:* N = 51 (n = 42 mentors, n = 9 mentees). Subscales of the variables are indented underneath the total score. P-values correspond to two-tailed two-sample t-tests. Abbreviations: M = mean, SD = standard deviation, CI = confidence interval. | | | | | | |

References.

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