

The effects of social belonging and kindness on stress and well-being during the COVID-19 pandemic: A longitudinal experiment

S. Katherine Nelson-Coffey^{1,2}  | Kristin Layous³  |
John K. Coffey^{1,2}  | Linda C. Mayes²

¹Arizona State University, Glendale, Arizona, USA

²Yale University School of Medicine, Yale Child Study Center, New Haven, Connecticut, USA

³California State University, East Bay, Hayward, California, USA

Correspondence

S. Katherine Nelson-Coffey, School of Social and Behavioral Sciences, Arizona State University, 4701 W. Thunderbird Rd., Mail Code 3051, Glendale, AZ 85306, USA.
Email: knelsoncoffey@asu.edu

Abstract

Because the ongoing COVID-19 pandemic has introduced significant stressors to people's lives, more research on self-directed strategies to cope with pandemic-related stress is needed. In the current longitudinal experiment ($N = 614$), we investigated the emotional benefits of two self-directed strategies—belonging affirmation and recalling kindness—during the Delta (October 2021) and Omicron (February 2022) waves of the pandemic. Participants were randomly assigned to one of three activity conditions (belonging affirmation, recalling kindness, or control), which they performed weekly for 4 weeks. Contrary to our pre-registered hypothesis, belonging affirmation and recalling kindness did not promote greater well-being overall; however, belonging affirmation led to well-being improvements indirectly via increases in positive emotions. Furthermore, the benefits of belonging affirmation were moderated by pandemic wave. That is, during the Omicron wave, but not the Delta wave, belonging affirmation led to improved life satisfaction, positive emotions, and connectedness, decreased loneliness and negative emotions, and marginally reduced perceived stress and anxiety. These results provide preliminary evidence for the well-being benefits of belonging affirmation and suggest the importance of evaluating coping strategies throughout different stages of a long-term stressor.

KEYWORDS

COVID-19, loneliness, prosocial behavior, social belonging, stress, well-being

1 | INTRODUCTION

COVID-19 has infected millions and introduced significant health-related stress alongside adjustments to work, school, family, and social life. Not surprisingly, in the initial months of the pandemic, people reported increases in psychological distress (Aknin et al., 2021; Robinson et al., 2022). Although people largely returned to baseline levels of mental health within months (Aknin et al., 2021), individuals also responded with elevated levels of distress to subsequent waves of COVID-19 (Daly & Robinson, 2022). Thus, further research is needed to explore mental health and coping strategies during ongoing stressors, as new variants of COVID-19 emerge and infection rates ebb and flow. Because professional mental health resources do not meet demand (Moitra et al., 2022; World Health Organization, 2022), in the current study, we investigated the emotional benefits of two self-directed coping strategies—affirming one's sense of belonging and recalling acts of kindness during the Delta and Omicron waves of COVID-19.

1.1 | Affirming one's sense of belonging

People have a fundamental need to belong (i.e., to form and maintain positive close relationships; Baumeister & Leary, 1995; Ryan & Deci, 2000). Thus, interventions that target one's perceived sense of social belonging may be particularly effective in sustaining well-being, especially when belonging is threatened due to social distancing protocols (Slavich et al., 2021). Belonging affirmation interventions prompt individuals to write about how their core values have made them feel closer and more connected to others (Shnabel et al., 2013). Participants randomly assigned to engage in belonging affirmation (vs. control) following experimentally-manipulated adversity, reported higher social connectedness and gratitude, as well as higher self-integrity, indicating that belonging affirmation helped sustain important personal resources in the face of threat (Layous & Nelson-Coffey, 2021; see also Shnabel et al., 2013). In addition, one multi-week experiment demonstrated the positive effect of a values affirmation task on well-being over time, especially among those with lower baseline well-being (Nelson et al., 2014). We expected that the belonging affirmation intervention would be similarly helpful in bolstering well-being (if not more so given its overt focus on relationships).

1.2 | Recalling acts of kindness

Engaging in prosocial behavior (i.e., acts of kindness intended to benefit others) is another way that people may sustain or improve their well-being during the pandemic (Slavich et al., 2021). Similar to belonging affirmation interventions, kindness interventions include an overt focus on close relationships; however, kindness interventions emphasize performing new behaviors within relationships rather than considering more generally how one's values bring them close to others as with belonging affirmation interventions. A meta-analysis of 27 randomized controlled experiments demonstrated that kindness interventions cause well-being improvements (Curry et al., 2018). In one experiment, participants were randomly assigned to perform kind acts or recall kind acts already performed, and both groups improved equally in well-being, and improved more than a neutral control group (Ko et al., 2021; see also Curry et al., 2018). Given that recalling kind acts appears to be as helpful as performing new kind acts, in the current study, we assigned the recalling kindness activity to limit the study burden on our likely already overwhelmed participants, and to better parallel the belonging affirmation activity. We expected that recalling kind acts would promote well-being over time.

