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BRIEF REPORT



## Evaluating the effects of gratitude interventions on college student well-being

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### ABSTRACT

**Objective:** To evaluate the effects of three different gratitude interventions on college student well-being. **Participants:** Participants were 132 college students at a university in the northwest sampled between September 2019 and February 2020. **Methods:** Participants were randomly assigned to one of three gratitude interventions (journaling, reflection, app prompted reflection) or an activity-matched control group for 8 weeks and completed baseline and post-intervention assessments of well-being (e.g., satisfaction with life, happiness, resilience, depression, anxiety, and stress). **Results:** Participants in all three gratitude intervention groups showed improvements in well-being over time, whereas the control group did not report any such improvements. Gratitude journaling appeared to have the most significant positive impact on well-being and affective functioning. **Conclusions:** Gratitude interventions are simple, easy to implement, low-cost tools that can increase overall well-being and decrease negative affect, stress, and anxiety in college students.

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Gratitude; intervention; negative affect; stress; well-being

College students consistently report being negatively impacted by stress and mental health problems. For example, in the most recent National College Health Association survey, stress (41.7%), anxiety (31.8%), and depression (24.3%) were the most commonly cited factors that adversely affected students' academic performance.<sup>1</sup> Unfortunately, students experiencing high levels of stress and negative affect rarely seek help,<sup>2,3</sup> suggesting a need for colleges to offer mental wellness interventions that can be easily delivered to and implemented by the general student population.

Helping students develop a gratitude practice of their own may be a good candidate for such an intervention. Practicing gratitude does not mean “thinking positively” or ignoring the stressful or negative aspects of life. Rather, practicing gratitude helps counteract negativity bias<sup>4</sup> by prompting individuals to notice, appreciate, and remember the good things that are already present in their life, thus giving them a more balanced and accurate view.<sup>5</sup> Gratitude practices are simple, inexpensive, easy to learn and maintain, and can lead to several psychological benefits such as higher life satisfaction, positive affect, optimism, well-being, and self-esteem,<sup>5,6</sup> as well as lower negative affect, depressive symptoms, and envy.<sup>7</sup> Developing a gratitude practice has also proven to significantly improve outcomes for students who do seek counseling.<sup>8</sup>

Whereas practicing gratitude appears to improve well-being in various populations, many previous studies have been hampered by the use of passive control groups, which raises the possibility that the benefits linked with

adopting a gratitude practice may be due to expectancy effects rather than the gratitude practice itself.<sup>5</sup> For example, a recent study in Turkey found that 3 weeks of gratitude journaling led to significantly higher life satisfaction, college adjustment, and positive affect in first year college students, when compared to a passive control group.<sup>9</sup> Conversely, another recent study found that instructing college students to spend five minutes daily thinking about things they were grateful for had positive effects on well-being and mental health. However, an activity-matched control group also showed similar improvements.<sup>10</sup> Taken together, such findings suggest that different types of gratitude interventions (e.g., journaling or reflecting) may have differential effects on well-being. Therefore, more research is needed to determine the extent to which practicing gratitude may benefit college students when compared to activity-matched control groups.

The present study sought to evaluate three different methods of gratitude practice in college students: (1) Three Good Things Gratitude Journaling; (2) Hand Over Heart Gratitude Reflection; and (3) App Prompted Hand Over Heart Gratitude Reflection. The Hand Over Heart Reflection is a gratitude practice that is relatively common; however, it has not yet been empirically evaluated, with or without the app prompt. Therefore, we aimed to test the Hand Over Heart Gratitude Reflection practices against an already established method of practicing gratitude, Three Good Things, as well as to an activity-matched control. We hypothesized that the primary outcome of this study would be that the students

who practiced gratitude in the experimental conditions would report significant increases in well-being after eight weeks, whereas students in an activity-matched control group would show no such improvements. Secondary analyses were also conducted to explore whether different types of gratitude practice may confer greater benefits on well-being, as well as the extent to which frequency of gratitude practice may impact other variables related to well-being such as satisfaction with life, happiness, gratitude, resilience, and positive affect, as well as decreased negative affect, depression, anxiety, and stress.

