ORIGINAL ARTICLE

The effects of gratitude and kindness on life satisfaction, positive emotions, negative emotions, and COVID-19 anxiety: An online pilot experimental study

Jesus Alfonso D. Datu[1] | **Jana Patricia M. Valdez**[2] |
Dennis M. McInerney[3] | **Ryan Francis Cayubit**[4]

[1]Department of Special Education and Counselling, Integrated Centre for Wellbeing (i-WELL), The Education University of Hong Kong, Hong Kong

[2]Department of Early Childhood Education, The Education University of Hong Kong, Hong Kong

[3]Department of Special Education and Counselling, The Education University of Hong Kong, Hong Kong

[4]Department of Psychology, University of Sto. Tomas, Manila, The Philippines

Correspondence
Dr. Jesus Alfonso D. Datu, Department of Special Education and Counselling, Integrated Centre for Wellbeing (i-WELL), The Education University of Hong Kong, Rm. D2-2F-28, 10 Lo Ping Rd., Tai Po, New Territories, Hong Kong.
Email: jadatu@eduhk.hk

Abstract

The continuous surge in the number of confirmed diagnoses and fatalities associated with the coronavirus disease 2019 (COVID-19) has caused debilitating economic, educational, social, and psychological issues. However, little is known about how psychological interventions may boost well-being outcomes amid the pandemic. This research addresses this gap by examining the effects of gratitude and kindness interventions on life satisfaction, positive emotions, negative emotions, and COVID-19 anxiety via an online pilot experimental study. A 3-week online pilot experiment was implemented among 107 Filipino undergraduate students ($M = 20.27$; $SD = 1.10$). These participants were randomly assigned to kindness ($n = 37$), gratitude ($n = 32$), and control ($n = 38$) conditions. The results showed that there were significant differences on positive emotions when controlling for the baseline well-being, gratitude, and kindness scores across all conditions (i.e., gratitude, kindness, and control). Participants assigned in the gratitude and kindness conditions had significantly higher scores on positive emotions than those in the control condition.

The findings point to the emotional benefits associated with promoting gratitude and kindness during the COVID-19 pandemic. This research contributes to scarce literature on the applicability of well-being interventions in non-Western cultural contexts.

KEYWORDS

COVID-19 anxiety, gratitude, kindness, subjective well-being

INTRODUCTION

The exponential rise in the health risks associated with the coronavirus disease 2019 (COVID-19) pandemic has urged many countries to impose community-based lockdowns, curfews, and physical distancing policies. These measures have significantly reduced people's face-to-face social interactions with family members, friends, and co-workers, particularly those living alone, by placing them in household-level isolation bubbles (Sibley et al., 2020). Interestingly, a recent study showed that there was a small decline in social connectedness during the first wave of the outbreak (Folk et al., 2020). There is also a growing concern regarding how these physical and social distancing measures can have detrimental impacts on students' social and psychological well-being (Barthelemy, 2020; Sibley et al., 2020), especially when school-based mental health services (e.g., counseling activities) are significantly disrupted (Golberstein et al., 2020). However, there is limited research into psychological interventions that can potentially promote individuals' well-being amid the COVID-19 global crisis.

Recognizing the possible consequences of the pandemic on students' social connectedness and well-being, this research concentrates on the effects of interpersonally oriented strengths such as gratitude and kindness on well-being during the pandemic. Gratitude refers to a state resulting from acknowledgement of desirable opportunities, outcomes, and gifts contributed by external factors such as friends, parents, or luck (Emmons et al., 2003). Studies have shown that gratitude has been associated with increased life satisfaction (Datu & Bernardo, 2020; Datu & Mateo, 2015), happiness (Froh et al., 2008; Seligman et al., 2005), healthy eating behavior (Fritz et al., 2019), and positive emotions (Datu & Mateo, 2020). Further, this construct has been linked to reduced levels of depression (Lambert et al., 2012) and anxiety (Kendler et al., 2003). Given that early and contemporary perspectives (Algoe, 2012; Algoe et al., 2020) have argued that gratitude can foster high-quality interpersonal ties, it is likely that promoting opportunities to be grateful may facilitate social connectedness, even in situations where face-to-face interpersonal actions are restricted due to pandemic-related social distancing measures. This interpersonal mechanism might account for the positive impacts of gratitude on well-being outcomes. However, there is mixed evidence regarding the impacts of gratitude interventions, with some research showing significant positive effects (Froh et al., 2008, 2014; Watkins et al., 2003), and others demonstrating non-significant impacts on well-being and psychological outcomes (Fritz et al., 2019; Koay et al., 2020). A recent meta-analytic review (Cregg & Cheavens, 2020) also revealed that gratitude interventions had small effect sizes on depression and anxiety.

Kindness refers to doing good deeds for other people (Peterson & Seligman, 2004). There is evidence showing how kindness relates to increased levels of life satisfaction (Buchanan & Bardi, 2010; Datu & Bernardo, 2020; Otake et al., 2006), optimism (Kerr et al., 2015), and positive interpersonal relationships (Layous et al., 2012). Recalling acts of kindness has been found to be an effective approach in enhancing happiness (Aknin et al., 2012; Ko et al., 2019). Further, research has demonstrated that kindness-enhancing activities can fulfill basic psychological needs for relatedness (Chancellor et al., 2018). However, a recent study (Shin et al., 2021) indicated that the effects of recalling acts of kindness was stronger when these behaviors were directed towards close others rather than distant people (e.g., strangers) in a collectivist context. A meta-analytic review has also shown that kindness interventions had small to medium effect sizes on well-being indices (Curry et al., 2018).