1.3 | Mechanisms of change

We hypothesized that both belonging affirmation and recalling kindness would lead to improved well-being via increased positive emotions and social connectedness, and decreased negative emotions. Past research found that affirmation activities increase positive emotions and social connectedness (e.g., Crocker et al., 2008; Layous & Nelson-Coffey, 2021), and some evidence also suggests that they decrease negative emotions (Layous & Nelson-Coffey, 2021, Supplemental Material). Similarly, kindness has been consistently linked to improvements in positive emotions and social connectedness (e.g., Kerr et al., 2014; Nelson et al., 2016) and less robustly with declines in negative emotions (Martela & Ryan, 2016). In direct support of our mediation hypotheses, research has demonstrated that positive emotions (Nelson et al., 2016; see also Fredrickson, 2013), and social connectedness (Nelson et al., 2015) at least partially mediate the effects of kindness on well-being and, given its similar focus on social relationships, we expected the belonging affirmation to work via similar paths. In addition, although we know of no studies that have illustrated negative emotions as a mechanism of kindness- or affirmation-induced changes in global well-being (see Nelson et al., 2016 for null effects), we included negative emotions as a plausible mechanism, and to differentiate its effect from that of positive emotions.

1.4 | The current study

In the current preregistered study (<https://osf.io/9sf76>) across two waves of the COVID-19 pandemic, we randomly assigned participants to engage in one of three conditions: belonging affirmation, recalling kindness, or control (writing about activities from the previous week). Participants performed their assigned task weekly for 4 weeks, reported their positive emotions, negative emotions, and connectedness weekly, and reported primary outcome measures (life satisfaction, meaning in life, loneliness, stress, and anxiety) at baseline, post-test, and at a 2-week follow-up. First, we hypothesized that practicing belonging affirmation and recalling kindness would lead to improvements in our outcome measures compared to the control group. Second, we hypothesized that positive emotions, negative emotions, and connectedness would mediate the effects of belonging affirmation and recalling kindness on our outcome measures relative to the control activity. Finally, given the changing landscape of the pandemic across multiple waves of COVID-19, we explored whether the benefits of belonging affirmation and recalling kindness differed across the Delta (October 2021) and Omicron (March 2022) waves.

2 | METHOD

2.1 | Participants

Participants ($N = 633$; 66.4% women; $M_{\text{age}} = 29.96$, $SD = 11.50$) were recruited from Prolific ($n = 527$) and the psychology department participant pool ($n = 106$) in exchange for \$16.25 or course credit, respectively, during the Delta (October 2021; $n = 265$) and Omicron (March 2022; $n = 368$) waves of COVID-19. See Table 1 for participant demographics.

Belonging affirmation and kindness interventions elicit small-to-medium effects on well-being (Curry et al., 2018; Layous & Nelson-Coffey, 2021); thus, we estimated that we would need at least 138 participants per condition ($N = 414$) to achieve 90% power using the pwr package in R ($k = 3$, $f = 0.175$, $\text{sig.level} = 0.05$, $\text{power} = 0.9$). We decided to recruit 600 participants to account for attrition. Nineteen participants dropped out before randomization (final $N = 614$). Participants completed an average of 3.72 of 5 surveys, and 380 participants completed ≥ 4 surveys, providing 87% power to detect small-to-medium effects. Missingness did not differ across experimental conditions or recruitment method, $ps > .10$, but was related to wave of COVID-19 (relatively higher rates of missingness during Delta), and across some psychological and demographic variables (see Supporting Information S1).

TABLE 1 Sample demographics by Delta and Omicron waves.

