Individual differences in spontaneous self-affirmation predict well-being

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ABSTRACT

The present research examines the relationship between individual differences in the extent to which people report self-affirming when faced with a threat (spontaneous self-affirmation) and well-being. Across three studies (total $N = 515$), spontaneous self-affirmation consistently emerged as a significant linear predictor of hedonic and eudaimonic well-being outcomes, both cross-sectionally and longitudinally. A self-affirmation manipulation eliminated this association for two indices of well-being, primarily by boosting the well-being scores of those lower in spontaneous self-affirmation. Furthermore, spontaneous self-affirmation was found to partially mediate associations between socioeconomic status and well-being. These findings highlight individual differences in spontaneous self-affirmation as a potentially important contributor to well-being and suggest that consideration of spontaneous self-affirmation might further our understanding of the relationship between socioeconomic status and well-being.

Overview

Well-being is an important index of health. Indeed subjective well-being is strongly associated with both mental and physical health outcomes, including all-cause mortality (Collins et al., 2009; Wiest et al., 2011). Fostering the well-being of citizens is now a policy goal in several countries, including the UK, where the government uses indicators of well-being to monitor social progress and inform policy (e.g., Dolan et al., 2011). Given the importance of maintaining and promoting well-being, the identification of variables that have the potential to influence well-being is a priority. These include socioeconomic inequalities: individuals of lower socioeconomic status experience poorer well-being across a range of outcomes (Gerdtham & Johannesson, 2001; Kaplan et al., 2008). Consequently, understanding factors that could help explain socioeconomic inequalities in well-being also represents an important objective, if population well-being is to be optimized.

Experimental research suggests that self-affirmation manipulations may have significant implications for well-being, both indirectly – through an impact on variables such as stress reactivity, health behavior, and academic attainment – and directly (Howell,

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2017; Schüz & Schüz, 2017). In this paper we build on these promising experimental findings by examining the relationships between individual differences in reported spontaneous self-affirmation (the tendency to self-affirm when faced with a threat) and well-being. Across three studies, we test the hypothesis that individuals higher in spontaneous self-affirmation will experience greater well-being. In addition, we explore (a) if a self-affirmation manipulation moderates this relationship (Study 1) and (b) whether differences in the propensity to spontaneously self-affirm might contribute to our understanding of the relationship between socioeconomic status and well-being (studies 2 & 3).

Self-affirmation theory

Self-affirmation theory (Steele, 1988) posits that people are fundamentally motivated to view themselves as moral and capable. Information that challenges this sense of having a morally adequate and competent self (or "self-integrity") can prompt defensive reactions to mitigate the threat and protect self-integrity, even if these reactions occur at the expense of adaptive change. For example, when heavy drinkers are exposed to information documenting the health-related costs of alcohol consumption they may respond by derogating the message and denying its personal relevance rather than contemplating behavior change, as the latter would require them to acknowledge that they have acted unwisely in the past.

Importantly, however, self-affirmation theory contends that threats to self-integrity in one domain can be offset by an equivalent boost to self-integrity in a domain of at least equal importance to the self (Steele, 1988). For example, a poor appraisal at work may be offset by reminding oneself of one's acts of kindness to others, but only if kindness is a sufficiently important personal value that it counters the detrimental impact of the poor appraisal. Consequently, self-affirmation manipulations, which typically require individuals to focus on a cherished value, attribute, or strength, have the potential to leave recipients more open to adaptive change in threatening situations, as they feel less need to respond defensively and are better able to engage with the threat. Self-affirmation manipulations can thus help people deal with potentially threatening information constructively, without resorting to defensive responses (Cohen & Sherman, 2014).

Self-affirmation and well-being

Two dimensions of well-being have been identified in the research literature: hedonic and eudaimonic. Hedonic well-being captures the presence of positive affect and the absence of negative affect, whereas eudaimonic well-being reflects the sense of living life in accordance with one's "true" self, through the experience of meaning, engagement in activities that promote the sensation of "flow", and the fulfillment of such core psychological needs as autonomy, competence, and relatedness (Carruthers & Hood, 2004; Nelson et al., 2014; Ryan & Deci, 2001). Although conceptually distinct, hedonic and eudaimonic well-being overlap empirically (e.g., Keyes et al., 2002). Findings indicate that self-affirmation processes may have important implications for both hedonic and eudaimonic well-being.

Self-affirmation and well-being: Indirect effects

Self-affirmation manipulations have been shown to result in participants responding to events and information in ways that are likely to have positive implications for their well-being. For example, self-affirmation has been shown to reduce negative reactions to stress. Thus self-affirmed participants have been found to show reduced epinephrine responses to exam stress and report less worry compared to their non-affirmed counterparts (Sherman et al., 2009). Relatedly, while non-affirmed participants who had to give a speech in front of a hostile audience displayed elevated cortisol levels, participants who first self-affirmed did not (Creswell et al., 2005). Although these studies have typically not assessed well-being as an outcome in its own right, experiencing such reduced adverse physiological and psychological reactions to stress is likely to benefit well-being. It should be noted, however, that research findings in this area are not unequivocal, with at least one paper reporting adverse effects of self-affirmation on outcomes following exposure to a stressor (Jessop et al., 2018).