Despite evidence supporting the possible benefits associated with promoting gratitude and kindness, gaps in the research remain. First, given that prior studies focused on evaluating the effects of gratitude and kindness interventions on life satisfaction, positive emotions, and healthy behaviors, their findings do not generalize to mental health outcomes associated with the COVID-19 health crisis (e.g., COVID-19 anxiety). Further, a critical limitation in the positive psychological intervention literature involves the dominance of studies exploring the effectiveness of these interventions in Anglo-American and Western samples (Shin & Lyubomirsky, 2017) or Western, educated, industrialized, rich, and democratic (WEIRD) societies (Henrich et al., 2010) such as the United States. Given that existing literature (Lyubomirsky & Layous, 2013) indicates that cultural contexts might potentially moderate the effects of positive psychological interventions on well-being, it is essential to explore whether the benefits of gratitude and kindness interventions may generalize in non-WEIRD societies. Second, past research commonly relied on face-to-face or traditional formats of implementing these positive psychological interventions, which are challenging to administer, especially seeing as social distancing and lockdown measures have been continuously implemented in many societies. This clearly underscores the importance of designing and implementing alternative modes of well-being interventions. Third, although there have been investigations demonstrating the detrimental psychological impacts of the COVID-19 pandemic among undergraduate students in mainland China (Fu et al., 2021) and the United States (Kibbey et al., 2021; Tasso et al., 2021), evidence on the effectiveness of online positive psychological interventions in promoting COVID-19-related well-being outcomes remains relatively scarce.

Therefore, this pilot online experimental study aims to examine the effects of gratitude and kindness interventions on life satisfaction, positive emotions, negative emotions, and COVID-19 anxiety among undergraduate students in the Philippine setting.

THEORETICAL FRAMEWORK

This research aims to explore the effects of kindness and gratitude on well-being outcomes using a 3-week online experimental design. Drawing from the *positive activity model* (Lyubomirsky & Layous, 2013), it is hypothesized that promoting gratitude and kindness may not only enhance life satisfaction and positive emotions but also reduce maladaptive outcomes (i.e., negative emotions and COVID-19 anxiety). This framework argues that positive psychological activities, such as writing a note of gratitude to COVID-19 healthcare workers via social media posts or donating money to nongovernment organizations (NGOs), can serve as

opportunities to satisfy basic psychological needs for autonomy, relatedness, and competence, which, in turn, facilitates psychological well-being (Ryan & Deci, 2017). For example, sharing an appreciation post towards medical frontline workers during the pandemic using Facebook may increase the likelihood of gaining positive feedback and having meaningful interactions with existing friends, which can potentially fulfill basic psychological needs for relatedness, and consequently fosters happiness. In other words, if gratitude- and kindness-enhancing activities provide possible routes to satisfying relatedness, it is logical to predict that these endeavors can catalyze well-being outcomes.

Existing literature supports this study's hypotheses on the role of gratitude and kindness in students' well-being. Research has showcased the psychological and mental health benefits associated with gratitude-enhancing (Cregg & Cheavens, 2020; Froh et al., 2008) and kindness-enhancing (Nelson et al., 2016; Otake et al., 2006) exercises. Given that gratitude (Algoe, 2012; Wood et al., 2008) and kindness (Chancellor et al., 2018) yield desirable impacts on relational satisfaction and perceived satisfaction of psychological needs for relatedness, which has enhanced well-being during the COVID-19 pandemic (Behzadnia & FatahModares, 2020), the argument for the psychological mechanism accounting for the expected benefits of these interventions is reasonable. However, because recent studies have cast doubts on the effectiveness of gratitude-enhancing (Shin et al., 2020) and kindness-enhancing (Shin et al., 2021) interventions in collectivist cultures, it is premature to assume that that these positive psychological activities may promote well-being in non-WEIRD settings (e.g., the Philippines). Given that research (Lyubomirsky & Layous, 2013) has emphasized the moderating role that cultural and contextual factors play in the efficacy of positive psychological interventions, it is important to explore the effectiveness of online gratitude- and kindness-enhancing exercises in the Philippine context.

This study hypothesizes that 3-week online pilot gratitude and kindness interventions will have positive impacts on life satisfaction (Hypothesis 1) and positive emotions (Hypothesis 2). These positive activities are also expected to yield reductions in participants' negative emotions (Hypothesis 3) and COVID-19 anxiety (Hypothesis 4).

METHODS

Participants

In total, 160 students from different classes in a private university in Manila city were invited to participate in this online pilot experimental study via the convenience sampling approach. However, only 129 Filipino undergraduate psychology students participated in the first week of this study. The final sample of this research comprised 107 students ($n_{kindness} = 37$, $n_{gratitude} = 32$, and $n_{control} = 38$) due to attrition (i.e., non-participation in succeeding weekly tasks). The participants' average age was 20.27 ($SD = 1.10$). In terms of the participants' demographic profile across conditions, the majority of the participants assigned in the control ($n = 22$), gratitude ($n = 24$), and kindness ($n = 31$) conditions were female. The average ages of participants assigned in the control, gratitude, and kindness conditions were 20.21 ($SD = 0.87$), 20.19 ($SD = 0.69$), and 20.41 ($SD = 1.52$), respectively. The results of the sensitivity analysis using G*Power indicated that the minimum detectable effect given the current sample size was around $f = .30$, suggesting medium effects (Cohen, 1988). Students who participated in this pilot study received course credits.

Measures

Gratitude

The 4-item gratitude subscale of the Values-in-Action Youth or VIA-Youth Inventory (Park & Peterson, 2006) was used to assess participants' perceived sense of thankfulness. Items were rated on a 5-point Likert scale, with 1 indicating "not like me at all" and 5 indicating "very much like me." Cronbach's alpha coefficients of this scale in the pretest and posttest phases were .78 and .74, respectively.

Kindness

The 4-items kindness subscale of the VIA-Youth Inventory (Park & Peterson, 2006) was used to measure participants' ability to perform kind acts. Items were marked on a 5-point Likert scale, with 1 indicating "not like me at all" and 7 indicating "very much like me." Cronbach's alpha coefficients of this scale in the pre-test and post-test phases were .71 and .73, respectively.

