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Follow-up to a randomized controlled trial of the effect of self-affirmation on anxiety during the COVID-19 pandemic

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ABSTRACT

A recent study showed that a brief intervention involving reflection on personal values (T1: 2 February 2020) can buffer the anxiety response one week later (T2: Feb. 9) during the COVID-19 pandemic in China. The present study reported the results from a follow-up two weeks (T3: Feb. 16) and one-month later (T4: Mar. 1). Two hundred and twenty participants were recruited via convenience sampling and randomly assigned either to the value-affirmation condition or to a control condition, with 110 participants in each condition. The results revealed that similar to T2, participants who affirmed their values showed a lower anxiety response than those in the control group at T3, despite the pandemic continuing to increase rapidly during that time. Meanwhile, anxiety decreased in both groups at T4 as the pandemic eased. Findings suggest that self-affirmations can help reduce stress in the face of the COVID-19.

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KEYWORDS

COVID-19; stress; self-affirmation; anxiety; follow-up

Introduction

The rapid widespread of COVID-19 has increased public attention to mental health stress (Wang et al., 2020). Timely mental healthcare interventions are urgently needed not only for confirmed or suspected COVID-19 patients and frontline medical workers (Xiang et al., 2020), but also for the general public (Bao et al., 2020). Some empirical evidence has showed that people who affirm their important values can buffer stress from threatening situations. For example, Creswell et al. (2007) showed that expressive writing on personal values reduced subjective distress and self-reported symptoms in early-stage breast cancer. Schmeichel and Martens (2005) demonstrated that affirming a valued aspect of one's worldview attenuated death-related concerns in a mortality salience situation. In a recent study, we showed that self-affirmation (T1: 2 February 2020) can also buffer the anxiety response one week later (T2: Feb. 9) during the COVID-19 outbreak for the general public in China (Li et al., 2020). In the present study, we report the findings of the follow up with subjects two-weeks (T3: Feb. 16) and one-month (T4: Mar. 1) later. We assess how self-affirmation affected anxiety responses to the ongoing pandemic over time in China.

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Methods

Participants

Figure 1 shows a flowchart of the participants. Initially, 220 participants (83 males, 137 females; age: 16–50 years, $M = 24.44 \pm 8.82$) from 16 provinces in China were recruited via convenience sampling. During recruitment, participants with pre-existing mental or physical health conditions that could affect their emotional state were excluded from the study. At T1, all participants completed a demographic questionnaire and a baseline