Self-affirmed participants have also been shown to respond to personally relevant health-risk information less defensively, rendering them more open to persuasion and, ultimately, to healthy behavior change (Epton et al., 2015; Sweeney & Moyer, 2015). Thus, self-affirmation has been shown to be effective at facilitating increased fruit and vegetable consumption (Epton & Harris, 2008), reduced alcohol intake (Armitage et al., 2011), and greater physical activity (Jessop et al., 2014). Following a healthy lifestyle, in turn, has the potential to benefit well-being (Dale et al., 2014). Although null findings and – on occasion – backlash effects of self–affirmation have also been reported (e.g., Good et al., 2015; Knight & Norman, 2016), on balance the published literature supports the position that self-affirmation confers benefits in the context of defensive responses to health risk information.

Furthermore, there are likely to be consequences for well-being from the well-documented benefits of self-affirmation for educational attainment in disadvantaged and other under-achieving groups (e.g., Cohen et al., 2006; Hadden et al., 2020); albeit conflicting findings have also been reported in this domain (e.g., Hanselman et al., 2017). In addition, self-affirmation interventions in educational settings have been shown to boost students' intrinsic motivation and sense of belonging (Hernández et al., 2017; Thoman et al., 2013), which may have implications for such components of eudaimonic well-being as meaning and relatedness.

Therefore, at least on balance, there is promising evidence that self-affirmation might promote well-being indirectly through various routes (see also Howell, 2017; Schüz & Schüz, 2017).

Self-affirmation and well-being: Direct effects

Few studies have tested whether self-affirmation confers direct benefits for well-being. Nelson et al. (2014) demonstrated that a self-affirmation manipulation was associated with increases in eudaimonic well-being in a sample of South Korean students. Similarly, in a further study, they found that self-affirmation was associated with increases in hedonic well-being and marginal ($p = .07$, $d = 0.79$) increases in eudaimonic well-being in U.S. students, although these changes were not long lasting. Interestingly, some of these effects were restricted to those initially lower in eudaimonic well-being. In addition,

Armitage (2016) found that older women who received a brief self-affirmation manipulation were protected against subsequent declines in well-being, relative to their counterparts in the control group.

There is also evidence, albeit mixed, that completing self-affirmation manipulations can promote positive affect (e.g., Creswell et al., 2013; cf., Johnson et al., 2016), which maps onto hedonic well-being. Indeed, self-affirmation has been shown in fMRI studies to activate regions of the brain associated with rewards (e.g., Dutcher et al., 2016), suggesting links to positive affective experiences.

Self-affirmation manipulations have additionally been found to boost constructs broadly aligned with components of eudaimonic well-being. Thus, self-affirmation has been shown to result in improved executive function (P.S. Harris et al., 2017), which may well coincide with fulfillment of the core psychological need of competence. Self-affirmation has also been shown to promote self-control (Schmeichel & Vohs, 2009) and beliefs relating to self-efficacy (e.g., Jessop et al., 2009; cf., Armitage et al., 2008), both of which potentially overlap with autonomy-related need fulfillment. Furthermore, Crocker et al. (2008) demonstrated that self-affirmation resulted in direct boosts to feelings of connectedness to others, which likely correspond with need fulfillment in the domain of relatedness.

In summary, there is some evidence that self-affirmation may boost well-being directly, although this research is very much in its infancy, which leaves many questions unanswered (Howell, 2017).

Individual differences in self-affirmation

The research described thus far has involved experimental manipulations in which participants are forced to self-affirm in ways that may not reflect their natural practices or responses. Relatively little research has paid attention to more naturally occurring or "spontaneous" self-affirmation. The primary goal of the research presented here, therefore, is to assess whether individual differences in the reported propensity to self-affirm spontaneously (Harris et al., 2019; see also, Pietersma & Dijkstra, 2012) relate to well-being outcomes.

Given the ubiquitous nature of stress and the likelihood of frequent exposure to information that challenges one's self concept, coupled with the apparent capacity for self-affirmation to mitigate negative reactions to stress (e.g., Sherman et al., 2009), reduce defensive responding (e.g., Epton & Harris, 2008), and (in some instances) directly benefit mood (e.g., Creswell et al., 2013), being predisposed to self-affirm spontaneously may well boost hedonic well-being by promoting positive affect or diminishing negative affect. Furthermore, in light of findings that manipulated self-affirmation can boost executive functioning (e.g., P.S. Harris et al., 2017), promote positive beliefs relating to self-efficacy and control (e.g., Jessop et al., 2008), and elevate other-directed feelings (Crocker et al., 2008), it seems plausible that individuals who are more inclined to engage in spontaneous self-affirmation may additionally be more likely to fulfill such core psychological needs as competence, autonomy, and relatedness, with attendant implications for eudaimonic well-being.

Some promising initial findings were reported by Emanuel et al. (2018), who analyzed cross-sectional data from the Health Information National Trends Survey (HINTS 4, Cycle 3), which collects information from a large US national adult sample (*N* = 3185). This survey included two items from a measure of spontaneous self-affirmation (Spontaneous Self-Affirmation Measure; Harris et al., 2019). It also contained single items assessing the frequency with which participants experienced each of a number of affective states (happy, angry, anxious, hopeful and sad) alongside single item measures of subjective health, optimism and personal health efficacy. The analyses conducted by Emanuel et al. indicated that individuals who reported being more likely to spontaneously self-affirm were also more likely to experience a range of positive outcomes commensurate with greater well-being. Thus they reported higher levels of happiness, hopefulness, and optimism and lower levels of sadness and anger, alongside more positive cognitions regarding personal health efficacy and subjective health. There was no association between spontaneous self-affirmation and anxiety. These findings provide preliminary support for the proposition that spontaneous self-affirmation may be associated with well-being, albeit by its nature the study could assess only a subset of indices of well-being and use only single item measures in the process.