Life satisfaction

To assess the participants' perceived satisfaction with life, the 6-item Riverside Life Satisfaction (Margolis et al., 2019) was used. Items were rated on a 7-point Likert scale, with 1 indicating "strongly disagree" and 7 indicating "strongly agree." Sample items in this scale included the following: "I like how my life is going" and "I am content with my life." Cronbach's alpha coefficients of this scale in the pretest and posttest phases were .78 and .83, respectively.

Positive and negative emotions

The 12-item Scale of Positive and Negative Emotions (Diener et al., 2009) was used to measure participants' positive and negative emotions. Items were rated on a 5-point Likert scale, with 1 indicating "very rarely or never" and 5 indicating "very often or always." Sample items in this scale included "happy" and "joyful" (positive emotions), as well as "sad" and "afraid." Cronbach's alpha coefficients of this scale in the pretest and posttest phases were .78 and .91, respectively, for positive emotions as well as .75 and .77, respectively, for negative emotions.

COVID-19 anxiety

The 5-item COVID anxiety scale (Lee, 2020) was used to assess participants' perceived anxiety towards COVID-19 health issue. Items were rated on a 5-point Likert scale with 0 indicating "not at all" and 4 indicating "nearly every day over the last two weeks." Sample items in the scale included "I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus (COVID-19)" and "I lost interest in eating when I thought about or was exposed to information about the coronavirus (COVID-19)." Cronbach's alpha coefficients of this scale in the pre-test and post-test phases were .87 and .83, respectively.

Procedures

Prior to conducting this study, approval was obtained from the Human Research Ethics Committee of The Education University of Hong Kong. Then, the study was advertised through an online social media platform (i.e., Facebook) and emails to co-instructors who were teaching undergraduate classes in psychology. To ensure that prospective participants did not get concrete clues regarding the actual hypotheses of our study, we changed the title of our experiment to "Examining the effects of personality and weekly contemplative activities on emotions." We also created a cover story, which specified that our study was about the role of personality on emotional states. Participants who indicated an interest in taking part in the study received a link containing an active consent form. Participants were randomly assigned to one of the study's conditions to increase the likelihood that they would have equivalent outcome variables prior to facilitating experimental tasks across conditions. Randomization was manually carried out by writing the names of the participants on individual pieces of paper, putting these pieces of paper in a container, and then picking them out at random to assign them to a condition. Only one member of the research team was aware of which participant was assigned to a specific condition. This same researcher also distributed the assigned tasks to all participants across conditions. Initially, the students who agreed to participate in the investigation were randomly assigned to either the control ($n = 44$), gratitude ($n = 43$), or kindness condition ($n = 42$). Participants assigned to the control, gratitude, and kindness conditions were asked to accomplish a weekly task for three consecutive weeks. Due to attrition, the final sample for each condition was as follows: (a) control ($n = 38$), (b) gratitude ($n = 32$), and (c) kindness ($n = 37$). On average, the participants' weekly task outputs in the control, gratitude, and kindness conditions comprised 13, 61, and 67 words, respectively. After implementation, a debriefing letter was distributed to all participants via email, which described the actual objectives and hypotheses of the investigation.

Two research assistants who were unaware of the study's objectives and hypotheses rated the weekly outputs of all participants across conditions. Each assistant independently rated the extent to which these outputs reflected gratitude or kindness using a 1–5 rating scale, with a higher score suggesting stronger manifestation of these virtues. Then, the participants' average scores for gratitude and kindness were calculated and compared for students across conditions to assess whether experimental manipulation was successful. Statistical analysis was conducted to address the study's hypotheses.

Experimental protocol

In the first week of the experiment, an online pretest survey containing questionnaires on gratitude, kindness, and mental health outcomes, as well as online experimental tasks for each condition were distributed to participants. The online surveys and tasks were created via Google Forms. The following 10-min tasks were assigned to students belonging to these conditions: (1) control = "List five academic or work-related activities that you accomplished this week"; (2) gratitude = "List five specific things, events, or people that you are grateful for"; and (3) kindness = "List five acts of kindness that you did for your family, friends, or strangers this week."

In the second week, a similar task was given to participants in the control condition, while those who were assigned to the gratitude and kindness conditions received the following

instructions: (1) gratitude condition = "Reflect on the person that you are most grateful for since the start of the COVID-19 health crisis. Write a thank you letter which describes how and why you are thankful to him/her"; and (2) = "Recall and narrate a specific kind act that you performed in the past few days to help a family, friend, or stranger cope with financial or non-financial (e.g., social and emotional) challenges associated with COVID-19. Describe this person's reaction to your behavior."

In the third week, unlike those in the control condition who were asked to perform a similar task, participants in the remaining conditions were given the following instructions: (1) gratitude = "Select your most favorite quotation about gratitude. Describe a recent experience or event demonstrating this quote's relevance to your life"; (2) kindness = "Select your favorite quotation about kindness. Describe a recent experience or event demonstrating this quote's relevance to your life." An online posttest survey with a modified sequence of questionnaires on kindness, gratitude, and well-being was then administered to participants. Finally, a debriefing letter describing the actual objectives and hypotheses of the study was sent to all participants. The number of students who participated in each weekly task across conditions is shown in Figure 1.