	Delta (n = 257)	Omicron (n = 357)	Total (N = 614)
Age	28.21 _a (9.51)	31.21 _b (12.59)	29.96 (11.50)
Gender			
Men	93 (36.2%)	96 (26.9%)	189 (30.8%)
Women	157 (61.1%)	251 (70.3%)	408 (66.4%)
Non-binary	7 (2.7%)	7 (2.0%)	14 (2.3%)
Prefer another term	0 (0%)	3 (0.8%)	3 (0.5%)
Race			
American Indian/Alaska Native	6 (2.3%)	5 (1.4%)	11 (1.8%)
Asian	17 (6.6%)	31 (8.7%)	48 (7.8%)
Black	35 _a (13.6%) _a	19 _b (5.3%)	54 (8.8%)
Native Hawaiian/Pacific Islander	1 (0.4%)	2 (0.6%)	3 (0.5%)
White	191 _a (74.3%)	304 _b (85.2%)	495 (80.6%)
Latinx	30 (11.7%)	40 (11.2%)	70 (11.4%)
Relationship status			
Married	70 (27.2%)	88 (24.6%)	158 (25.7%)
Cohabiting	14 (5.4%)	23 (6.4%)	37 (6.0%)
Widowed	0 (0.0%)	2 (0.6%)	2 (0.3%)
Divorced/separated	12 (4.7%)	18 (5.0%)	30 (4.9%)
In a relationship	57 (22.2%)	85 (23.8%)	142 (23.1%)
Single/never married	104 (40.5%)	141 (39.5%)	245 (39.9%)
Number of children	0.57 (0.99)	0.40 (0.89)	0.47 (0.94)
Education			
Some high school	5 (1.9%)	3 (0.8%)	8 (1.3%)
High school/GED	48 (18.7%)	46 (12.9%)	94 (15.3%)
Some college	95 (37.0%)	128 (35.9%)	223 (36.3%)
College	68 _a (26.5%)	139 _b (38.9%)	207 (33.7%)
Advanced degree	41 (16.0%)	41 (11.5%)	82 (13.4%)
Income	Mode = less than \$20,000	Mode = \$40,000–\$60,000	Mode = \$40,001–\$60,000
Employment status			
Full-time	102 (39.7%)	123 (34.5%)	225 (36.6%)
Part-time	48 (18.7%)	59 (16.5%)	107 (17.4%)
Self-employed	14 (5.4%)	36 (10.1%)	50 (8.1%)
Student	82 (31.9%)	97 (27.2%)	179 (29.2%)
Retired	1 (0.4%)	11 (3.1%)	12 (2.0%)
Laid off due to COVID-19	5 (1.9%)	6 (1.7%)	11 (1.8%)
Unemployed (disabled, stay-at-home parent, etc)	30 (11.7%)	48 (13.4%)	78 (12.7%)
Prior COVID-19 diagnosis	34 _a (13.2%)	96 _b (26.9%)	130 (21.2%)
Sample			
Students	48	58	106
Prolific	209	299	508

TABLE 1 (Continued)

	Delta (n = 257)	Omicron (n = 357)	Total (N = 614)
Experimental conditions			
Belonging affirmation	85	121	206
Kindness	86	120	206
Control	86	116	202

Note: _{a,b} Reflects significant differences across waves, $p < .01$.

2.2 | Procedure

After signing up for the study, participants were directed to a website where they provided consent, completed baseline measures, and were randomly assigned to one of three writing activities: belonging affirmation ($n = 206$), recalling kindness ($n = 206$), or control ($n = 202$). They performed these activities weekly for 4 weeks and completed a 2-week follow-up (5 total time points). See Supporting Information S1: Table S1 for activity instructions. Participants across the three conditions did not differ at baseline on any well-being variable, $F_s < 2.01$, $p_s > .13$. In addition to the measures described below, participants also completed the COVID Stress Scales (Taylor et al., 2020), a measure of positive and negative emotions regarding the COVID-19 pandemic, and a measure of empathic emotions (Lishner et al., 2011). These variables were included in our preregistration and their results are reported in the Supporting Information S1: Tables S10–S16. The preregistration is available at <https://osf.io/9sf76>, and full study protocol is available at <https://osf.io/rkt58>.

2.3 | Measures

Composites for all measures were created by reverse-scoring the relevant items and calculating averages for each timepoint ($\alpha_s > .80$).

2.3.1 | Mental health and well-being

At baseline, post-test, and follow-up, participants completed several measures to provide a comprehensive evaluation of well-being and mental health, including the Satisfaction With Life Scale (Diener et al., 1985), the Meaning in Life Questionnaire Presence of Meaning Subscale (Steger et al., 2006), the UCLA Loneliness Scale (short form; Hays & DiMatteo, 1987), the Perceived Stress Scale (Cohen et al., 1983), and the State Trait Anxiety Inventory (short form; van der Bij et al., 2003).

2.3.2 | Positive and negative emotions

Weekly, participants completed the Affect-Adjective Scale (Diener & Emmons, 1984), which includes positive (e.g., happy, grateful) and negative (e.g., worried/anxious, unhappy) emotions.

2.3.3 | Connectedness

Weekly, participants completed the Relatedness subscale of the Balanced Measure of Psychological Needs (Sheldon & Hilpert, 2012), which includes six items evaluating the extent to which people feel close and connected to others.