In subsequent cross-sectional work, utilizing five samples ranging in size from 95 to 387 and drawn from student and community-based populations, Harris and colleagues (Harris et al., 2019) demonstrated that the full Spontaneous Self-Affirmation Measure (SSAM; Harris et al., 2019) correlated moderately with measures of self-esteem and habitual positive self-thought. Furthermore, the SSAM was an independent predictor of a large number of outcomes and showed discriminant relationships with variables that one might expect to be indicative of well-being, including measures of self-compassion, optimism rooted in behavioral control and behavior-specific self-efficacy. In addition, the SSAM showed convergent validity with measures consistent with self-affirming, including manipulation checks used in experimental research (e.g., Napper et al., 2009). Overall, therefore, the evidence suggests both that the SSAM is a valid measure of reported tendency to self-affirm in response to threats and that individual differences in spontaneous self-affirmation are sufficiently distinct from self-esteem to merit studying as a predictor of well-being in their own right.

More recently, Lakuta (2020) explored associations between spontaneous self-affirmation and well-being and mental health outcomes among a relatively small (*N* = 51) sample of people with psoriasis. They used a composite measure of subjective well-being (comprising measures of life satisfaction, happiness, and pleasant and unpleasant affect) and assessed spontaneous self-affirmation using two items derived from the SSAM (Harris et al., 2019). Findings indicated that being more inclined to spontaneously self-affirm was associated with better well-being and lower levels of depression and anxiety. Furthermore, the relationship between spontaneous self-affirmation and well-being appeared to be sequentially mediated by (i) greater engagement with the emotional regulation strategy of putting negative and stressful life events into perspective and (ii) fewer negative body-related emotions.

Collectively, the findings of both Emanuel et al. (2018) and Harris et al. (2019) provide preliminary evidence that measures of individual differences in spontaneous self-affirmation are correlated with outcomes that one would expect to be indicative of well-being. Furthermore, the evidence reported by Lakuta (2020) indicates that, amongst

a sample of people experiencing a specific illness, spontaneous self-affirmation was associated with better well-being. However, these studies have not systematically investigated the interrelationships between individual differences in spontaneous self-affirmation and well-being, using established measures and including those of both hedonic and eudaimonic aspects of well-being. Furthermore, the studies described above were all cross-sectional and correlational in design.

The present research

Ascertaining the nature of the relationship between spontaneous self-affirmation and well-being has the potential to contribute to theory by advancing the emergent literature on self-affirmation and well-being and fostering understanding of the mechanisms that affect well-being and – hence – could contribute to inequalities in this important outcome. Furthermore, if links are established between spontaneous self-affirmation and well-being, this could have important applied implications, potentially leading to the development of interventions to foster well-being and reduce well-being inequalities.

In light of the above, the present research systematically explores whether individual differences in spontaneous self-affirmation predict eudaimonic and hedonic well-being, both cross-sectionally (studies 1 & 2) and prospectively (Study 3). We hypothesized that individuals higher in spontaneous self-affirmation would experience more positive well-being across a range of outcomes.

Furthermore, in a secondary exploratory angle to the present research, we examined whether an explicit self-affirmation manipulation would moderate the association between spontaneous self-affirmation and well-being (Study 1). We speculated that experimentally induced self-affirmation might attenuate the relationship between spontaneous self-affirmation and well-being, as it may boost state well-being for individuals lower in spontaneous self-affirmation rendering it more in-line with that experienced by individuals higher in spontaneous self-affirmation (who may have little to gain from an explicit self-affirmation manipulation, as they self-affirm naturally).

In addition, as a further exploratory element to the present programme of research, we sought to explore whether individual differences in spontaneous self-affirmation might partially mediate any associations between socioeconomic status and well-being (studies 2 and 3). In light of evidence that low socioeconomic status is associated with less positive evaluations of the self (Twenge & Campbell, 2002) and a less individualistic orientation (Kraus et al., 2012), we conjectured that individuals lower in socioeconomic status would be less likely to spontaneously self-affirm when faced with threatening situations relative to those higher in socioeconomic status and that this, in turn, would be predictive of lower levels of well-being.

Study 1

In Study 1 we undertook our first test of the hypothesis that individual differences in spontaneous self-affirmation would be associated with a range of indices of hedonic and eudaimonic well-being. We also investigated whether a self-affirmation manipulation moderated any such relationships. Specifically, in line with the rationale outlined above, we speculated that experimentally induced self-affirmation might weaken the

relationship between spontaneous self-affirmation and well-being, as it should bolster the well-being of those lower in spontaneous self-affirmation to be more in line with their counterparts higher in spontaneous self-affirmation.

Accordingly, we predicted that for participants not receiving a self-affirmation manipulation there would be a positive linear association between spontaneous self-affirmation and indicators of hedonic and eudaimonic well-being, with individuals higher in spontaneous self-affirmation experiencing greater well-being. By contrast, for self-affirmed participants we speculated that this relationship might be attenuated.

Method

Participants

Eighty three participants completed the study and met the inclusion criterion that they volunteered a value at the first stage of the self-affirmation manipulation (see Materials section). The sample was predominantly female (68.67%), student (75.90%), and resident in the UK (60.24%). The two most frequently represented nationalities were British (39.76%) and Nigerian (19.28%); no other nationality was reported by more than 5% of the sample. Ages ranged from 18 to 62 years ($M = 22.15$; $SD = 6.62$).