Data analyses

The descriptive statistical analyses such as mean, standard deviation, and absolute values for skewness and kurtoses as well as the Cronbach's alpha coefficients of the scales were all
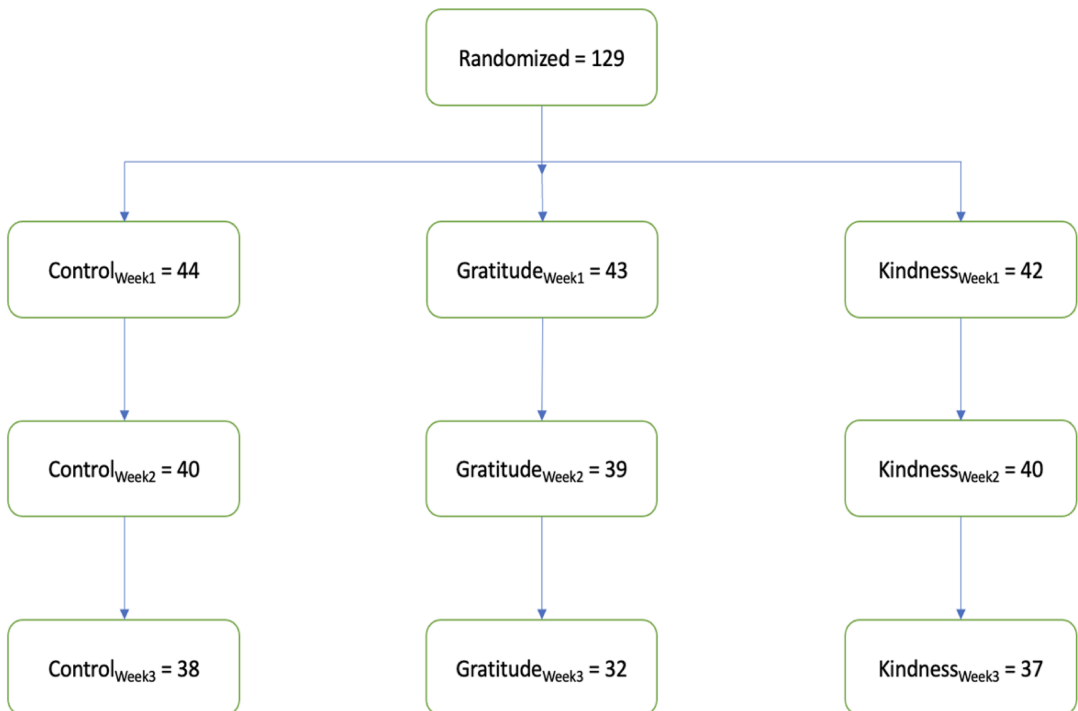
FIGURE 1 Number of participants who completed weekly tasks across the control, gratitude, and kindness conditions [Color figure can be viewed at wileyonlinelibrary.com]

calculated. To estimate the research assistants' inter-rater agreement on the degree to which the participants' experimental weekly outputs reflected gratitude or kindness, intra-class coefficients were also calculated. Analysis of variance (ANOVA) was then conducted to assess mean-level differences in gratitude and kindness across conditions to determine the success of the study's experimental manipulation. Multivariate analysis of covariance (MANCOVA) was carried out to examine mean-level differences in subjective well-being dimensions and COVID-19 anxiety, after controlling for the participants' baseline scores in outcomes, gratitude, and kindness. Follow-up univariate analyses of variances were performed to identify differences in well-being outcomes across experimental conditions. Specifically, we added pre-test scores on outcomes as covariates in the final analyses to reduce systematic bias and statistically address issues relate to possible non-equivalence on specific variables across groups or conditions.

RESULTS

This section describes the findings of the manipulation check, descriptive statistics, and multivariate analyses to address the study's research objectives.

Manipulation check

To assess if the experimental manipulation was successful for the gratitude and kindness conditions, two research assistants who were blind to this study's hypotheses (i.e., raters), independently rated the extent to which all weekly outputs characterized gratitude and kindness using a 5-point rating scale (1 [*strongly evident*]; 5 [*not evident*]). Intra-class coefficients were calculated to provide evidence of raters' agreement on the ratings for all participants' experimental outputs. The assistants' scores on all participants' weekly outputs were averaged and analyzed using ANOVA to examine whether the scores for gratitude and kindness differed across the control, gratitude, and kindness conditions.

Intra-class correlational coefficients (*ICC*) were calculated to provide evidence of inter-rater reliability on gratitude and kindness scores for each experimental output. The results suggest that the inter-rater agreement for the gratitude (*ICC* = .96) and kindness (*ICC* = .94) conditions was relatively high. The raters' mean for both constructs across the control, gratitude, and kindness conditions were then computed. The ANOVA results demonstrated a significant difference in gratitude scores $F(2,104) = 506.79$, $p < .001$, with participants in the gratitude condition ($M = 3.98$, $SD = 0.52$) showing higher scores in this construct than those assigned to the kindness ($M = 1.80$, $SD = 0.48$) and control ($M = 1.00$, $SD = 0.01$) conditions. The findings also showed a significant difference in kindness $F(2,104) = 493.37$, $p < .001$, with participants in the kindness ($M = 4.12$, $SD = 0.62$) condition demonstrating higher scores for kindness than those assigned in the gratitude ($M = 1.67$, $SD = 0.48$) and control ($M = 1.00$, $SD = 0.00$) conditions.

Descriptive statistics and main analyses

The results of the descriptive statistical analyses for the pretest and posttest scores for gratitude, kindness, and well-being outcomes are shown in Table 1. Relevant statistical assumptions were

TABLE 1 Pretest and posttest descriptive statistics by condition

Outcomes	Time	Control		Gratitude		Kindness	
		M	*SD*	*M*	*SD*	*M*	*SD*
Life satisfaction	Pretest	4.18	0.87	4.22	1.10	4.26	1.08
	Posttest	3.96	1.21	4.36	1.11	4.20	1.08
Positive emotions	Pretest	2.91	0.74	2.88	0.68	3.11	0.88
	Posttest	2.89	0.82	3.25	0.85	3.30	0.72
Negative emotions	Pretest	3.35	0.80	3.23	0.70	3.05	0.74
	Posttest	3.11	0.81	2.92	0.77	2.85	0.68
COVID-19 anxiety	Pretest	1.18	1.08	0.74	0.70	0.97	0.87
	Posttest	0.85	0.82	0.54	0.62	0.73	0.70

TABLE 2 Univariate analyses of covariance on well-being outcomes\

Outcomes	Covariates	F (2, 100)	Partial $\acute{\eta}^2$	Bonferroni post-hoc[a]
Life satisfaction	Pretest with T1 gratitude and T1 kindness	2.40	.046	G < C
Positive emotions	Pretest with T1 gratitude and T1 kindness	4.12*	.076	G > C, K > C
Negative emotions	Pretest with T1 gratitude and T1 kindness	0.56	.011	—
COVID-19 anxiety	Pretest with T1 gratitude and T1 kindness	0.13	.003	—

