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The impact of a gratitude intervention on mental well-being during COVID-19: A quasi-experimental study of university students

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Abstract

Previous research suggest that gratitude interventions are effective in improving mental well-being, which might be beneficial to university students during the COVID-19 pandemic. This quasi-experimental study sought to investigate if a gratitude intervention will lead to higher mental well-being of university students during the COVID-19 pandemic. Participants ($N = 47$) mental well-being was assessed before and after 10 weekly gratitude reflection journals and statistically compared with a control group ($N = 40$). An analysis of covariance (ANCOVA) was used to analyze the data. The treatment group showed significantly higher well-being after the gratitude intervention compared with the control group (Cohen's $d = 0.74$). The treatment group significantly increased (Cohen's $d = 0.35$) and the control group significantly decreased (Cohen's $d = -0.41$). Gratitude interventions may be effective in improving the mental well-being of university students even during a crisis such as the COVID-19 pandemic. Gratitude interventions seem suitable for improving mental well-being for temporary mental challenges of university students such as a pandemic or other forms of crisis.

KEYWORDS

COVID-19, gratitude, intervention, mental health, mental well-being, pandemic

INTRODUCTION

Mental well-being/health is a complex construct covering both affect (subjective experience of happiness and life satisfaction) and psychological functioning and self-realization (Tennant et al., 2007). Recent research showed that self-isolation/social distancing due to the COVID-19 pandemic might lead to poor mental well-being (Smith et al., 2020; Wang et al., 2020). Smith et al. (2020) conducted a study in the United Kingdom ($N = 932$) that concluded that 36.8% of individuals that self-isolated/socially distanced reported a prevalence of poor mental well-being. Mental well-being reported in the study was lower than pre-pandemic data in the United Kingdom. Hence, the pandemic may lead to lower levels of mental well-being (i.e. increased levels of anxiety and depression) (Smith et al., 2020; Wang et al., 2020). One potential cause may be the intolerance of uncertainty in combination with fear of COVID-19 (Satici et al., 2020). The risk of lower mental well-being during the pandemic may be higher among younger adults. For instance, Smith et al. (2020) reported that young age groups are associated with low levels of mental well-being. Furthermore, Savage et al. (2020) conducted a longitudinal cohort study and found that university students during the COVID-19 lockdown in the United Kingdom reported lower mental well-being levels than before the lockdown.

Campion et al. (2020) mention that one reason for decreasing mental well-being may be that mental health interventions have become more limited during the COVID-19 pandemic. They state three challenges of the pandemic: (1) the prevention of increased mental disorders and the reduction of mental well-being; (2) protect people with a mental disorder from COVID-19 and the associated consequences; and (3) provide appropriate mental health interventions. This study will align with the item (3) and take the approach of promoting mental well-being via an intervention instead of treating illnesses (i.e. positive psychology) (Slade, 2010).

Based on previous research, mental well-being can be improved with *gratitude interventions* (Carson et al., 2010; Emmons & McCullough, 2003; Emmons & Stern, 2013; Gabana et al., 2019; Jackowska et al., 2016; Killen & Macaskill, 2015; Rash et al., 2011; Seligman et al., 2005). There are two basic components in the definition of gratitude: (1) a positive personal outcome that is not necessarily deserved or earned and (2) the positive outcome is caused by external sources (e.g. another person) (Emmons & McCullough, 2003). This definition was derived from the definitions by Bertocci and Millard (1963) "the willingness to recognize the unearned increments of value in one's experience" (p. 389) and Solomon (1977) "an estimate of gain coupled with the judgment that someone else is responsible for that gain" (p. 316) (as cited in Emmons & McCullough, 2003, pp. 377–378).

The purpose of this study is to explore a positive psychology intervention focusing on the impact of gratitude on mental well-being (i.e. a gratitude intervention) during the COVID-19 pandemic. The use of gratitude journals during the COVID-19 pandemic has been proposed by Fishman (2020) to enhance mental well-being. Although a multi-component positive psychology approach is common (Seligman, 2018; Tejada-Gallardo et al., 2020), this study was designed to take a single-component approach. More specifically, this study is based on the experimental

study by Emmons and McCullough (2003), which explored the influence of grateful thinking on psychological well-being in a single-component approach. Participants were asked to write 10 weekly (positive) gratitude journals and showed heightened psychological well-being compared with the other experimental conditions (hassles (negative) and event (neutral)). This quasi-experimental study will explore the impact of 10 weekly gratitude journals on the mental well-being of university students during the COVID-19 pandemic. During the pandemic, most universities engage in online education; hence, the gratitude intervention delivery is internet-based.