Design and procedure

The study had an experimental design. Participants were recruited opportunistically through contacts of a student research assistant[1] using e-mail and the social media website Facebook. Prospective participants were sent a message inviting them to take part in a study about their values, thoughts, and feelings; this invitation included the link to the online questionnaire. In order to encourage participation, participants were entered into a cash prize draw. Participants were randomly allocated to the self-affirmation ($n = 30$) or control ($n = 53$) condition by the host website Bristol Online Surveys. Participants provided electronic informed consent and the study was granted ethical approval by the appropriate body at the University of Sussex.[2]

We conducted a power calculation for the main effects[3] using G*Power. This indicated that for linear multiple regression with two predictors a minimum sample size of 68 was required to detect a medium effect size (f^2) of 0.15 with a .80 level of power.

Materials

The online questionnaire included the following measures and manipulations.

Demographic information. Participants were asked to indicate their age, gender, occupation, nationality, and country of residence.

Self-affirmation manipulation. Participants in both conditions were given a list of example values (e.g., conscientiousness, compassion, and intelligence). In line with previous self-affirmation research (e.g., Harris et al., 2014), participants in the self-affirmation condition were asked to indicate their most important value (which did not have to appear on the list), give three reasons why their chosen value was important to them, and one

example of something they had done to demonstrate its personal importance. Participants in the control condition were asked to indicate their least important value and respond to comparable questions about why this value might be important to someone else.

Value-importance. In order to allow us to check that participants in the self-affirmation condition did write about a more personally important value than their counterparts in the control condition (as instructed), participants in both conditions were asked to rate the personal importance of the value they had chosen on a 7-point scale ranging from *extremely unimportant* (1) to *extremely important* (7; Jessop et al., 2018).

Hedonic well-being. Hedonic well-being was assessed using measures of affect balance, mental well-being, and anxiety. These measures were adapted where appropriate to assess state well-being (i.e., how participants were feeling in the present moment), in order to maximize their sensitivity to variations in well-being induced by the self-affirmation manipulation.

Affect balance. Participants completed an adaptation of the Modified Differential Emotions Scale (Fredrickson, 2013). Participants were asked to rate the extent to which they felt each of ten clusters of positive emotions (e.g., "I feel joyful, glad, or happy") and ten clusters of negative emotions (e.g., "I feel sad, downhearted, or unhappy"). Responses were given on 5-point scales ranging from *not at all* (1) to *extremely* (5). Internal reliability was acceptable for both positive (α = .86) and negative (α = .85) emotion subscales. Following Nelson et al. (2014), affect balance scores were computed by averaging the mean of the positive emotion items with the mean of the (reverse-scored) negative emotions. Higher scores thus reflect the experience of more positive emotions relative to negative emotions.

Mental well-being. Participants completed an adaptation of the Short Warwick-Edinburgh Mental Well-Being Scale (Stewart-Brown et al., 2009), comprising seven items (e.g., "I feel optimistic about the future"); responses were given on five-point scales ranging from *none of the time* (1) to *all of the time* (5). The resultant scale had acceptable internal reliability (α = .74). A mean score was calculated for each participant, with higher scores indicating greater well-being.

Anxiety. Participants' current levels of anxiety were assessed using the state subscale of the short-form State Trait Anxiety Inventory (Marteau & Bekker, 1992). This scale has six items (e.g., "I am tense"); responses range from *not at all* (1) to *very much* (4). The scale had acceptable internal reliability (α = .83). A mean score was calculated for each participant, with higher scores indicating greater levels of anxiety.

Eudaimonic well-being. Eudaimonic well-being was assessed using measures of flourishing, meaning and need satisfaction. Again, these measures were modified where appropriate to tap state well-being. Responses to all items were given on seven-point scales ranging from *strongly disagree* [1] to *strongly agree* [7]. Mean scores were calculated for each measure with higher scores indicating greater levels of well-being on the construct in question. A measure of flow was not included in the present study, as it was not considered suitable for assessment in state form in the present context.

Flourishing. Participants completed the Flourishing Scale (Diener et al., 2010), which is designed to capture positive functioning relating to such eudaimonic constructs as meaning and purpose, competence, and positive relationships. The scale comprises eight items (e.g., "I lead a purposeful and meaningful life"), α = .87.

Meaning. Meaning in life was assessed using the four-item measure developed by Nelson et al. (2014) (e.g., "I feel a sense of purpose in my daily life"), α = .78.

Need satisfaction. Following Nelson et al. (2014), need satisfaction was assessed using a nine-item measure tapping need satisfaction in the domains of competence ("I feel that I am successful at completing difficult tasks and projects"), autonomy ("I feel free to do things my own way"), and relatedness ("I feel close and connected with other people who are important to me"), α = .88.

Spontaneous self-affirmation. Spontaneous self-affirmation was assessed using nine items from the Spontaneous Self-Affirmation Measure (SSAM; Harris et al., 2019). The SSAM examines the extent to which people report reflecting on personal strengths, values or social relationships when they feel threatened or anxious (e.g., "When I feel threatened or anxious by people or events I find myself thinking about my strengths"; "When I feel threatened or anxious by people or events I find myself thinking about my values"; "When I feel threatened or anxious by people or events I find myself thinking about the people I love"). Responses were measured on a seven-point scale ranging from *disagree completely* (1) to *agree completely* (7). The resultant scale was found to have acceptable internal reliability in the present study, α = .79.

Self-esteem. A measure of self-esteem was included to verify that spontaneous self-affirmation can be considered as distinct from this construct (see, Harris et al., 2019). Self-esteem was assessed using the Single Item Self-Esteem Scale (SISE; Robins et al., 2001). The bi-variate correlation between spontaneous self-affirmation and self-esteem in the present study was $r(77) = .29$, $p = .009$.