## Methods

### Participants

One-hundred and thirty-two students at a private four-year university in the Pacific Northwest were recruited via Psychology courses and given partial course credit for their participation. Participants ranged from 18 to 24 years old and averaged at 19 years-old ( $SD = 1$ ), and primarily identified as female (73.7%; 25.6% male) and white (61.1%; 22.1% Asian American, 9.2% Hispanic/Latinx, 4.6% multi-racial, 1.5% Hawaiian/Pacific Islander, and 0.8% Native American/Alaskan Native).

### Procedures

The study was approved by the Institutional Review Board (IRB) at the authors' institution and took place between the months of September 2019 and February 2020. Participants came from a pool of approximately 25–30 different class sections of various psychology courses. After providing informed consent, participants completed baseline measures and the researchers used blocked randomization to assign participants to one of the three experimental groups or a Free Journaling control group. Those in the Free Journaling group were asked to spend 2–5 min each day journaling (i.e., writing in a notebook or journal) about anything they desired. Those in the Three Good Things Gratitude Journaling group were asked to spend 2–5 min each day writing down three things they were grateful for. Those in the Hand Over Heart Gratitude Reflection group were asked to place their hand over their heart twice a day, breathe deeply, and focus for a few moments on something or someone they were grateful for. Those in the App Prompted Hand Over Heart Group downloaded an app that was created specifically for this study and is not available in the app store. The app displayed a smiling heart widget on their cellphone that gradually turned from light pink to dark red over 12 h, along with a counter showing how much time passed since participants last practiced gratitude. Participants in this group were given a wristband with a sensor linked to the app that reset the counter and smiling heart widget when participants placed their hand over their heart. The app did not collect any data from participants and was solely used to prompt participants to practice gratitude. It is important to note that all participants who had an

Android device were placed into the App Prompted Hand Over Heart Group since the App was only compatible with Android devices. Additional details regarding different gratitude practices are provided by Wood and colleagues.<sup>5</sup>

All participants were provided written instructions for their intervention and were blind to the study objectives, hypotheses, and whether they were in an experimental or control group. Two months after their initial study session, 108 participants (81.8% of those recruited for the study) completed the study measures a second time. We asked participants in all groups, including the control, during the time 2 survey what they liked/didn't like about the study and what aspects of the study worked well/didn't work well for them, as a social validity check. Positive responses included that it was simple and easy to do, didn't take much time, and that it was beneficial to their mental health. Negative responses included that it was occasionally hard to remember to complete their activity every day, and that the study duration was too long.

### Measures

#### Satisfaction with life scale (SWLS)

The SWLS is a reliable ( $\alpha = .79$ ) and valid 5-item assessment of one's life satisfaction (e.g., "The conditions of my life are excellent") on a 7-point scale with total scores ranging from 5 to 35.<sup>11</sup>

#### World health organization-five well-being index (WHO-5)

The WHO-5 is a reliable ( $\alpha = .79$ ) and valid 5-item assessment that measures well-being (e.g., "I have felt cheerful and in good spirits") on a 6-point scale. Scores range from 0–25, with scores of 12 or lower indicating low well-being and risk for depression or anxiety.<sup>12</sup>

#### Oxford happiness questionnaire (OHQ)

The OHQ is a reliable ( $\alpha = .93$ ) and valid 29-item instrument that assesses personal happiness (e.g., "I laugh a lot") on a 6-point scale. Response values are averaged with total scores ranging from 1 to 6.<sup>13</sup>

#### Gratitude questionnaire (GQ-6)

The GQ-6 is a reliable ( $\alpha = .76$ ) and valid 6-item assessment of gratitude (e.g., "I have so much in life to be thankful for") on a 7-point scale. Responses are summed and total scores range from 6 to 42.<sup>14</sup>

#### Brief resilience scale (BRS)

The BRS is a reliable ( $\alpha = .84$ ) and valid 6-item scale that assesses resilience (e.g., "I usually come through difficult times with little trouble") on a 5-point scale. Response values are averaged with total scores ranging from 1 to 5.<sup>15</sup>

#### Positive and negative affect scale (PANAS)

The PANAS is a reliable and valid 20-item scale that assesses positive (e.g., "excited";  $\alpha = .87$ ) and negative (e.g.,

“hostile”;  $\alpha = .87$ ) affect on a 5-point scale. The 10 positive items and 10 negative items are summed separately, resulting in two scores ranging from 0 to 50.<sup>16</sup>

**Depression, anxiety, and stress scale (DASS)**

The DASS is a reliable and valid 24-item scale that assesses depression (e.g., “I felt that life was meaningless”;  $\alpha = .86$ ), anxiety (e.g., “I felt I was close to panic”;  $\alpha = .82$ ), and stress (e.g., “I found it difficult to relax”;  $\alpha = .76$ ) on a 4-point scale. The 8-items on each of the three subscales are summed separately.<sup>17</sup>

**Frequency of gratitude practice**

One question on the survey asked participants in all groups “over the last week, how many days have you practiced gratitude or paused to think about something you were thankful for?”