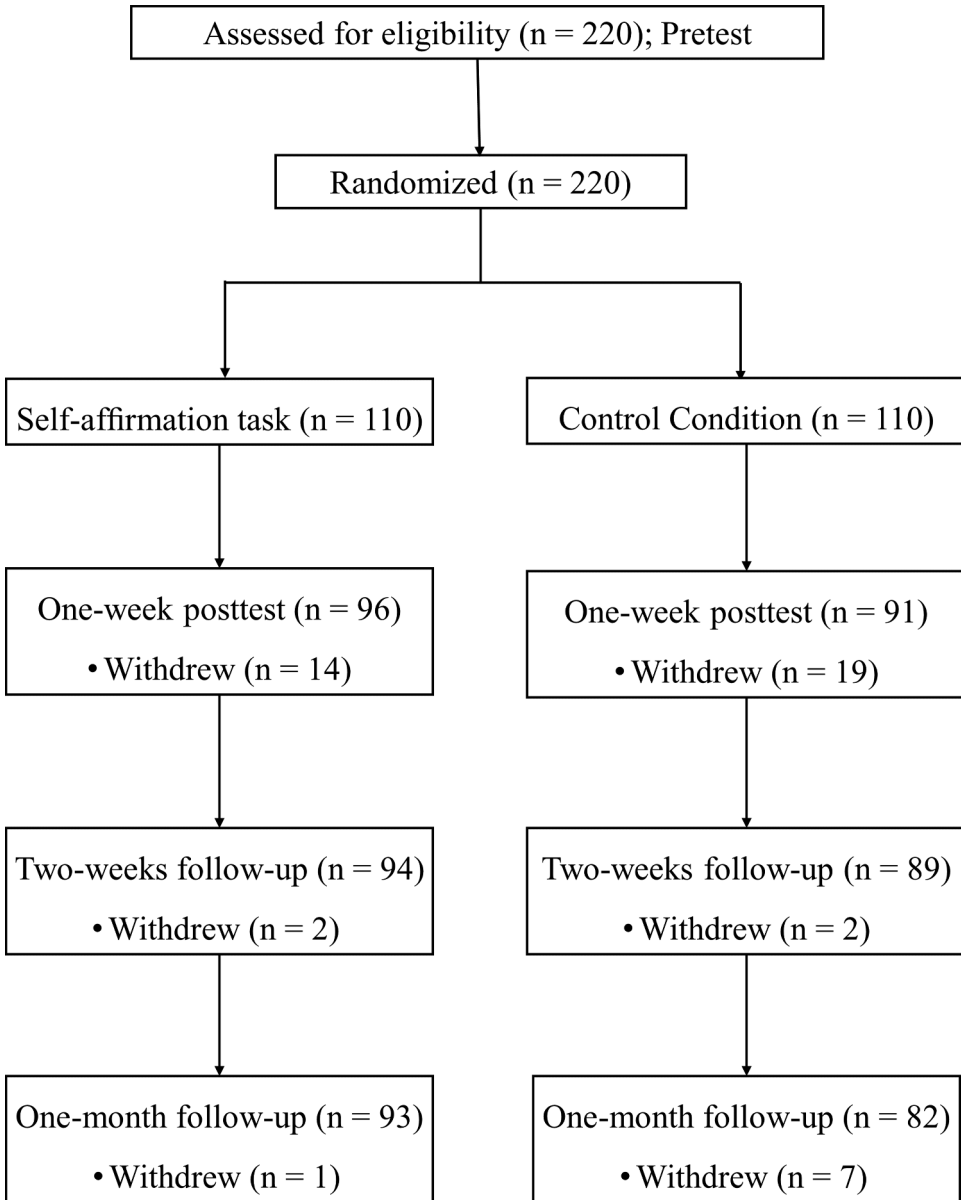


Figure 1. Participant flowchart.

Table 1. Means and standard deviations on various demographic variables and anxiety measure for self-affirmation group and control group.

	Range	Self-affirmation group	Control group	<i>F</i> (1,173)	Partial η^2
		(<i>n</i> = 93)	(<i>n</i> = 82)		
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
Sex (male/female) ^a	-	34/59	30/52	.01 ^b	.00
Age (year)	16–50	24.14 (7.66)	23.78 (7.27)	.09	.00
Educational level	0–7	4.69 (1.06)	4.85 (.96)	1.15	.00
Annual household income	1–8	3.83 (1.77)	4.00 (1.85)	.39	.01
Anxiety at T1	20–80	32.92 (6.43)	32.15 (6.50)	.61	.00
Anxiety at T2	20–80	32.61 (6.35)	34.45 (5.76)	3.97*	.02
Anxiety at T3	20–80	32.47 (5.89)	34.59 (7.43)	4.44*	.03
Anxiety at T4	20–80	31.05 (6.81)	30.76 (7.09)	.07	.00

N = 175.

^aNumbers of male and female were reported.

^b χ^2 value was reported; **p* < .05.

anxiety assessment. Then, the 220 participants were randomly allocated to either the self-affirmation group (*n* = 110) or the control group (*n* = 110). After assignment, all participants completed the writing intervention. At T2, 96 participants in the self-affirmation group and 91 in the control group completed the test. At T3, 94 participants in the self-affirmation group and 89 in the control group completed the test. At T4, 93 participants in the self-affirmation group and 82 in the control group completed the assessment. Therefore, the final sample consisted of 175 participants ($M_{age} = 23.96 \pm 7.46$).

Intervention and procedures

The intervention was based on the research of Cohen et al. (2006) and Goyer et al. (2017). Participants in both groups were presented a list of six personal values that were previously identified by Chinese individuals as important (Jin et al., 2009). In the self-affirmation group, participants were asked to select a personal value from the list that made them feel important and write about it. Participants in the control group were asked to select a personal value that was unimportant to them and write about why it may be important to others. To reinforce the manipulation, after the writing exercise, participants were asked to complete a four-item questionnaire concerning their chosen value (Cohen et al., 2006).

Participants' anxiety states were assessed using the self-rating anxiety scale (SAS) developed by Zung (1971). A revised Chinese version of the SAS has been shown to have high validity and reliability for mainland Chinese samples (Tao & Gao, 1994). In the present study, participants were instructed to complete the scale based on their feelings and emotional state at four time points (T1, T2, T3, and T4). The Cronbach's alpha coefficients of this scale were .75, .72, .76, and .79 at T1, T2, T3, and T4, respectively.

We also collected participants' educational level and annual family income. Educational level was measured on a 7-point Likert scale: 0 = no education, 1 = primary school level, 2 = junior middle school level, 3 = senior middle school level, 4 = 3-year college, 5 = 4-year university, 6 = postgraduate level, and above. Annual household income was measured on an 8-point Likert scale: 1 = less than 5,000, 2 = 5,000–10,000,

3 = 10,000–20,000, 4 = 20,000–50,000, 5 = 50,000–100,000, 6 = 100,000–200,000, 7 = 200,000–500,000, 8 = more than 500,000 Chinese Yuan per year.