3 | RESULTS

3.1 | Overview

Following our preregistration, we evaluated whether belonging affirmation and recalling kindness led to improvements in mental health and well-being (pre-registered Hypothesis 1) using multilevel growth curve modeling to account for repeated measures nested within participants (Singer & Willett, 2003). We also explored potential moderators of the effects of belonging affirmation and recalling kindness on well-being improvements, including pandemic wave (Delta vs. Omicron) and baseline well-being. Wave was dummy-coded (Delta = 0; Omicron = 1) and included as a moderator of both interventions on all outcomes. Baseline well-being did not consistently moderate the effects of either intervention activity and is not discussed further. Next, we tested whether positive emotions, negative emotions, and connectedness (averaged across Week 2 through Week 5) mediate change in well-being outcomes (pre-registered Hypothesis 2) using the PROCESS Macro in SPSS (Model 4, 5000 bootstrapped samples; Hayes, 2018), adjusting for baseline levels of all variables (for a similar approach, see Nelson et al., 2016). Finally, we originally intended to discuss effects at $p < .05$ as described in our preregistration; however, given the number of analyses, we interpret results at $p < .01$ to be conservative.

3.2 | Do belonging affirmation and recalling kindness improve well-being during the Delta and Omicron waves of COVID-19?

Contrary to our hypothesis, neither belonging affirmation nor recalling kindness led to linear or nonlinear improvements in any mental health or well-being outcomes relative to control, $|ys| < 0.17$, $ps > .01$. Next, we explored whether pandemic wave (Omicron vs. Delta) moderated the effects of each activity. In these analyses, pandemic wave moderated the benefits of belonging affirmation (vs. control) on life satisfaction ($\gamma = 0.45$, $p < .001$), positive emotions ($\gamma = 0.21$, $p = .001$), negative emotions ($\gamma = -0.30$, $p < .001$), and connectedness ($\gamma = 0.23$, $p < .001$). The Wave X Belonging Affirmation effects for loneliness ($\gamma = -0.14$, $p = .027$), perceived stress ($\gamma = -0.16$, $p = .062$), and anxiety ($\gamma = -0.20$, $p = .062$) paralleled the other outcomes, but did not surpass the $p < .01$ threshold. For each outcome, belonging affirmation led to linear improvements in mental health and well-being relative to control only during the Omicron wave. By contrast, during the Delta wave, control led to significant linear increases in life satisfaction and positive emotions relative to belonging affirmation (see Supporting Information S1: Tables S2–S9 for full model results; Table 2 for simple slopes). Pandemic wave did not moderate the effects of recalling kindness.

To consider why belonging affirmation was more beneficial during the Omicron than the Delta wave of the pandemic, we explored psychological and demographic differences between these subsamples of our participants. At baseline, participants recruited during Omicron reported fewer positive emotions than participants recruited during Delta, $t(612) = 4.41$, $p < .001$, but did not differ on other well-being or mental health outcomes. As demonstrated in Table 1, Omicron participants were slightly older, included more white people and fewer Black people, were slightly more likely to be college-educated, and were more likely to have a prior COVID-19 diagnosis, $ps < .01$. However, none of these characteristics consistently moderated the effects of belonging affirmation on well-being. Wave X Belonging Affirmation effects on life satisfaction ($\gamma = 0.43$, $p < .001$), positive emotions ($\gamma = 0.19$, $p = .01$), negative emotions ($\gamma = -0.28$, $p = .001$), and connectedness ($\gamma = 0.22$, $p < .001$) remain consistent when controlling for these psychological and demographic differences.

3.3 | Indirect effects of belonging affirmation and kindness via positive emotions, negative emotions, and connectedness

Next, we investigated the indirect effects of belonging affirmation and recalling kindness on well-being and mental health via improvements in positive emotions, negative emotions, and connectedness (see Table 3), adjusting for

TABLE 2 Simple slopes analyses by wave and condition. Values represent parameter estimates (b) and 95% confidence intervals reflecting changes within conditions during the Delta and Omicron waves.