**Results**

**Effects of gratitude interventions**

Participant adherence to the intended protocol did not differ significantly across groups and ranged from 51.4% to 61%, which resulted in the use of an intention to treat (ITT) protocol for the analyses. Drop-out rates from baseline to time 2 were as follows: journal control group = 32.5%; Hand Over Heart = 17.1%; 3 Good things = 9.8%; and App group = 0%. Data regarding why participants did not complete the study were not collected, and a complete-case analysis

was conducted ( $n=108$ ), which excluded the 24 participants who did not complete the time 2 assessment. Paired samples  $t$ -tests were used to evaluate our primary outcome and determine whether participants in each group reported significant changes from baseline to post-intervention. As seen in Table 1, the Free Journaling control group reported a significant decrease in gratitude from Time 1 to Time 2,  $t(26) = -3.042, p < 0.01, d = 0.45$  with no other variables significantly changing from baseline to post-intervention. The App Prompted Hand Over Heart group reported a significant post-intervention increase in well-being,  $t(9) = 3.00, p < .05, d = 0.87$  with no other variables changing significantly from Time 1 to Time 2. The Hand-Over-Heart group reported a significant increase in well-being from Time 1 to Time 2,  $t(34) = 2.269, p < 0.05, d = 0.37$  and decreases in negative affect,  $t(32) = -2.168, p < 0.05, d = 0.30$  anxiety,  $t(30) = -2.933, p < 0.01, d = 0.46$  and stress,  $t(32) = -2.624, p < 0.05, d = 0.43$ . The Three Good Things group reported significant increases from Time 1 to Time 2 in well-being,  $t(37) = 3.189, p < 0.01, d = 0.60$ , happiness,  $t(36) = 2.342, p < 0.05, d = 0.28$ , and resilience,  $t(37) = 2.720, p < 0.01, d = 0.35$ , as well as decreased negative affect,  $t(36) = -2.099, p < 0.05, d = 0.46$ , stress,  $t(36) = -4.851, p < 0.001, d = 0.77$ , and anxiety,  $t(35) = -3.546, p < 0.001, d = 0.56$ . An increase in frequency of practicing gratitude was observed in the Three Good Things group,  $t(36) = 5.025, p < 0.001, d = 0.81$ , whereas no other group showed such an increase post-intervention.

For our secondary analyses, ANOVAs with follow-up contrasts revealed the Three Good Things and Hand Over Heart groups reported higher gratitude  $t(104) = 2.00, p < .05$ ,