Results

Preliminary analyses

Participants' SSAM scores ranged from 1.13 to 6.78 ($M = 4.44$; $SD = 0.96$). Oneway ANOVAs revealed no significant differences between conditions in terms of age or spontaneous self-affirmation; $ps > .468$, $\eta p^2 s < .01$. Chi-Square analyses revealed no significant associations between condition and gender (male or female), occupation (student or not), country of residence (UK or not), or nationality (British, Nigerian, or other); all $ps > .050$, *Cramer's Vs* < .22.

As expected, participants in the standard self-affirmation condition rated the value that they had selected as significantly more important to them than did participants in the control condition, $F(1, 81) = 68.07$, $p < .001$, $\eta p^2 = .46$, $Ms = 6.27$ and 3.19 respectively.

Associations between spontaneous self-affirmation, condition and state well-being

In order to determine whether (a) spontaneous self-affirmation predicted well-being and (b) condition moderated any relationship between spontaneous self-affirmation and well-being, we conducted a series of hierarchical multiple regression analyses, with each indicator of well-being entered in turn as the dependent variable. Mean-centered SSAM scores were entered at step one; dummy coded condition (control = 0, self-affirmation = 1) was entered at step two, and the two-way interaction was entered at step 3. The resultant regression equations are summarized in Tables 1 and 2.

Spontaneous self-affirmation emerged as a significant linear predictor of each of the indicators of state well-being, accounting for between 8% and 19% of the variance. Furthermore, the interaction effect was significant for anxiety and meaning, indicating that condition moderated the relationship between spontaneous self-affirmation and these outcomes.

In order to further explore these interaction effects, we regressed each of these well-being outcomes onto SSAM scores for participants in the control and self-affirmation conditions separately. We used non-mean-centered SSAM scores in these analyses to facilitate interpretation (Figure 1). In each instance there was a significant linear association between spontaneous self-affirmation and well-being for participants in the control condition (all Fs ≥ 12.20; ps ≤ .002; R^2s ≥ .20), whereas, for participants in the self-affirmation condition, there were no significant relationships between spontaneous self-affirmation and well-being (all Fs ≤ 0.65; ps ≥ .427; R^2s ≤ .02).

Discussion

Findings support our primary hypothesis that there would be a positive association between individual differences in spontaneous self-affirmation and well-being. Across all six outcomes, spontaneous self-affirmation emerged as a significant linear predictor of state well-being: individuals who were more likely to engage in spontaneous self-affirmation experienced greater hedonic and eudaimonic well-being.

Furthermore, and in line with our second, more exploratory, prediction, the relationships between spontaneous self-affirmation and two of the six indices of well-being (anxiety and meaning) showed evidence of moderation by condition.[4] In each instance, there was a strong association between spontaneous self-affirmation and well-being in the control condition that was eliminated in the self-affirmation condition. The figures suggest that this was in part attributable to the self-affirmation manipulation boosting state well-being for participants lower in spontaneous self-affirmation (as speculated).

This pattern complements the findings of other studies showing that self-affirmation manipulations tend to confer the greatest benefit for those who are arguably most in need of intervention, such as those most at risk of engaging in a particular health detrimental behavior (e.g., Harris & Napper, 2005) or those most vulnerable to the stressor under investigation (e.g., Sherman et al., 2009). It is perhaps noteworthy, however, that the figures could also be interpreted to suggest that the self-affirmation manipulation might have resulted in reduced well-being for those higher in spontaneous self-affirmation (compared to their control counterparts). It is not unknown for

Table 1. Summary of hierarchical multiple regression analyses predicting indicators of hedonic well-being, study 1.

Variables entered	Affect-balance			Mental well-being			Anxiety		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
SSAM ß	.42***	.41***	.52***	.41***	.40***	.47***	−.29*	−.29*	−.45***
(95% CI)	(.21, .62)	(.21, .62)	(.28, .76)	(.21, .62)	(.19, .60)	(.23, .71)	(−.50, −.07)	(−.51, −.07)	(−.70, −.20)
Condition ß		.08	.09		.16	.17		.02	.00
(95% CI)		(−.12, .29)	(−.11, .30)		(−.04, .37)	(−.03, .37)		(−.20, .24)	(−.21, .21)
SSAM X Condition ß			−.21			−.14			.32*
(95% CI)			(−.45, .03)			(−.38, .10)			(.07, .56)
R^2	.18***	.18***	.21***	.17***	.20***	.21***	.08*	.08*	.15**
F	16.55***	8.55***	6.83***	15.88***	9.34***	6.72***	6.91*	3.43*	4.59**
ΔR^2		.01	.03		.03	.01		.00	.07*
ΔF		0.62	2.97		2.49	1.39		0.04	6.42*

total df = 79.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Summary of Hierarchical Multiple Regression Analyses Predicting Indicators of Eudaimonic Well-Being, Study 1.