[a]G = gratitude condition, K = kindness condition, C = control condition;
*Levene's test was significant but robustness of test assumed $p < .05$.

met before conducting succeeding multivariate tests (e.g., a normality test, absence of multicollinearity, and equality of variance). To examine whether there were significant differences in life satisfaction, positive emotions, negative emotions, and COVID-19 anxiety between different experimental conditions after controlling for the baseline scores in such outcomes, multivariate analyses of covariance (MANCOVA) were conducted (see Table 2). The MANCOVA results generated mixed evidence regarding the effects of experimental conditions on well-being outcomes, with Wilk's lambda demonstrating non-significant multivariate effects (F [8, 194] = 1.42, $p = .19$, $\Lambda = .89$, partial $\acute{\eta}^2 = .19$) and Roy's largest root indicating significant multivariate effects (F [4, 98] = 2.56, $p = .04$, $\varphi = .10$, partial $\acute{\eta}^2 = .10$). The findings from the univariate analysis of covariances showed that there was a statistically significant difference on positive emotions across all conditions, (F [2,100] = 4.12, $p = .02$, partial $\acute{\eta}^2 = .08$). Specifically, participants in gratitude and kindness had significantly higher scores for positive emotions than those assigned in the control condition, which corroborated Hypothesis 2. No significant differences were observed in the positive emotions scores of participants assigned to the kindness and gratitude experimental conditions. However, the remaining hypotheses were not confirmed, as no significant differences were found on life satisfaction, (F [2,100] = 2.40, $p = .10$, partial $\acute{\eta}^2 = .05$), negative emotions, (F [2,100] = 0.56, $p = .57$, partial $\acute{\eta}^2 = .01$), and COVID-19 anxiety, (F [2,100] = 0.13, $p = .88$, partial $\acute{\eta}^2 = .003$). The effect size estimates in this study suggest that experimental conditions accounted for approximately 0.30% to 8% of changes in well-being outcomes.

DISCUSSION

Recent studies have shown that the COVID-19 pandemic has had a considerable toll on individuals' mental health and psychological well-being (Barthelemy, 2020; Sibley et al., 2020). However, there is sparse literature on psychological interventions that can potentially promote well-being outcomes during the pandemic. This online pilot experimental study contributes to the growing body of evidence on the role of positive psychology in mitigating the detrimental impacts of COVID-19 by exploring the effects of gratitude and kindness on life satisfaction, positive emotions, negative emotions, and COVID-19 anxiety among Filipino undergraduate students.

A key finding of this research points to the positive effects of gratitude on positive emotions during the pandemic in the Philippines. This result corroborates previous research on the role of gratitude in students' emotional well-being (Datu & Bernardo, 2020; Datu & Mateo, 2015; Emmons et al., 2003; Seligman et al., 2005). Grateful individuals are likely to experience positive affective states, given that gratitude promotes opportunities to: (1) establish new interpersonal connections, (2) remember extant social ties, and (3) maintain existing social relationships (Algoe, 2012). Although these interpersonal mechanisms might potentially account for the benefits of gratitude on affective well-being, further research is needed to explore the mediating effects of such psychological processes.

There is also evidence showcasing the advantageous role of kindness in students' positive emotions during the pandemic. This result confirms existing literature about the well-being benefits of performing good deeds for others (Aknin et al., 2012; Datu & Bernardo, 2020; Layous et al., 2013). It is plausible that kindness can yield desirable effects on emotional well-being, given that engaging in prosocial actions affords the opportunity to satisfy basic psychological needs for autonomy, relatedness, and competence (Chancellor et al., 2018). Although research has showed that kindness interventions have stronger impacts than gratitude tasks on well-being outcomes (Yang et al., 2018), this research demonstrated a lack of significant differences in the effects of online gratitude and kindness interventions. This study suggests that both psychological interventions can serve as equally effective approaches in promoting positive emotions.

Broadly speaking, the positive effects of online gratitude and kindness interventions on positive emotions during the COVID-19 pandemic corroborate the fundamental assumptions of the *positive activity model* (Lyubomirsky & Layous, 2013). Although the effect sizes found in this investigation are relatively small, as per conventional guidelines, they were comparable with average effect sizes detected in prior positive psychological interventions (Bolier et al., 2013). It is likely that cultivating these positive virtues matters for well-being, given that they may facilitate satisfaction of basic psychological needs for autonomy, relatedness, and competence. For example, because our online gratitude intervention involved choosing a person for whom these participants were grateful, and preparing a letter indicating their reasons for being thankful, the choice that participants have in terms of the recipient and content of their gratitude letter may help in fulfilling their basic psychological needs for autonomy. Given that these gratitude tasks entailed reflecting on people for whom they were grateful, the participants might have been reminded of their sense for positive interpersonal ties, which may have helped satisfy their needs for relatedness. As this study involved carrying out gratitude-enhancing activities, participants were able to demonstrate their ability to be grateful, which may have potentially fulfilled their need for competence. In turn, satisfaction in the basic psychological needs for autonomy, relatedness, and competence were accrued by performing kindness and gratitude tasks, which

enhanced well-being. Clearly, the capacity of gratitude and kindness interventions to foster fulfillment of these psychological needs explains why these activities facilitated positive emotions.