**Table 1.** Pre- and post-intervention mean scores on well-being variables by experimental group.

|                        |        | Journal                     | App prompted    | Hand over                 | Three good                 |
|------------------------|--------|-----------------------------|-----------------|---------------------------|----------------------------|
|                        |        | Control group               | Hand over heart | Heart                     | Things                     |
| Time 1 $N = 132$       |        |                             |                 |                           |                            |
| Female, Male           | 98, 34 | $N = 40$ 29,11              | $N = 10$ 5,5    | $N = 41$ 32,9             | $N = 41$ 32,9              |
|                        |        | $N = 27$ 18,9               | $N = 10$ 5,5    | $N = 33$ 27,6             | $N = 37$ 31,6              |
| Time 2 $N = 108$       |        |                             |                 |                           |                            |
| Female, Male           | 82, 26 | Mean (SD)                   | Mean (SD)       | Mean (SD)                 | Mean (SD)                  |
| Well-being             | Time 1 | 12.80 (4.4)                 | 12.10* (3.3)    | 14.37* (3.9)              | 13.11** (3.7)              |
|                        | Time 2 | 13.79 (4.6)                 | 15.10* (3.6)    | 15.83* (3.9)              | 15.45** (4.1)              |
| Satisfaction with life | Time 1 | 24.00 (5.3)                 | 24.70 (5.3)     | 27.14 (5.6)               | 26.08 (6.2)                |
|                        | Time 2 | 24.68 (5.5)                 | 24.70 (5.3)     | 27.14 (5.6)               | 26.08 (6.2)                |
| Happiness              | Time 1 | 4.23 (0.7)                  | 4.19 (0.4)      | 4.39 (0.7)                | 4.49 (0.6)                 |
|                        | Time 2 | 4.23 (0.9)                  | 4.06 (0.6)      | 4.42 (0.8)                | 4.32 (0.6)                 |
| Gratitude              | Time 1 | 36.67** (4.7)               | 36.56 (5.5)     | 37.18 <sup>a</sup> (4.7)  | 36.82 (4.0)                |
|                        | Time 2 | 34.44** <sup>ab</sup> (5.1) | 35.10 (4.3)     | 37.18 <sup>a</sup> (4.7)  | 36.82 <sup>b</sup> (4.3)   |
| Resilience             | Time 1 | 3.41 (0.7)                  | 3.80 (0.9)      | 3.48 (0.7)                | 3.28* (0.6)                |
|                        | Time 2 | 3.41 (0.6)                  | 3.47 (0.9)      | 3.37 (0.7)                | 3.03* (0.8)                |
| Positive affect        | Time 1 | 34.41 (6.7)                 | 32.40 (6.9)     | 35.09 (6.6)               | 35.00 (7.3)                |
|                        | Time 2 | 33.00 (8.0)                 | 31.00 (6.6)     | 33.94 (6.8)               | 33.63 (7.0)                |
| Negative affect        | Time 1 | 23.54 (7.9)                 | 22.90 (8.0)     | 20.76* (7.0)              | 19.65** <sup>a</sup> (5.0) |
|                        | Time 2 | 24.11 <sup>a</sup> (8.1)    | 25.70 (7.6)     | 22.81* (6.5)              | 22.54* (7.3)               |
| Depression             | Time 1 | 10.59 (7.7)                 | 10.80 (6.8)     | 6.97 (8.5)                | 5.33 (6.8)                 |
|                        | Time 2 | 8.15 (9.5)                  | 12.20 (8.2)     | 7.83 (7.8)                | 7.56 (6.4)                 |
| Anxiety                | Time 1 | 11.78 (9.5)                 | 10.22 (7.5)     | 6.32** (6.9)              | 5.11*** <sup>a</sup> (5.9) |
|                        | Time 2 | 9.64 <sup>a</sup> (8.4)     | 13.33 (6.6)     | 9.81** (8.2)              | 8.89** (7.4)               |
| Stress                 | Time 1 | 15.92 (9.0)                 | 12.20 (10.2)    | 8.48** <sup>a</sup> (7.1) | 8.32** <sup>b</sup> (6.4)  |
|                        | Time 2 | 13.38 <sup>ab</sup> (8.3)   | 16.40 (7.8)     | 11.58* (7.2)              | 13.46** (6.9)              |
| Days per week grateful | Time 1 | 3.04 (2.1)                  | 3.60 (2.0)      | 4.21 (1.8)                | 4.27** (2.0)               |
|                        | Time 2 | 3.78 (2.0)                  | 2.40 (1.8)      | 3.55 (2.0)                | 2.59** (2.1)               |

Note. Within-group scores that differ significantly from Time 1 to Time 2 are noted as \* =  $p < .05$  and \*\* =  $p < .01$ . Means across rows with the same letter superscript indicate between-group differences that are significant at  $p < .05$ .

$d=0.25$  and  $t(104)=2.25$ ,  $p<.05$ ,  $d=0.23$ , respectively, and lower stress  $t(102)=2.63$ ,  $p<.05$ ,  $d=0.68$  and  $t(102)=2.48$ ,  $p<.05$ ,  $d=0.63$ , respectively, than the control group post-intervention, with the Three Good things also reporting lower negative affect  $t(102)=2.58$ ,  $p<.05$ ,  $d=0.66$ , and anxiety  $t(101)=2.31$ ,  $p<.05$ ,  $d=0.62$  than the control group post-intervention.