Variables entered	Flourishing			Meaning			Need satisfaction		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
SSAM ß	.44***	.44***	.56***	.44***	.44***	.57***	.42***	.43***	.49***
(95% CI)	(.24, .64)	(.24, .64)	(.33, .80)	(.23, .64)	(.23, .65)	(.33, .81)	(.22, .63)	(.22, .64)	(.25, .74)
Condition ß		.01	.02		−.04	−.03		−.06	−.05
(95% CI)		(−.20, .21)	(−.18, .22)		(−.25, .17)	(−.23, .18)		(−.27, .15)	(−.26, .16)
SSAM X Condition ß			−.23			−.25*			−.12
(95% CI)			(−.47, .00)			(−.49, −.01)			(−.37, .13)
R^2	.19***	.19***	.23***	.19***	.19***	.24***	.18***	.18***	.19**
F	18.83***	9.30***	7.72***	17.61***	8.77***	7.51***	16.42***	8.27***	5.83**
ΔR^2		.00	.04		.00	.04*		.00	.01
ΔF		0.00	3.86		0.13	4.23*		0.28	0.95

total *df* s range from 76 to 79.
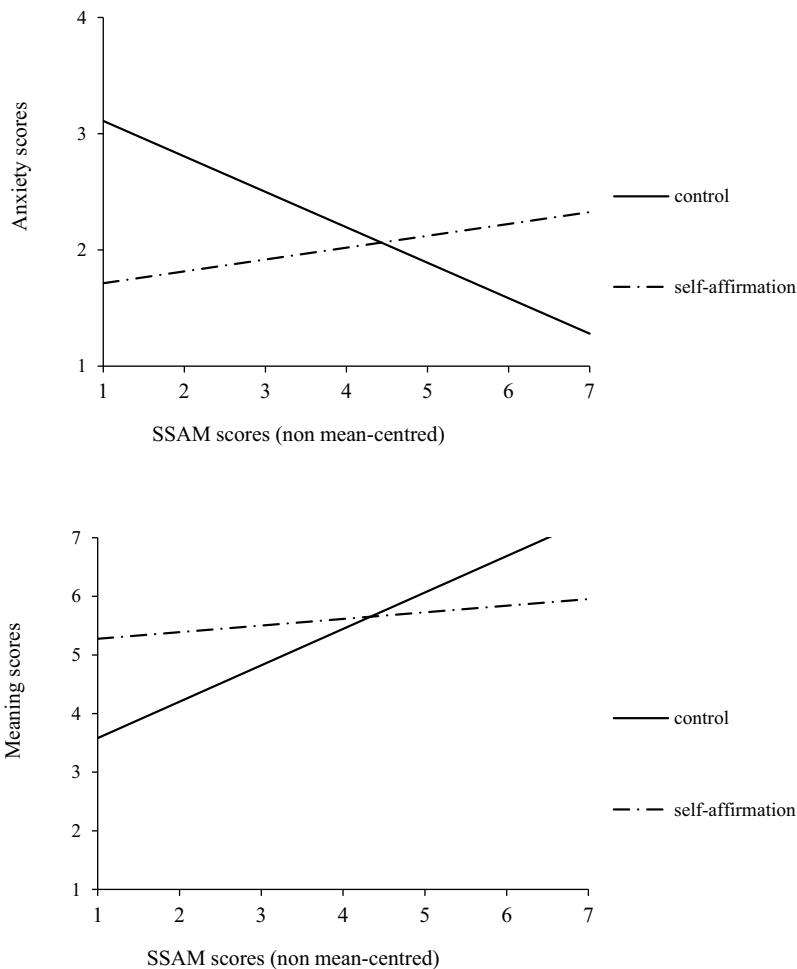* *p* < .05. ** *p* < .01. *** *p* < .001.

Figure 1. Measures of anxiety and meaning regressed onto spontaneous self-affirmation for participants in the control and self-affirmation conditions. Note. **Anxiety**: Control condition regression equation: Anxiety = 3.41−0.31*SSAM; $F(1, 49) = 12.20$, $p = .001$; $R^2 = .20$. Self-affirmation condition regression equation: Anxiety = 1.61 + 0.10*SSAM; $F(1, 27) = 0.65$, $p = .427$; $R^2 = .02$. **Meaning**: Control condition regression equation: Meaning = 2.96 + 0.62*SSAM; $F(1, 46) = 23.75$, $p < .001$; $R^2 = .34$. Self-affirmation condition regression equation: Meaning = 5.16 + 0.11*SSAM; $F(1, 27) = 0.26$, $p = .612$; $R^2 = .01$.

self-affirmation manipulations to produce backfire effects, especially among those who are least in need of intervention (e.g., Good et al., 2015), and it is important to establish parameters to the efficacy of self-affirmation effects before employing such manipulations on a widespread basis.

Overall, therefore, the findings from Study 1 support our primary hypothesis that spontaneous self-affirmation might have positive implications for well-being and provide initial evidence that it does so in the absence of an explicit threat. Nonetheless, Study 1 is subject to some limitations. First, the random allocation of participants to condition

resulted in an uneven distribution of participants between the self-affirmation and control conditions. This, compounded by the relatively small sample size overall, may have limited the ability of the study to detect interaction effects.

Second, the nature of the research design dictated that we assess well-being outcomes in state form immediately after exposure to the self-affirmation manipulation or control equivalent and we measured individual differences in spontaneous self-affirmation at the end of the questionnaire, in case completion of this scale affected the experimental manipulation (given that they both relate to self-affirmation). Research has shown that scores on this individual difference variable are relatively stable (Harris et al., 2019) and the preliminary analyses indicated that participants' scores did not vary as a function of condition in the present study, suggesting that scores on this measure were not affected by the experimental manipulation. Nonetheless, it is important to establish that the apparent relationship between spontaneous self-affirmation and well-being holds when both variables are assessed in the absence of an experimental manipulation.

Study 2

Study 2 assessed spontaneous self-affirmation and well-being using a cross-sectional, observational design, to test whether the positive associations between spontaneous self-affirmation and indicators of hedonic and eudaimonic well-being reported in Study 1 hold in a larger sample, who were not required to complete a self-affirmation manipulation, and extend to measures of well-being evaluated beyond the immediate state.