Despite the positive impacts of gratitude and kindness interventions on positive emotions, there was no evidence supporting the efficacy of these interventions in enhancing life satisfaction or reducing negative emotions. There are two possible reasons why gratitude and kindness interventions did not impact such well-being outcomes. First, there is mixed evidence on the role of the intervention delivery method in terms of the outcomes of positive psychological interventions, with online-based interventions having lower effect sizes compared to traditionally administered interventions (Koydemir et al., 2020; Malouff & Schutte, 2016). Second, as the current sample was drawn from a collectivist context (i.e., Philippines) where espousing an interdependent self-view and relational values are highly encouraged (Markus & Kitayama, 1991), it is likely that implementing socially or relationally oriented psychological interventions may not always lead to gains in well-being (Shin et al., 2019). To support this claim, prior literature (Suh, 2007) has argued that collectivists' inclinations to espouse a highly "context-sensitive self" can potentially backfire, as they may overly rely on social and contextual factors to achieve happiness. For example, a collectivist student may continuously (or relentlessly) find ways to please his parents and teachers in the area of scholastic achievement to achieve higher levels of psychological well-being. As their achievement of happiness is primarily contingent on meeting societal and normative expectations, collectivists might experience social pressure in their quest to attain a happy and satisfying life. For this reason, interpersonally oriented strength intervention may not always increase well-being.

The current study has several limitations. Given the self-reporting method used to measure the explanatory and outcome variables in this research, the results are susceptible to social desirability bias. For example, the participants' relatively low baseline scores on COVID-19 anxiety but higher scores on negative emotions might indicate socially desirable responses on items about anxiety towards the pandemic. Further, as there was inconclusive evidence on this investigation's multivariate effects, caution should be exercised when evaluating the outcomes of the study. As this study recruited Filipino undergraduate students, findings have limited generalizability to other student samples in the Philippines and other collectivist societies. This shortcoming can be addressed by conducting future cross-cultural investigations, which will explore the effects of online gratitude and kindness interventions on students' mental health functioning during the COVID-19 pandemic. Given that no analysis was carried out to determine the desired sample size to reach a specific statistical power in this experiment, future research may conduct a power analysis to identify a sample size that might yield better effect size estimates on how gratitude and kindness impact on well-being. Importantly, future studies can tease out the precise psychological mechanisms underpinning the desirable effects of gratitude and kindness on a wide range of psychological outcomes. There was also no evidence supporting the effectiveness of gratitude and kindness interventions on COVID-19 anxiety. As the levels of participants' perceived COVID-19 anxiety were relatively low at the beginning of the experiment, it is likely that a "floor effect" was operating; thus, even if the interventions are considered effective, it is relatively challenging to detect lower anxiety scores after implementing such interventions. Using a 4-point Likert scale might have also contributed to this methodological shortcoming. Therefore, it is advisable for future studies to explore alternative response options, such as using a 7-point Likert scale, to provide more variance for analysis. Importantly, as prior research (Curry et al., 2018; Lyubomirsky & Layous, 2013) has pointed out the importance of moderating variables (e.g., cultural values, gender, motivation to engage in positive activities, and person-activity fit) on how these positive psychological interventions influence well-being

outcomes, future research needs to consider these cultural, contextual, and dispositional factors when designing online interventions to promote gratitude and kindness.

Nevertheless, this research has implications for existing positive psychological literature. Building on prior research (Jovančević & Milićević, 2020; Waters et al., 2021) into the importance of protective psychological resources during a pandemic, this investigation demonstrates the positive impacts of online gratitude and kindness interventions on positive emotions during such a time. To the best of our knowledge, this is the first investigation of its kind to show how technologically driven gratitude and kindness interventions can yield COVID-19 emotional benefits, with effect sizes that are comparable with prior research on online positive psychological interventions (Bolier et al., 2013). This research also provides preliminary evidence on the non-significant impacts of these online interventions on COVID-19 anxiety, which contributes to mixed evidence on the role of specific positive psychological activities on mental health functioning (Cregg & Cheavens, 2020). Further, as existing literature has raised concerns about the dominance of studies on the effects of positive psychological interventions in WEIRD countries (Hendriks et al., 2019), this study provides evidence on the effectiveness of specific positive interventions in a non-WEIRD society. These results can generate insights about the role of online positive psychological interventions in countries or settings that are considered typically "under-represented" in the existing psychological literature. Hence, this study has important implications for designing technologically driven well-being interventions in non-WEIRD cultural contexts.

ETHICS STATEMENT

Prior to conducting this study, approval was obtained from the Human Research Ethics Committee of The Education University of Hong Kong.

DATA AVAILABILITY STATEMENT

The dataset generated during and/or analyzed during the current study is available from the corresponding author on reasonable request.

ORCID

Jesus Alfonso D. Datu 🅾 https://orcid.org/0000-0002-8790-1113

REFERENCES

Aknin, L. B., Dunn, E. W., & Norton, M. I. (2012). Happiness runs in a circular motion: Evidence for a positive feedback loop between prosocial spending and happiness. *Journal of Happiness Studies*, *13*, 347–355. https://doi.org/10.1007/s10902-011-9267-5

Algoe, S. B. (2012). Find, remind, and bind: The functions of gratitude in everyday relationships. *Social and Personality Psychology Compass*, *6*, 455–469. https://doi.org/10.1111/j.1751-9004.2012.00439.x

Algoe, S. B., Dwyer, P. C., Younge, A., & Oveis, C. (2020). A new perspective on the social functions of emotions: Gratitude and the witnessing effect. *Journal of Personality and Social Psychology*, *119*, 40–74. https://doi.org/10.1037/pspi0000202

Barthelemy, J. E. (2020). Mental health is the next pandemic. Retrieved from: https://www.globalmed.com/mental-health-is-the-next-pandemic/

Behzadnia, B., & FatahModares, S. (2020). Basic psychological need-satisfying activities during the COVID-19 outbreak. *Applied Psychology. Health and Well-Being*, *12*(4), 1115–1139. https://doi.org/10.1111/aphw.12228

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*, *13*, 119. https://doi.org/10.1186/1471-2458/13/119

Buchanan, K. E., & Bardi, A. (2010). Acts of kindness and acts of novelty affect life satisfaction. *The Journal of Social Psychology*, *150*, 235–237. https://doi.org/10.1080/00224540903365554

Chancellor, J., Margolis, S., Jacobs Bao, K., & Lyubomirsky, S. (2018). Everyday prosociality in the workplace: The reinforcing benefits of giving, getting, and glimpsing. *Emotion*, *18*(4), 507–517. https://doi.org/10.1037/emo0000321

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York, NY: Routledge Academic.