THEORETICAL FRAMEWORK AND HYPOTHESIS: GRATITUDE INTERVENTIONS AND MENTAL WELL-BEING

The study by Emmons and McCullough (2003), which this study is based on, provided evidence that the intervention of 10 weekly gratitude journals leads to higher levels of mental well-being (i.e. a more positive outlook of one's life as a whole and more positive expectations concerning the upcoming week). Because the publication of the study by Emmons and McCullough (2003), there have been many other experimental studies outlining the positive effects of gratitude interventions on mental well-being. For instance, gratitude interventions demonstrated to have positive effects on being thankful for more things in their lives, life satisfaction, environmental mastery, and social feelings (Carson et al., 2010), self-esteem and life satisfaction (Rash et al., 2011), higher levels of eudemonic well-being and decreased levels of perceived stress (Killen & Macaskill, 2015), improvement in subjective well-being resulting in increased sleep quality and reductions in blood pressure (Jackowska et al., 2016), and increases in well-being (state gratitude, sport satisfaction, social support) and significant decreases in ill-being (psychological distress and athlete burnout) (Gabana et al., 2019).

Although there seems to be amble support that gratitude interventions positively affect mental well-being, there also have been challenges to the efficacy of gratitude interventions (Wood et al., 2010). Davis et al. (2016) conducted a series of meta-analyses investigating the efficacy of gratitude interventions across three outcomes (gratitude, anxiety, psychological well-being). They concluded that gratitude interventions generally have limited effects. Other recent meta-analyses concluded that gratitude interventions have a small effect on depression (Cregg & Cheavens, 2021; Dickens, 2017) and anxiety (Cregg & Cheavens, 2021). Dickens (2017) states explicitly that the effect of gratitude interventions may be limited for university students as they are potentially less invested in the practice when the intervention is part of the course. Adults show the best results if they volunteer for these self-improvement interventions.

Hypothesis 1. During the COVID-19 pandemic and in an online education setting, university students who engage in 10 weekly gratitude reflection journals (treatment group) will have significantly higher self-reported mental well-being levels than students who do not engage in weekly gratitude reflection journals (control group).

Hypothesis 2. The intervention of 10 weekly gratitude reflection journals will have a small to medium effect size when comparing the treatment group with the control group.

METHOD

Sample

This was a quasi-experimental study utilizing a convenience sample. The data was collected at a medium-sized, private university located in the Southeastern Unites States during the Fall semester of 2020 (online education due to the COVID-19 pandemic started in Spring 2020). The sample consisted of students in four courses of the School of Business. Two business strategy undergraduate courses, one organizational behavior undergraduate course, and one organizational behavior graduate course.

Participants

The four participating classes had a total of 114 students. Eighty-nine students participated in the study. An informed consent was obtained from all participants. The data included incomplete records. A complete record consisted of a pre-intervention mental well-being assessment (T1), 10 gratitude journals, and a post-intervention mental well-being assessment (T2). A total of two records were removed as two participants stopped participation during the gratitude intervention also did not complete the post-intervention mental well-being assessment, leading to a final sample of $N = 87$. The overall response rate was 76.3%, which was determined using $N = 87$ and 114 potential participants. The student standings were 77.0% undergraduate students (all seniors) and 23.0% graduate students. The sample consisted of 44.8% females and 56.2% males.

Data collection procedure

The two organizational behavior classes were the treatment group ($N = 47$). The two business strategy classes served as the control group ($N = 40$). The control group and treatment group completed a mental well-being assessment before and after the gratitude intervention of the treatment group. For the treatment group, at the beginning of the course, participants were given assignments for 10 weekly gratitude reflection journals via the internet-based Learning Management System. The assignment was based on Emmons and McCullough's (2003) gratitude condition. The instructions provided, identical to Emmons and McCullough (2003), were:

> There are many things in our lives, both large and small, that we might be grateful about. Think back over the past week and write down on the lines below up to five things in your life that you are grateful or thankful for. (p. 379)

Examples of gratitude experiences listed by participants were as follows: "thankful for my health and the good health of my family and friends in the midst of COVID," "hear birds chirping at sunrise," "for my supportive family," "I have several distant family members that contracted COVID-19. I am grateful that they all successfully recovered from the virus and are doing well," "the joy I get from spending time with my children," "catching up with an old neighbor," and "a negative result on my COVID test." The control group did not get any assignments.