In Study 2 we also took the opportunity to address our second exploratory research question concerning the relationships between socioeconomic status, spontaneous self-affirmation and well-being. Specifically, we investigated whether individual differences in spontaneous self-affirmation contribute to the relationship between socioeconomic status and well-being.

Evidence suggests that individuals of lower socioeconomic status frequently experience poorer well-being across a range of outcomes (Gerdtham & Johannesson, 2001; Kaplan et al., 2008). However, the mechanisms underpinning this association are not fully understood. Research findings indicate that individuals of lower socioeconomic status tend to have lower self-regard, typically evaluating themselves less favorably (Twenge & Campbell, 2002). Integrating these findings alongside Kraus and colleagues observation that people of lower socioeconomic status have a less individualistic orientation, in so far as their thoughts and actions are less influenced by internal characteristics and goals (Kraus et al., 2012), we speculated that people of lower socioeconomic status might be less likely to respond to threats by self-affirming. Furthermore, we considered that such lower levels of spontaneous self-affirmation may – in turn – have negative ramifications for well-being. Hence, we conjectured that lower levels of spontaneous self-affirmation might partially mediate any negative associations between lower socioeconomic status and well-being outcomes.

Method

Participants

Two hundred and thirty-nine people took part in the study. The sample was predominantly female (62.34%), employed (71.13%), British (92.47%), and resident in the UK (94.14%). Ages ranged from 20 to 74 years ($M = 36.58$; $SD = 13.18$).

Design and procedure

The study employed a cross-sectional, correlational design. Participants, recruited opportunistically through a student research assistant using e-mail and social media, were invited to take part in a study exploring their values, thoughts, and feelings. The recruitment message contained the link to the online questionnaire. In order to encourage participation, participants were entered into a cash prize draw. Participants provided electronic informed consent and the study was granted ethical approval by the appropriate body at the University of Sussex.

We conducted a power calculation for the primary hypothesized relationship between spontaneous self-affirmation and well-being using G*Power. This indicated that for linear multiple regression with one predictor a minimum sample size of 55 was required to detect a medium effect size (f^2) of 0.15 with a .80 level of power.

Materials

The online questionnaire included the following measures.[5]

Demographic information. Participants were asked to indicate their age, gender, occupation, nationality, and country of residence.

Socioeconomic status. Socioeconomic status (SES) was assessed using an adaptation of the MacArthur Scale of Subjective Social Status (Adler et al., 2000). Participants were shown a picture of a ladder and asked to imagine that the top of the ladder represented those people who are the best off in the UK, insofar as "they have the most money, the highest amount of schooling and the jobs that bring the most respect". In contrast, the bottom rung on the ladder was presented as representing those who are the least well off. Participants were asked to indicate where they would be on the ladder from the lowest rung (1) to the highest rung (9).

This measure correlates with more traditional indicators of SES (e.g., measures of education, income and occupation) and has been widely used in studies examining associations between indicators of socioeconomic status and health/well-being (Adler et al., 2000; Cundiff & Matthews, 2017). We elected to use this measure in preference to more traditional measures of socioeconomic status in the present research, as the latter do not necessarily translate well in samples that include a mixture of student and non-student participants. Furthermore, the MacArthur Scale of Subjective Social Status has been found to be more predictive of outcomes associated with health and well-being than such traditional measures (e.g., Adler et al., 2000).

Spontaneous self-affirmation. Spontaneous self-affirmation was assessed using the same SSAM items as in Study 1 (Harris et al., 2019). The resultant scale was found to have acceptable internal reliability in the present study, α = .80.

Self-esteem. Self-esteem was again assessed using the SISE (Robins et al., 2001). The correlation between spontaneous self-affirmation and self-esteem in the present study was $r(237) = .49, p < .001$.

Hedonic well-being. Hedonic well-being was assessed using the same measures of affect balance,[6] mental well-being, and anxiety as in Study 1, all αs ≥ .86, although the measures of affect balance and mental well-being were adapted to assess well-being over the previous seven days.

Eudaimonic well-being. Eudaimonic well-being was assessed using the same measures of flourishing, meaning and need satisfaction used in Study 1, all αs ≥ .86. These measures were framed, where appropriate, to assess well-being over the past seven days. Following Nelson et al. (2014), Study 2 also included a five item measure assessing flow over the previous seven days (e.g., "I felt unaware of myself; I was only aware of the task at hand", *strongly disagree* [1] to *strongly agree* [7]), α = .07. A mean score was computed for each participant with higher scores indicating higher levels of flow.

Results

Descriptive statistics and bivariate correlations are given in Tables 3 and 4.

Associations between spontaneous self-affirmation and well-being

To test whether individual differences in spontaneous self-affirmation predicted well-being outcomes, we regressed each of the indicators of hedonic and eudaimonic well-being onto participants' SSAM scores (Table 5). SSAM scores were a significant linear predictor of each indicator of well-being, accounting for between 5% and 19% of the variance. Higher levels of spontaneous self-affirmation were consistently associated with greater well-being.

Table 3. Descriptive Statistics for Spontaneous Self-Affirmation, SES, and Indicators of Well-Being, Study 2.

	Min.	Max.	*M*	*SD*	*n*
Spontaneous self-affirmation	1.44	6.67	4.33	0.98	239
SES	2	9	5.39	1.20	239
Affect balance	1.71	4.90	3.59	0.50	239
Mental well-being	1.71	4.71	3.43	0.59	239
Anxiety	1.00	4.00	1.96	0.68	239
Flourishing	1.88	7.00	5.57	0.83	239
Flow	2.00	7.00	4.84	0.92	239
Meaning	2.25	7.00	5.41	1.00	239
Need satisfaction	2.22	7.00	5.39	0.87	239

Table 4. Bivariate correlations (Pearson's r) between Spontaneous Self-Affirmation, SES, and Indicators of Well-Being, Study 2.