To reduce close contact during the outbreak, the writing intervention and data collection were conducted online by 22 trained undergraduate students majoring in psychology. The training session for the undergraduate students lasted approximately 30 minutes, and mainly covered the provision of instructions to participants and detailed task procedures. All experimenters and participants were blinded to the condition assignment and purpose of the study. Before the study, informed consent was obtained orally from each participant, and all procedures were approved by the local institutional review board.

Results

Compared self-affirmation group and control group at baseline (T1)

A multivariate analysis of variance (MANOVA) was conducted to examine the group differences for various demographic variables and anxiety measure at T1. The results showed that the overall group effect was not significant (*Wilks' Lambda* = .99, $F(4, 170) = .49$, $p = .74$). Separate analyses of variance (ANOVA) further confirmed that there was no significant difference between the two groups on various demographic variables and anxiety measure at T1 ($F_s < 1.15$, all $p > .28$), see [Table 1](#).

Self-affirmation effect on anxiety

Repeated measures ANOVA was conducted to examine the self-affirmation effect on anxiety with assessed time as a within-subjects factor, and group as a between-subjects factor. The main effect of *time* was significant ($F(3, 519) = 7.66$, $p < .001$, partial $\eta^2 = .04$). Bonferroni-corrected pairwise comparisons demonstrated that the level of anxiety at T4 was significantly lower than at T1, T2, and T3 (all $p < .05$). The interaction effect of group and time was significant ($F(3, 519) = 2.68$, $p = .046$, partial $\eta^2 = .02$) (see [Figure 2](#)). Simple effect analysis demonstrated that for the control group, anxiety levels at T2 and T3 were significantly higher than at T1 (all $p < .05$), and the anxiety level at T4 was significantly lower than at T1, T2, and T3 (all $p < .05$). However,

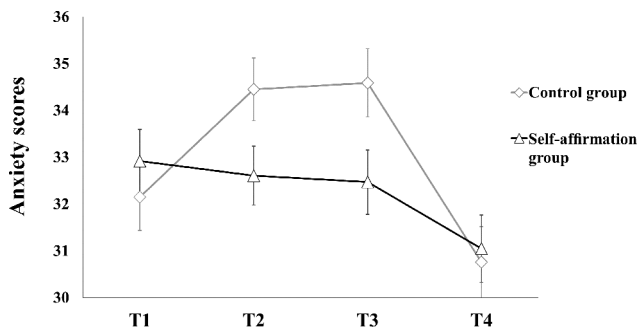


Figure 2. Anxiety profiles of two groups at T1, T2, T3, and T4. Note: Vertical lines depict standard errors of the means.

the self-affirmation group did not show any significant change from T1 to T2 and T3 (all $p > .65$), and similar to the control group, the anxiety level at T4 was significantly lower than at T1, T2, and T3 (all $p < .05$).

Discussion

In the present study, we examine how self-affirmation effects anxiety reactions during the ongoing pandemic. The results revealed that compared with control participants who experienced increased levels of anxiety from T1 to T2 and T3 as COVID-19 prevalence increased, self-affirmation participants did not show increased anxiety during this period. Meanwhile, both groups showed a significant decrease in anxiety at T4 as the pandemic eased. The current study provides important evidence that a brief experimental intervention involving the affirmation of personal values can buffer individuals' anxiety responses during the ongoing threat situation of COVID-19.

In the present study, the persistent pandemic created a naturalized threat that caused people to be in a state of constant stress. Given the rapidly increasing number of confirmed cases and deaths between 27 January 2020 and 18 February 2020 in China, people were likely to show higher anxiety over time. Indeed, our results showed that the control group showed increased levels of anxiety from February 2 (T1) to February 9 (T2) and February 16 (T3). By contrast, our results showed that the self-affirmation group's anxiety did not change over time. This may be because self-affirmations remind people who they are and what is important to them despite adversity. When self-affirmed, people can view a threat from a broadened perspective, allowing them to uncouple the self and the threat, and providing a buffer against the threat and its consequences (Cohen & Sherman, 2014; Sherman, 2013). In the absence of affirmation, people tend to narrow their attention, causing them to focus on the threat (Pratto & John, 1991), which invokes a state of constant stress. However, as the pandemic eased in China (T4), anxiety decreased in both groups, which may be due to attenuated perceptions of the threat.

In conclusion, the present study demonstrated that interventions involving the affirmation of personal values can buffer psychological stress responses in the face of COVID-19 pandemic.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Datasets are available on request by the corresponding author.

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