Measure: Mental well-being ratings

Mental well-being was assessed using the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) by Tennant et al. (2007). The WEMWBS consists of 14 items. Sample items are "I've been feeling optimistic about the future," "I've been dealing with problems well," and "I've been feeling close to other people." Participants were asked to rate the frequency of experiencing each statement over the past 2 weeks using a 5-point Likert scale from 1 (*none of the time*) to 5 (*all of the time*). The overall Cronbach's alpha for the WEMWBS was .89.

The measure was used twice for all participants (treatment group and control group) to assess the participants' mental well-being. The assessment was given to all participants the week before the first gratitude assignment (T1, September 2020) and the week after the last gratitude journal (T2, November 2020).

Demographic variables

The demographic variables were gender, based on Smith et al. (2020), and class standing (i.e. undergrad and graduate), based on Savage et al. (2020) and Smith et al. (2020).

ANALYSES

The descriptive statistics were performed in *R* (R Core Team, 2020), including mean total score, means and standard deviations (Sproull, 1995), and reliability of the instruments (Sekaran & Bougie, 2011). A normality check of the data was performed using an Anderson-Daring (AD) test (Razali & Wah, 2011). The test revealed that the data was normally distributed. Based on the results of the AD test and the hypothesis emphasizing the difference in treatment effect between groups, inferential statistics employed a parametric analysis of covariance (ANCOVA), including effect size (Fritz et al., 2012; Van Breukelen, 2006). The ANCOVA assumptions were tested and met according to Keselman et al. (1998) and Van Breukelen (2006). The data supporting this study's findings are available from the corresponding author upon reasonable request.

RESULTS

Descriptive statistics and reliabilities

Table 1 displays the mean total score, means, standard deviations, and reliabilities of mental well-being for the treatment and control groups. The demographic variables data for the treatment and control groups are shown in Table 2. *T*-tests were performed to analyze if there is a difference in mental well-being at T1 based on the demographic variables (gender and class standing) for the sample as a whole. None of the t-tests was significant, indicating no difference in mental well-being at T1 based on the demographic variables. Correlations for the demographic variables with mental well-being at T2 for the sample as a whole were calculated. None of the demographic variables showed significant correlations with mental well-being at T2. Hence, none of the demographic variables will be used as a control variable for hypotheses

TABLE 1 Means, standard deviations, and alpha coefficients

Variable	Mean total score	M	*SD*	Cronbach's alpha
1. MWB C T1	51.0	3.64	0.36	.88
2. MWB T T1	51.4	3.67	0.48	.88
3. MWB C T2	49.0	3.50	0.45	.86
4. MWB T T2	53.5	3.82	0.54	.92

Note: $N = 87$. Control variables (student standing and gender) not shown.
Abbreviations: MWB, mental well-being; T, treatment condition; C, control group; T1, before 10-week gratitude journal; T2, after 10-week gratitude journal of the treatment group.

TABLE 2 Demographic variables data for the treatment and control groups

Variable	Male	Female	Undergraduate	Graduate
1. Control group	67.5%	32.5%	100.0%	0.0%
2. Treatment group	44.7%	55.3%	57.4%	42.6%

testing. Further, a one-way analysis of variance (ANOVA) was performed to explore a difference in mental well-being across the four participating classes at T1 due to the non-randomized research design. The result of the ANOVA was not significant, indicating that there is no difference in mental well-being at T1 across the four participating classes.

Hypotheses testing: The impact of gratitude on mental well-being

A one-way between-subjects ANCOVA was performed to examine the hypotheses (between-group changes). The one-way between-subjects ANCOVA revealed that there was a statistically significant difference in T2 mental well-being scores between the control and treatment groups. After adjustment for T1 mental well-being score, there was a statistically significant difference in T2 mental well-being score between the groups, $F(1, 84) = 13.25$, $p < .001$. The effect size (Cohen's d) was medium 0.74 95% CI [0.30, 1.18] for the mean difference of the treatment group to the control group at T2. Post hoc analysis was performed with a Bonferroni adjustment. The mean mental well-being score was statistically significantly greater in the treatment group (3.81 ± 0.11) compared with the control group (3.52 ± 0.12), $p < .001$. There was support for Hypothesis 1 that 10 weekly gratitude reflection journals significantly improved mental well-being for university students during the COVID-19 pandemic compared with university students that did not engage in the intervention. There was also support for Hypothesis 2 as the effect size was medium.