	Life satisfaction	Meaning in life	Loneliness	Perceived stress	Anxiety	Positive emotions	Negative emotions	Connectedness
Delta								
Belonging affirmation	-0.06 [-0.18, 0.06]	0.002 [-0.14, 0.14]	-0.003 [-0.07, 0.06]	-0.06 [-0.15, 0.02]	0.08 [-0.04, 0.19]	-0.04 [-0.10, 0.03]	0.003 [-0.07, 0.08]	-0.05 ⁺ [-0.10, 0.004]
Recalling kindness	0.17* [0.04, 0.29]	0.02 [-0.12, 0.16]	-0.10** [-0.17, -0.04]	-0.08 ⁺ [-0.17, 0.01]	-0.03 [-0.15, 0.08]	0.04 [-0.02, 0.11]	-0.11** [-0.18, -0.03]	0.06* [0.01, 0.11]
Control	0.31*** [0.17, 0.45]	0.13 ⁺ [-0.02, 0.28]	-0.08* [-0.15, -0.005]	-0.12* [-0.22, -0.03]	-0.03 [-0.15, 0.09]	0.08* [0.004, 0.15]	-0.20*** [-0.28, -0.12]	0.09*** [0.04, 0.14]
Omicron								
Belonging affirmation	0.12 [0.02, 0.22]	0.05 [-0.06, 0.15]	-0.10*** [-0.15, -0.04]	-0.11** [-0.18, -0.04]	-0.08 ⁺ [-0.17, 0.01]	0.07* [0.02, 0.12]	-0.13*** [-0.18, -0.07]	-0.13*** [-0.18, -0.07]
Recalling kindness	0.06 [-0.03, 0.15]	-0.03 [-0.13, 0.07]	0.01 [-0.03, 0.06]	-0.07* [-0.14, -0.01]	-0.04 [-0.13, 0.04]	0.04 ⁺ [-0.01, 0.09]	-0.07* [-0.13, -0.02]	-0.07* [-0.13, -0.02]
Control	0.04 [-0.06, 0.14]	0.01 [-0.10, 0.12]	-0.03 [-0.08, 0.02]	-0.01 [-0.08, 0.06]	0.02 [-0.08, 0.11]	-0.02 [-0.07, 0.03]	-0.03 [-0.09, 0.03]	-0.03 [-0.09, 0.03]

*p < .10, *p < .05, **p < .01, ***p < .001.

TABLE 3 Summary of indirect effects and 95% confidence intervals of belonging affirmation and recalling kindness via positive emotions, negative emotions, and social connectedness.

	Belonging affirmation			Recalling kindness		
	Positive emotions	Negative emotions	Social connectedness	Positive emotions	Negative emotions	Social connectedness
Post-test						
Life satisfaction	0.06* [0.01, 0.12]	0.01 [-0.02, 0.04]	0.02 [-0.02, 0.08]	0.02 [-0.04, 0.07]	-0.0001 [-0.04, 0.03]	-0.04 [-0.10, 0.01]
Meaning in life	0.05* [0.01, 0.11]	0.02 [-0.02, 0.06]	0.02 [-0.02, 0.07]	0.02 [-0.02, 0.07]	0.01 [-0.03, 0.04]	-0.02 [-0.08, 0.01]
Loneliness	-0.001 [-0.02, 0.02]	-0.01 [-0.03, 0.01]	-0.03 [-0.07, 0.02]	-0.0003 [-0.01, 0.01]	-0.003 [-0.02, 0.01]	0.02 [-0.02, 0.07]
Perceived stress	-0.02* [-0.05, -0.001]	-0.04 [-0.10, 0.03]	-0.01 [-0.04, 0.01]	-0.01 [-0.03, 0.01]	-0.004 [-0.06, 0.06]	0.01 [-0.005, 0.04]
Anxiety	-0.05* [-0.09, -0.01]	-0.05 [-0.14, 0.04]	-0.002 [-0.02, 0.02]	-0.02 [-0.06, 0.02]	-0.01 [-0.09, 0.07]	0.002 [-0.02, 0.03]
Follow-up						
Life satisfaction	0.08* [0.02, 0.17]	0.001 [-0.02, 0.02]	0.01 [-0.01, 0.05]	0.03 [-0.04, 0.10]	-0.004 [-0.04, 0.01]	-0.01 [-0.05, 0.02]
Meaning in life	0.02 [-0.04, 0.09]	0.005 [-0.02, 0.04]	0.01 [-0.02, 0.06]	0.01 [-0.02, 0.05]	-0.004 [-0.04, 0.02]	-0.01 [-0.08, 0.02]
Loneliness	-0.004 [-0.03, 0.02]	-0.004 [-0.02, 0.01]	-0.02 [-0.06, 0.02]	-0.002 [-0.02, 0.01]	0.004 [-0.01, 0.02]	0.02 [-0.01, 0.06]
Perceived stress	-0.02 [-0.07, 0.01]	-0.01 [-0.05, 0.02]	-0.01 [-0.04, 0.01]	-0.01 [-0.04, 0.01]	0.01 [-0.02, 0.04]	0.01 [-0.01, 0.05]
Anxiety	-0.05* [-0.10, -0.01]	-0.01 [-0.07, 0.04]	0.002 [-0.02, 0.03]	-0.02 [-0.06, 0.02]	0.02 [-0.03, 0.08]	-0.002 [-0.03, 0.03]

* $p < .05$.