Cregg, D., & Cheavens, J. S. (2020). Gratitude interventions: Effective self-help? A meta-analysis of the impact on symptoms of depression and anxiety. *Journal of Happiness Studies*. Advance online publication, *22*, 413–445. https://doi.org/10.1007/s10902-020-00236-6

Curry, O. S., Rowland, L. A., Van Lissa, C. J., Zlotowitz, S., McAlaney, J., & Whitehouse, H. (2018). Happy to help? A systematic review and meta-analysis of the effects of performing acts of kindness on the well-being of the actor. *Journal of Experimental Social Psychology*, *76*, 320–329. https://doi.org/10.1016/j.jesp.2018.02.014

Datu, J. A. D., & Bernardo, A. B. I. (2020). The blessings of social-oriented virtues: Interpersonal character strengths are linked to increased life satisfaction and academic success among Filipino high school students. *Social Psychological and Personality Science*. Advance online publication, *11*, 983–990. https://doi.org/10.1177/1948550620906294

Datu, J. A. D., & Mateo, N. J. (2015). Gratitude and life satisfaction among Filipino adolescents: The mediating role of meaning in life. *International Journal for the Advancement of Counseling*, *37*(2), 198–206. https://doi.org/10.1007/s10447-015-9238-3

Datu, J. A. D., & Mateo, N. J. (2020). Character strengths, academic self-efficacy, and well-being outcomes among Filipino high school students: A longitudinal study. *Children and Youth Services Review*. Advance online publication, *119*, 105649. https://doi.org/10.1016/j.childyouth.2020.105649

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research*, *39*, 247–266. https://doi.org/10.1007/978-90-481-2354-4_12

Emmons, R. A., McCullough, M. E., & Tsang, J.-A. (2003). The assessment of gratitude. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 327–341). American Psychological Association. https://doi.org/10.1037/10612-021

Folk, D., Okabe-Miyamoto, K., Dunn, E. W., & Lyubomirsky, S. (2020). Has social connection declined during the first wave of COVID-19? The role of extraversion. *Collabra: Psychology*, *6*(1), 37. https://doi.org/10.1525/collabra.365

Fritz, M. M., Armenta, C. N., Walsh, L. C., & Lyubomirsky, S. (2019). Gratitude facilitates healthy eating behaviors in adolescents and young adults. *Journal of Experimental Social Psychology*, *81*, 4–14. https://doi.org/10.1016/j.jesp.2018.08.011

Froh, J. J., Bono, G., Fan, J., Emmons, R. A., Henderson, K., Harris, C., Leggio, H., & Wood, A. M. (2014). Nice thinking! An educational intervention that teaches children how to think gratefully. *School Psychology Review*, *43*, 132–152. https://doi.org/10.1080/02796015.2014.12087440

Froh, J. J., Sefick, W. J., & Emmons, R. A. (2008). Counting blessings in early adolescents: An experimental study of gratitude and subjective well-being. *Journal of School Psychology*, *46*, 213–233. https://doi.org/10.1016/j.jsp.2007.03.005

Fu, W., Yan, S., Zong, Q., Anderson-Luxford, D., Song, X., Lv, Z., & Lv, C. (2021). Mental health of college students during the COVID-19 epidemic in China. *Journal of Affective Disorders*. Advance online publication, *280*, 7–10. https://doi.org/10.1016/j.jad.2020.11.032

Golberstein, E., Wen, H., & Miller, B. F. (2020). Coronavirus disease 2019 (COVID-19) and mental health for children and adolescents. *Journal of American Medical Association Pediatrics*. Advance online publication, *174*, 819–820. https://doi.org/10.1001/jamapediatrics.2020.1456

Hendriks, T., Warren, M. A., Schotanus-Dijkstra, M., Hassankhan, A., Graafsma, T., Bohlmeijer, E., & de Jong, J. (2019). How WEIRD are positive psychology interventions? A bibliometric analysis of randomized controlled trials on the science of well-being. *The Journal of Positive Psychology*, *14*, 489–501. https://doi.org/10.1080/17439760.2018.1484941

Henrich, J., Heine, S., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, *466*, 29. https://doi.org/10.1038/466029a

Jovančević, A., & Milićević, N. (2020). Optimism-pessimism, conspiracy theories and general trust factors contributing to COVID-19 related behavior—A cross-cultural study. *Personality and Individual Differences*. Advance online publication, *167*, 110216. https://doi.org/10.1016/j.paid.2020.110216

Kendler, K. S., Liu, X. Q., Gardner, C. O., McCullough, M. E., Larson, D., & Prescott, C. A. (2003). Dimensions of religiosity and their relationship to lifetime psychiatric and substance use disorders. *American Journal of Psychiatry*, *160*, 496–503. https://doi.org/10.1176/appi.ajp.160.3.496

Kerr, S. L., O'Donovan, A., & Pepping, C. A. (2015). Can gratitude and kindness interventions enhance well-being in a clinical sample? *Journal of Happiness Studies*, *16*, 17–36. https://doi.org/10.1007/s10902-013-9492-1

Kibbey, M. M., Fedorenko, E. J., & Farris, S. G. (2021). Anxiety, depression, and health anxiety in undergraduate students living in initial US outbreak "hotspot" during COVID-19 pandemic. *Cognitive Behaviour Therapy*. Advance online publication, *50*, 409–421. https://doi.org/10.1080/16506073.2020.1853805

Ko, K., Margolis, S., Revord, J., & Lyubomirsky, S. (2019). Comparing the effects of performing and recalling acts of kindness. *Journal of Positive Psychology*. Advance online publication, *16*, 73–81. https://doi.org/10.1080/17439760.2019.1663252

Koay, S. H., Ng, A. T., Tham, S. K., & Tan, C. S. (2020). Gratitude intervention on Instagram: An experimental study. *Psychological Studies*, *65*, 168–173. https://doi.org/10.1007/s12646-019-00547-6