Supplemental analysis

A supplemental analysis will be performed with a focus on within-group changes. Meta-analytical findings indicate that gratitude interventions have small to medium effects on mental well-being (Cregg & Cheavens, 2021; Davis et al., 2016; Dickens, 2017). The supplemental analysis will investigate the changes within the control and treatment groups.

A paired t-test was performed to compare the mental well-being of the control group T1 versus T2. The results from T1 (M = 3.64, $SD = 0.36$) and T2 (M = 3.50, $SD = 0.45$) indicate that the group that did not receive an intervention of 10 weekly gratitude journals resulted in a significant decrease in mental well-being, $t(39) = -2.57$, $p = .014$. The effect size (Cohen's d) was small −.41 95% CI [−.73, −.08] for the mean difference of the control group between T1 and T2.

Furthermore, a paired t-test was performed to compare the level of mental well-being for the treatment group T1 versus T2. The results from T1 (M = 3.67, $SD = 0.48$) and T2 (M = 3.82, $SD = 0.54$) indicate that the level of mental well-being is significantly higher, $t(46) = 2.42$, $p = .01$. The effect size (Cohen's d) was small .35 95% CI [.06, .65] for the treatment group's mean difference between T1 and T2.

DISCUSSION

Previous research provided evidence of the effectiveness and positive influence of gratitude interventions (Carson et al., 2010; Emmons & McCullough, 2003; Emmons & Stern, 2013; Gabana et al., 2019; Jackowska et al., 2016; Killen & Macaskill, 2015; Rash et al., 2011; Seligman et al., 2005). This study confirmed that a gratitude intervention effectively improves the mental well-being of university students during the COVID pandemic. The treatment group showed significantly higher well-being after the 10 weekly gratitude reflection journals. This study explored a single-component positive psychology intervention approach. The impact of the gratitude intervention was significantly positive and of medium effect size (Cohen's $d = 0.74$) comparing the treatment group with the control group after the 10 weekly gratitude reflection journals.

The supplemental analysis confirms results in the study by Savage et al. (2020) that students' mental well-being is declining during the COVID-19 pandemic without intervention (Cohen's $d = -0.41$; small effect size). Furthermore, the supplemental analysis showed that the within-group effect size of the gratitude intervention was small (Cohen's $d = 0.35$). This finding confirms recent research that gratitude interventions, specifically in a single-component intervention approach, have a small effect (Cregg & Cheavens, 2021; Davis et al., 2016; Dickens, 2017; Wood et al., 2010).

Theoretical implications

In a greater sense, this study adds more evidence to the importance of the field of positive psychology. Positive psychology studies positive emotions, positive character traits, and enabling institutions (Seligman et al., 2005) utilizing positive interventions that may relieve human suffering, weaknesses, and disorder. This study utilized a positive psychology intervention that resulted in the participants' improved mental well-being. A positive psychology intervention demonstrates medium and positive effects during a pandemic when comparing the treatment group with the control group and small and positive effects on mention well-being within the treatment group.

There was a decline in mental well-being without intervention during the COVID-19 pandemic (Savage et al., 2020; Smith et al., 2020; Wang et al., 2020), confirmed by this study's control group. The decline in mental well-being has been documented in previous crises, such as the financial crisis in 2007 in the United States and spreading worldwide in the following years

(Guardiola et al., 2015; Van Hal, 2015). For instance, Van Hal (2015) recommends that policymakers support psychological coping mechanisms during a crisis due to the risk of increased suicides. Hence, the research on interventions preventing a decline in mental well-being during a crisis is essential.

Practical implications

Campion et al. (2020) state that the challenge of providing appropriate mental health interventions during a pandemic might be one reason for decreasing mental well-being during the COVID-19 pandemic. Self-help internet-based positive psychology interventions are popular (Bolier et al., 2013) and might be an opportunity to improve mental well-being in a situation with limited access to help, such as a pandemic. However, internet-based interventions are not necessarily simpler than face-to-face interventions. They are different modes of communication. Previous research findings guide the approach of self-help internet-based interventions. Internet-based interventions should have guided professional support to yield similar effectiveness as face-to-face interventions (Cuijpers & Kleiboer, 2017). Bolier et al. (2013) also recommend interactive support and add that an intervention should be based on individual needs rather than a "one-size-fits-all" approach.