baseline levels of positive emotions, negative emotions, connectedness, and well-being outcomes. Belonging affirmation predicted positive emotions, $b = 0.22$, $p = .02$, but not negative emotions or connectedness, $|bs| < 0.08$, $ps > .40$. In turn, positive emotions predicted greater life satisfaction, $b = 0.26$, $p = .0001$, and meaning in life, $b = 0.21$, $p = .003$, as well as lower levels of anxiety, $b = -0.20$, $p = .001$ and perceived stress, $b = -0.09$, $p = .03$ (marginally), but not loneliness, $b = -0.004$, $p = .90$, at the end of the intervention period (Week 4). Positive emotions also predicted follow-up (Week 6) life satisfaction, $b = 0.30$, $p < .001$, and anxiety, $b = -0.17$, $p = .009$, but not meaning in life, perceived stress, or loneliness, $|bs| < 0.09$, $ps > .09$. We found indirect effects of belonging affirmation on post-test life satisfaction, meaning in life, perceived stress, and anxiety, along with follow-up life satisfaction and anxiety, via positive emotions only. Alternatively, we did not find indirect effects of recalling kindness on post-test and follow-up well-being and mental health via positive emotions, negative emotions, or connectedness. Finally, moderated mediation analyses did not reveal any moderation of indirect effects by pandemic wave.

4 | DISCUSSION

Contrary to our pre-registered prediction, belonging affirmation and kindness activities did not promote greater well-being than the control activity overall. That said, belonging affirmation did promote greater well-being indirectly via increases in positive emotions (but not negative emotions or connectedness). In addition, belonging affirmation

led to linear improvements in well-being relative to control during the Omicron (but not Delta) wave. Notably, simple slopes analyses revealed that none of our conditions were associated with significant decreases in well-being (in either wave), but the control group during the Delta wave showed steeper improvements in linear well-being than the other condition/wave combinations (which also sometimes demonstrated improved within-person well-being, see Table 2). Thus, our intervention activities were not detrimental and perhaps our control activity was not as neutral as we expected (at least during the Delta wave).

4.1 | Strengths, limitations, and future directions

The current study added to the literature by employing a longitudinal experimental design to evaluate a well-tested positive intervention (recalling kindness) in a new context (during a pandemic), as well as a relatively new purported happiness-increasing activity (belonging affirmation). Notably, the pandemic was a backdrop across both waves of the study, and we do not have a pre-pandemic sample to directly evaluate how the pandemic affected our findings. We are also unsure how much COVID affected the daily lives of our participants—the COVID stress scale indicated minimal distress across waves ($M = 0.93$, $SD = 0.76$, 0–4 scale). Our activities may have been more beneficial for people experiencing greater stress.

Further, participants in the Omicron wave varied demographically and psychologically from those in the Delta wave; notably, however, none of these differences explained the condition differences by wave. Future research could continue to explore the effects of the belonging affirmation on well-being over time, and perhaps use a different neutral comparison group (e.g., asking participants to write about why their least important values may be important to others) or tie the belonging affirmation to a specific stressful event to boost its effectiveness (e.g., administer affirmation prior to a COVID test; Cohen & Sherman, 2014).

In addition, because our first wave of data collection was about 1.5 years into the pandemic, people may have already found effective ways of coping, rendering the kindness and belonging affirmation activities less helpful than they might have been at the beginning. For example, early in the pandemic, increases in time spent on personal hobbies (e.g., gardening, baking) predicted decreases in depression (Bu et al., 2021). During the Delta wave, the control task may have reminded participants about the enjoyable activities they engaged in, thus becoming more pleasant than intended. Alternatively, well-being improvements in the control condition may have reflected natural improvements in well-being as people acclimated to the threat of Delta. Future research could institute a different control task and could also ask participants what coping strategies they regularly engage in to see how the tested positive activities fit into the landscape of participants' other behaviors.

4.2 | Conclusion

Overall, kindness and belonging affirmation did not promote well-being relative to control. However, belonging affirmation indirectly promoted well-being via increases in positive emotions and directly benefitted well-being during the Omicron wave of the pandemic, pointing to the importance of evaluating coping strategies throughout different stages of a long-term stressor.