### Gratitude frequency and well-being

At Time 2, frequency of practicing gratitude was significantly correlated with satisfaction with life,  $r(107)=0.22$ ,  $p<0.05$ , well-being,  $r(108)=0.20$ ,  $p<0.05$ , happiness,  $r(106)=0.33$ ,  $p<0.01$ , gratitude,  $r(106)=0.29$ ,  $p<0.01$ , resilience,  $r(107)=0.23$ ,  $p<.01$ , and positive affect.  $r(106)=0.39$ ,  $p<0.001$ . Frequency of gratitude practice was significantly inversely correlated with stress,  $r(106) = -0.23$ ,  $p<0.05$ .

### Discussion

The primary purpose of this study was to evaluate the effectiveness of three different gratitude interventions within college students. Consistent with previous studies in various populations,<sup>5</sup> our study suggests that practicing gratitude can have a positive impact on student well-being. Specifically, after eight weeks of the gratitude intervention, the Three Good Things and Hand Over Heart groups reported significantly higher well-being and lower negative affect, stress, and anxiety, whereas the Free Journaling control group showed no such improvements over time. Indeed, the only change from time 1 to time 2 observed in the control group was a significant decrease in gratitude, which suggests the possibility that actively practicing gratitude may help protect against reductions in gratitude that may be experienced by some students over the course of the academic year. The Three Good Things group appeared to derive the most benefits as they also showed increases in resilience, happiness, and frequency of practicing gratitude. The App Prompted Hand Over Heart group reported changes in the expected direction on most dependent variables that were of similar magnitude to the other experimental groups and also increased the number of days per week they practiced gratitude from 2.4 to 3.6. However, due to the low number of participants in the App Prompted group only the increase in well-being was statistically significant.

Importantly, this study suggests that adopting a gratitude practice may help decrease feelings of stress and anxiety, which students report are the most common factors that negatively impact their academic performance and progress toward graduation.<sup>1</sup> Almost as important, a social validity check revealed that the gratitude interventions were described by participants as beneficial and easy to do. In addition, gratitude interventions are extremely cost-effective, easy to teach and learn, and can be implemented at times that fit within one's daily life, thus making them a good candidate for campus-wide wellness promotion efforts, as well as efforts targeted to individual students in need, such as those who seek counseling or help with managing stressors that are negatively impacting them.

### Limitations

This study was limited by a sample that was disproportionately young and female and did not include any participants who identified as Black or African-American, thus limiting the ability to generalize the results. Although we did not find any significant sex or racial/ethnic differences on any of the well-being variables in this study either before or after the intervention, it will be important to continue evaluating the extent to which diverse groups of students may or may not benefit from gratitude interventions. The study was also limited by the app only being compatible with Android phones, thus severely limiting our ability to recruit participants for that group as most students on our campus do not use Android phones. This lowered statistical power and introduced the possibility that the results may have been biased somewhat by assignment to treatment conditions that was not entirely random. That said, there were no significant differences between any of the groups on any variables at baseline. The app showed promise in improving well-being and decreasing negative affect, but future studies with more participants should be conducted to determine the effectiveness of tech-based prompts to practice gratitude. An additional potential limitation of this study is that it is possible that some participants may have disclosed which experimental group they were in to another participant over the course of the study, thus introducing a possible contamination threat. That said, because participants were blind to the purposes and hypotheses of the study, it is unlikely that any such potential contamination significantly affected the results. Drop-out rates also varied across the experimental and control groups, which may have introduced bias if the reasons that participants dropped out of the study were related to the outcome variables assessed. The final limitation of this study is that no manipulation checks were employed to be certain that participants adhered to their practices. At time 2, participants were asked to report how many times per week they practiced gratitude, but it is not possible to completely ensure they were truthful and adhered to their interventions for the full 8 weeks, thus it is possible that the results may have been affected by self-report bias.

### Conclusions

The results of this study indicate that both gratitude journaling and gratitude reflection practices can be easily taught to and implemented by college students and show promise in improving well-being and decreasing stress and anxiety. Because teaching students to practice gratitude does not require any special expertise, a variety of campus professionals such as residence life staff, wellness and prevention coordinators, health center staff, peer-health educators, faculty, or even online programs could easily teach students how to implement a regular gratitude practice. Such efforts would likely increase the well-being of students who participate, while also helping them to better cope with stressors within their academic and personal lives. Relatedly, colleges may also benefit from improved retention and academic persistence, as well as a more resilient and engaged campus community.

## Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States of America and received approval from the Institutional Review Board of the University of Portland.

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