The effectiveness of the gratitude interventions may be short-term. In the Seligman et al. (2005) study, the boost in happiness and decreased depressive symptoms were maintained at follow-up assessments up to 1 month later. However, by 3 months, participants in the gratitude condition were no happier or less depressed than they had been at baseline. Therefore, gratitude interventions seem suitable for temporary challenges such as a pandemic or other forms of crisis to minimize a decline in mental well-being potentially.

Finally, a multi-component positive psychology approach should be considered (Seligman, 2018; Tejada-Gallardo et al., 2020). The scope of a multi-component approach is to target both perspectives of well-being: hedonia (pleasure maximization and pain avoidance) and eudaimonia (realization of one's true inner potential and virtue as a pathway to experiencing a meaningful and fulfilling life) (Tejada-Gallardo et al., 2020). Although even a multi-component approach yields small effects, there is evidence that the effects of a multi-component approach remain significant in the short and long term.

Limitations and future research

There were five limitations of the study. First, the participation in the intervention was not randomly assigned across all participants. Although measures were taken to verify that there was no significant difference group in mental well-being at T1, a quasi-experiment has an inherent risk of selection bias in which the intervention/treatment group may differ from the baseline/control group (Cook et al., 2002). Further, studies without randomization limit the study's ability to conclude a causal association between an intervention and an outcome concerning the overall treatment effect's mechanism (how the changes in outcomes occur) (Gopalan et al., 2020). A randomized approach would have been more suitable. Second, the ANCOVA approach can introduce bias if there is measurement error and a non-randomized research design (Jamieson, 2004). Third, there was no measure of gratitude and, therefore, no assessment of impact or cause and effect due to gratitude can be made. Fourth, there was no additional

mental well-being assessment after T2 (i.e. the week after the last journal), which was not possible due to term/semester limitations. A follow-up would be desired after 30 days, 3 months, and 6 months (Seligman et al., 2005) to determine the effectiveness of the intervention more thoroughly. Lastly, the convenience sample was a specific cross-section of a general population limited to university seniors and graduate students in the United States. Findings in gratitude interventions might not generalize to other cultures (Mendonça et al., 2018; Mercon-Vargas et al., 2018; Naito & Washizu, 2015).

Although crisis-type research opportunities during the pandemic are going to diminish, research needs to continue to improve mental well-being in critical conditions. A pandemic/crisis is an increased risk concerning mental well-being (Smith et al., 2020; Wang et al., 2020). Hence, experimental research should continue in extraordinary settings. Furthermore, Campion et al. (2020) mention the difficulty of administering intervention in times of crisis. Further, the delivery method of interventions needs to be explored more thoroughly. Ye et al. (2014) explored the effectiveness of internet-based interventions and found them to be effective. Sheldon and Yu (2021) concluded that texting gratitude is effective. However, some form of human support seems to be needed (Bolier et al., 2013; Cuijpers & Kleiboer, 2017). More understanding is needed in these alternatives to face-to-face interventions. Finally, according to Watkins et al. (2017), joy is a discrete positive emotion related to gratitude. Gratitude may be necessary for experiences of joy. During a crisis, negative emotions may be experienced. Positive emotions may undo negative emotions (Fredrickson, 2001), improving mental well-being. The interaction of gratitude and other positive emotions should be explored in more detail. Moreover, positive emotions may mediate the relationship between gratitude and mental well-being.

CONCLUSIONS

Mental well-being declines during a crisis (Guardiola et al., 2015; Savage et al., 2020; Smith et al., 2020; Van Hal, 2015; Wang et al., 2020). A decline in mental well-being can lead to increased levels of anxiety and depression (Smith et al., 2020; Wang et al., 2020) and even the risk of increased suicide (Van Hal, 2015). As confirmed in this study, gratitude interventions are one protentional path to minimize the negative effects of a crisis on mental well-being. Gratitude interventions have small to medium positive effects on mental well-being (Cregg & Cheavens, 2021; Davis et al., 2016; Dickens, 2017; Wood et al., 2010) and might be short-term (Seligman et al., 2005). However, during a crisis, which is temporary, simply maintaining mental well-being could be one way to cope more effectively with a crisis.

CONFLICT OF INTERESTS

There is no conflict of interest.

ETHICS STATEMENT

The research proposal was reviewed by the Universities RRB and approved. Ethical principles were followed in this study.

DATA AVAILABILITY STATEMENT

The data supporting this study's findings are available from the corresponding author upon reasonable request.

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