ACKNOWLEDGMENTS

This research was supported by a Faculty Research Grant from The University of the South.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

ORCID

S. Katherine Nelson-Coffey  <https://orcid.org/0000-0002-9958-6819>

Kristin Layous  <https://orcid.org/0000-0003-0524-2802>

John K. Coffey  <https://orcid.org/0000-0003-0088-382X>

REFERENCES

- Aknin, L. B., De Neve, J.-E., Dunn, E. W., Fancourt, D. E., Goldberg, E., Helliwell, J. F., Jones, S. P., Karam, E., Layard, R., Lyubomirsky, S., Rzepa, A., Saxena, S., Thornton, E. M., VanderWeele, T. J., Whillans, A. V., Zaki, J., Karadag, O., & Ben Amor, Y. (2021). Mental health during the first year of the COVID-19 pandemic: A review and recommendations for moving forward. *Perspectives on Psychological Science*, 17(4), 915–936. <https://doi.org/10.1177/17456916211029964>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Bu, F., Steptoe, A., Mak, H., & Fancourt, D. (2021). Time use and mental health in UK adults during an 11-week COVID-19 lockdown: A panel analysis. *The British Journal of Psychiatry*, 219(4), 551–556. <https://doi.org/10.1192/bjp.2021.44>
- Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology*, 65(1), 333–371. <https://doi.org/10.1146/annurev-psych-010213-115137>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4). <https://doi.org/10.2307/2136404>
- Crocker, J., Niiya, Y., & Mischkowski, D. (2008). Why does writing about important values reduce defensiveness?: Self-affirmation and the role of positive other-directed feelings. *Psychological Science*, 19(7), 740–747. <https://doi.org/10.1111/j.1467-9280.2008.02150.x>
- 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>
- Daly, M., & Robinson, E. (2022). Psychological distress associated with the second COVID-19 wave: Prospective evidence from the UK Household Longitudinal Study. *Journal of Affective Disorders*, 310, 274–278. <https://doi.org/10.1016/j.jad.2022.05.025>
- Diener, E., & Emmons, R. (1984). The independence of positive and negative affect. *Journal of Personality*, 47(5), 1105–1117. <https://doi.org/10.1037/0022-3514.47.5.11>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
- Fredrickson, B. L. (2013). Positive emotions broaden and build. In E. Ashby Plant & P. G. Devine (Eds.), *Advances in experimental social psychology* (1st ed., Vol. 47, pp. 1–53). Academic Press. <https://doi.org/10.1016/B978-0-12-407236-7.00001-2>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.
- Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment*, 51(1), 69–81. https://doi.org/10.1207/s15327752jpa5101_6
- Kerr, S. L., O'Donovan, A., & Pepping, C. A. (2014). Can gratitude and kindness interventions enhance well-being in a clinical sample? *Journal of Happiness Studies*, 16(1), 17–36. <https://doi.org/10.1007/s10902-013-9492-1>
- Ko, K., Margolis, S., Revord, J., & Lyubomirsky, S. (2021). Comparing the effects of performing and recalling acts of kindness. *The Journal of Positive Psychology*, 16(1), 73–81. <https://doi.org/10.1080/17439760.2019.1663252>
- Layous, K., & Nelson-Coffey, S. K. (2021). The effect of perceived social support on personal resources following minor adversity: An experimental investigation of belonging affirmation. *Personality and Social Psychology Bulletin*, 47(7), 1152–1168. <https://doi.org/10.1177/0146167220961270>
- Lishner, D. A., Batson, C. D., & Huss, E. (2011). Tenderness and sympathy: Distinct empathic emotions elicited by different forms of need. *Personality and Social Psychology Bulletin*, 37(5), 614–625. <https://doi.org/10.1177/0146167211403157>
- Martela, F., & Ryan, R. M. (2016). Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motivation and Emotion*, 40(3), 351–357. <https://doi.org/10.1007/s11031-016-9552-z>
- Moitra, M., Santomauro, D., Collins, P. Y., Vos, T., Whiteford, H., Saxena, S., & Ferrari, A. J. (2022). The global gap in treatment coverage for major depressive disorder in 84 countries from 2000–2019: A systematic review and Bayesian meta-regression analysis. *PLoS Medicine*, 19(2), e1003901. <https://doi.org/10.1371/journal.pmed.1003901>
- Nelson, S. K., Della Porta, M. D., Jacobs Bao, K., Lee, H. J. C., Choi, I., & Lyubomirsky, S. (2015). 'It's up to you': Experimentally manipulated autonomy support for prosocial behavior improves well-being in two cultures over six weeks. *The Journal of Positive Psychology*, 10(5), 463–476. <https://doi.org/10.1080/17439760.2014.983959>
- Nelson, S. K., Fuller, J. A. K., Choi, I., & Lyubomirsky, S. (2014). Beyond self-protection: Self-affirmation benefits hedonic and eudaimonic well-being. *Personality and Social Psychology Bulletin*, 40(8), 998–1011. <https://doi.org/10.1177/0146167214533389>