Koydemir, S., Sökmez, A. B., & Schütz, A. (2020). A meta-analysis of the effectiveness of randomized controlled positive psychological interventions on subjective and psychological well-being. *Applied Research in Quality of Life*. Advance online publication, *16*, 1145–1185. https://doi.org/10.1007/s11482-019-09788-z

Lambert, N. M., Fincham, F. D., & Stillman, T. F. (2012). Gratitude and depressive symptoms: The role of positive reframing and positive emotion. *Cognition and Emotion*, *26*, 615–633. https://doi.org/10.1080/02699931.2011.595393

Layous, K., Lee, H., Choi, I., & Lyubomirsky, S. (2013). Culture matters when designing a successful happiness-increasing activity: A comparison of the United States and South Korea. *Journal of Cross-Cultural Psychology*, *44*, 1294–1303. https://doi.org/10.1177/0022022113487591

Layous, K., Nelson, S. K., Oberle, E., Schonert-Reichl, K. A., & Lyubomirsky, S. (2012). Kindness counts: Prompting prosocial behavior in preadolescents boosts peer acceptance and well-being. *PLoS ONE*, *7*, e51380. https://doi.org/10.1371/journal.pone.0051380

Lee, S. A. (2020). Coronavirus anxiety scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies*, *44*(7), 393–401. https://doi.org/10.1080/07481187.2020.1748481

Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science*, *22*(1), 57–62. https://doi.org/10.1177/0963721412469809

Malouff, J. M., & Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, *12*(6), 594–604. https://doi.org/10.1080/17439760.2016.1221122

Margolis, S., Schwitzgebel, E., Ozer, D. J., & Lyubomirsky, S. (2019). A new measure of life satisfaction: The Riverside Life Satisfaction Scale. *Journal of Personality Assessment*, *101*, 621–630. https://doi.org/10.1080/00223891.2018.1464457

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. https://doi.org/10.1037/0033-295X.98.2.224

Nelson, S. K., Layous, K., Cole, S., & Lyubomirsky, S. (2016). Do unto others or treat yourself?: The effects of prosocial and self-focused behavior on psychological flourishing. *Emotion*, *16*(6), 850–861. https://doi.org/10.1037/emo0000178

Otake, K., Shimai, S., Tanaka-Matsumi, J., Otsui, K., & Fredrickson, B. L. (2006). Happy people become happier through kindness: A counting kindnesses intervention. *Journal of Happiness Studies*, *7*, 361–375. https://doi.org/10.1007/s10902-005-3650-z

Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: The development and validation of the Values in Action Inventory of Strengths for Youth. *Journal of Adolescence*, *29*, 891–905. https://doi.org/10.1016/j.adolescence.2006.04.011

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Washington, D.C: APA Press and Oxford University Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publishing. https://doi.org/10.1521/978.14625/28806

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist*, *60*(5), 410–421. https://doi.org/10.1037/0003-066X.60.5.410

Shin, L., Armenta, C. N., Kamble, S. V., Chang, S. L., Wu, H., & Lyubomirsky, S. (2020). Gratitude in collectivist and individualist cultures. *Journal of Positive Psychology*, *5*, 598–604. https://doi.org/10.1080/17439760.2020.1789699

Shin, L. J., Layous, K., Choi, I., Na, S., & Lyubomirsky, S. (2019). Good for self or good for others? The well-being benefits of kindness in two cultures depend on how the kindness is framed. *Journal of Positive Psychology*. Advance online publication, *15*, 795–805. https://doi.org/10.1080/17439760.2019.1651894

Shin, L. J., & Lyubomirsky, S. (2017). Positive activity interventions for interdependent cultures. In S. Donaldson & M. Rao (Eds.), *Scientific advances in positive psychology* (pp. 11–36). Santa Barbara, CA: Praeger.

Shin, L. J., Margolis, S. M., Walsh, L. C., Kwok, S. Y. C. L., Yue, X., Chan, C. K., Siu, N. Y. F., Sheldon, K. M., & Lyubomirsky, S. (2021). Cultural differences in the hedonic rewards of recalling kindness: Priming cultural identity with language. *Affective Science*, *2*, 80–90. https://doi.org/10.1007/s42761-020-00029-3

Sibley, C. G., Greaves, L. M., Wilson, M. S., Overall, N. C., Lee, C. H. J., Milojev, P., Milfont, T. L., Houkamau, C. A., Duck, I. M., Vickers-Jones, R., & Barlow, F. K. (2020). Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *American Psychologist*. Advance online publication, *75*, 618–630. https://doi.org/10.1037/amp0000662

Suh, E. M. (2007). Downsides of an overly context-sensitive self: Implications from the culture and subjective well-being research. *Journal of Personality*, *75*, 1321–1343. https://doi.org/10.1111/j.1467-6494.2007.00477.x

Tasso, A. F., Sahin, N. H., & San Roman, G. J. (2021). COVID-19 disruption on college students: Academic and socioemotional implications. *Psychological Trauma Theory Research Practice and Policy*, *13*, 9–15. https://doi.org/10.1037/tra0000996

Waters, L., Algoe, S. B., Dutton, J., Emmons, R., Fredrickson, B. L., Heaphy, E., Moskowitz, J. T., Neff, K., Niemiec, R., Pury, C., & Steger, M. (2021). Positive psychology in a pandemic: Buffering, bolstering, and building mental health. *The Journal of Positive Psychology*. Advance online publication, 1–21. https://doi.org/10.1080/17439760.2021.1871945

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality*, *31*(5), 431–452. https://doi.org/10.2224/sbp.2003.31.5.431

Wood, A. M., Maltby, J., Gillett, R., Linley, P. A., & Joseph, S. (2008). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality*, *42*, 854–871. https://doi.org/10.1016/j.jrp.2007.11.003

Yang, Y., Zhao, H., Aidi, M., & Kou, Y. (2018). Three good deeds and three blessings: The kindness and gratitude interventions with Chinese prisoners. *Criminal Behaviour and Mental Health*, *28*, 433–441. https://doi.org/10.1002/cbm.2085