- Nelson, S. K., Layous, K., Cole, S. W., & 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>
- Robinson, E., Sutin, A. R., Daly, M., & Jones, A. (2022). A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *Journal of Affective Disorders, 296*, 567–576. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Sheldon, K. M., & Hilpert, J. C. (2012). The balanced measure of psychological needs (BMPN) scale: An alternative domain general measure of need satisfaction. *Motivation and Emotion, 36*(4), 439–451. <https://doi.org/10.1007/s11031-012-9279-4>
- Shnabel, N., Purdie-Vaughns, V., Cook, J. E., Garcia, J., & Cohen, G. L. (2013). Demystifying values-affirmation interventions: Writing about social belonging is a key to buffering against identity threat. *Personality and Social Psychology Bulletin, 39*(5), 663–676. <https://doi.org/10.1177/0146167213480816>
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195152968.001.0001>
- Slavich, G. M., Roos, L. G., & Zaki, J. (2021). Social belonging, compassion, and kindness: Key ingredients for fostering resilience, recovery, and growth from the COVID-19 pandemic. *Anxiety, Stress & Coping, 35*(1), 1–8. <https://doi.org/10.1080/10615806.2021.1950695>
- Steger, M. F., Frazier, P., Kaler, M., & Oishi, S. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*(1), 80–93. <https://doi.org/10.1037/0022-0167.53.1.80>
- Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020). Development and initial validation of the COVID stress scales. *Journal of Anxiety Disorders, 72*, 102232. <https://doi.org/10.1016/j.janxdis.2020.102232>
- van der Bij, A. K., de Weerd, S., Cikot, R. J., Steegers, E. A., & Braspenning, J. C. (2003). Validation of the Dutch short form of the state scale of the Spielberger state-trait anxiety inventory: Considerations for usage in screening outcomes. *Public Health Genomics, 6*(2), 84–87. <https://doi.org/10.1159/000073003>
- World Health Organization. (2022, June 16). World mental health report: Transforming mental health for all. <https://www.who.int/publications/i/item/9789240049338>

AUTHOR BIOGRAPHIES

S. Katherine Nelson-Coffey is an Associate Professor in the School of Social and Behavioral Sciences at Arizona State University. Her research explores the many ways in which close relationships are related to happiness and well-being, using experimental, longitudinal, and daily diary studies. Her research on these topics has been published in *Psychological Science*, *Psychological Bulletin*, *Personality and Social Psychology Bulletin*, *Emotion*, *The Journal of Positive Psychology*, and other outlets. She holds a M.A. and Ph.D. in social/personality psychology from the University of California, Riverside, and a B.S. in psychology from the University of Mary Washington.

Kristin Layous is an Associate Professor of Psychology at California State University, East Bay. Her research explores how brief psychological interventions can improve people's lives. Specifically, she examines the processes by which people can become happier through engaging in simple positive activities, as well as the ways in which these activities can help people overcome challenging experiences and maladaptive habits. She has published on these topics in *The Journal of Personality and Social Psychology*, *Perspectives on Psychological Science*, *Emotion*, *Journal of Experimental Social Psychology*, and *The Journal of Positive Psychology*, among others. She holds a M.A. and Ph.D. in social/personality psychology from the University of California, Riverside, an M.A. in Higher Education/Student Affairs from The Ohio State University, and a B.A. in Psychology from the University of California, Santa Barbara.

John K. Coffey is an Associate Professor in the School of Social and Behavioral Sciences at Arizona State University. His research explores the role of children's emotions and relationships in lifelong happiness and well-being and the benefits of brief interventions to promote children's well-being. He has published on this topic in *Emotion*, *The Journal of Positive Psychology*, *Motivation and Emotion*, and *Attachment and Human Development*, among other

outlets. He holds a Ph.D. in Positive Developmental Psychology from Claremont Graduate University, a M.S.W. from The University of Michigan, and a B.A. in Psychology from Creighton University.

Linda C. Mayes is the Arnold Gesell Professor of Child Psychiatry, Pediatrics, and Psychology and Director of the Yale Child Study Center. Her research focuses on stress-response and regulatory mechanisms in young children at both biological and psychosocial risk, with a specific focus on the impact of prenatal substance use on children's long-term outcomes. She is also a Distinguished Visiting Professor of Psychology at Sewanee: The University of the South where she is working on intervention programs to enhance child and family resilience. She has published on these topics in *Journal of Child Psychology and Psychiatry*, *Archives of Pediatrics and Adolescent Medicine*, *Journal of Psychosomatic Research*, *Clinical Psychology Review*, and *Pediatrics*, among other outlets. She holds an M.D. from Vanderbilt University and a B.A. in Chemistry from Sewanee: The University of the South.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Nelson-Coffey, S. K., Layouts, K., Coffey, J. K., & Mayes, L. C. (2023). The effects of social belonging and kindness on stress and well-being during the COVID-19 pandemic: A longitudinal experiment. *Social and Personality Psychology Compass*, e12798. <https://doi.org/10.1111/spc3.12798>