Variable	2	3	4	5	6	7	8	9
1. SSA	.21***	.43***	.43***	−.23***	.43***	.29***	.43***	.44***
2. SES		.23***	.23***	−.16*	.31***	.13	.26***	.25***
3. Affect balance			.74***	−.64***	.70***	.52***	.69***	.69***
4. MWB				−.70***	.67***	.49***	.66***	.68***
5. Anxiety					−.47***	−.37***	−.52***	−.52***
6. Flourishing						.58***	.83***	.83***
7. Flow							.72***	.70***
8. Meaning								.86***
9. Need satisfaction								

SSA = spontaneous self-affirmation; MWB = mental well-being.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5. Summary of regression analyses predicting indicators of hedonic and eudaimonic well-being from spontaneous self-affirmation scores, study 2.

Dependent variable	SSAM β (95% CI)	Model F	Model R^2	df
Affect balance	.43*** (.32, .55)	54.25***	.19***	1, 237
Mental well-being	.43*** (.32, .55)	55.07***	.19***	1, 237
Anxiety	−.23*** (−0.35, −.11)	13.24***	.05***	1, 237
Flourishing	.43*** (.32, .55)	54.69***	.19***	1, 237
Flow	.29*** (.17, .41)	21.67***	.08***	1, 237
Meaning	.43*** (.32, .55)	54.66***	.19***	1, 237
Need satisfaction	.44*** (.33, .56)	57.38***	.19***	1, 237

*** $p < .001$.

Spontaneous self-affirmation as a mediator of the relationship between socioeconomic status and well-being

Participants' SSAM scores and each of the measures of well-being were first regressed onto SES; SES was a significant ($p < .05$) linear predictor of SSAM scores and all indicators of well-being bar flow. Accordingly, using the PROCESS macro in SPSS and taking 5,000 bootstrap samples to compute bias corrected confidence intervals (Hayes, 2013), we tested whether spontaneous self-affirmation mediated the relationship between socio-economic status and each well-being measure except flow (Figure 2). The resultant analyses revealed significant[7] indirect effects of SES through SSAM scores on affect balance ($b = 0.04$, 95% BCa CI [.015, .065]), mental well-being ($b = 0.04$, 95% BCa CI [.017, .075]), anxiety ($b = −0.02$, 95% BCa CI [−.053, −.007]), flourishing ($b = 0.06$, 95% BCa CI [.022, .104]), meaning ($b = 0.07$, 95% BCa CI [.029, .130]) and need-satisfaction ($b = 0.06$, 95% BCa CI [.025, .113]). In each case, while the total effect of SES on well-being was significant, its direct effect was reduced when SSAM scores were included in the model (see, Figure 2), suggesting that the relationship between socioeconomic status and well-being was partially mediated through spontaneous self-affirmation.
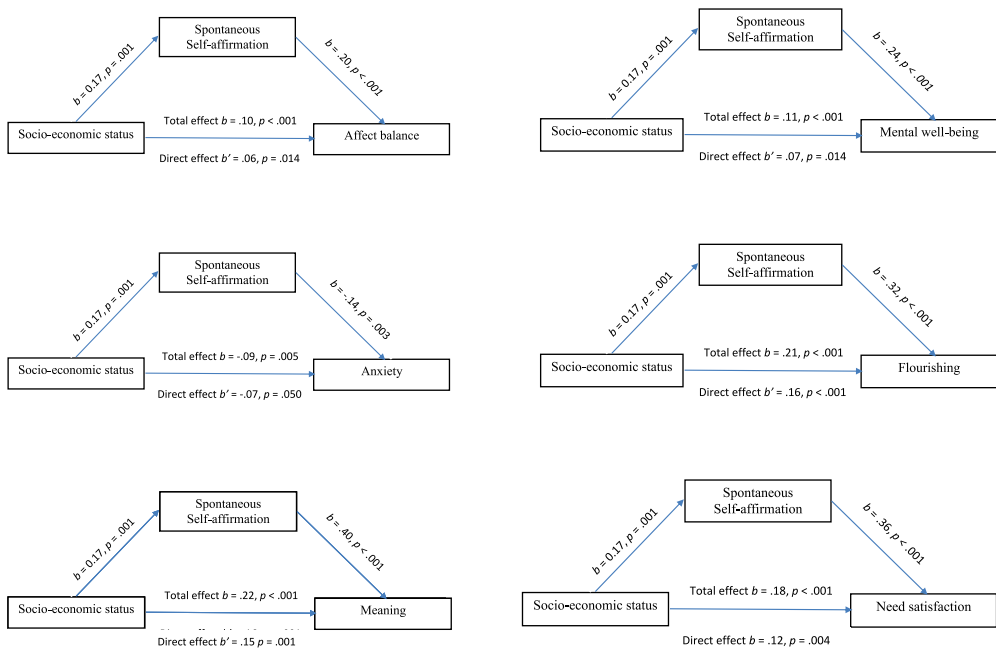
Figure 2. Summary of mediation analyses predicting well-being outcomes, Study 2.

Discussion

Study 2 presents further support for our principal prediction that higher levels of spontaneous self-affirmation would be associated with greater well-being. Once again, spontaneous self-affirmation emerged as a significant linear predictor for all indicators of hedonic and eudaimonic well-being assessed in the present study. These findings are commensurate with our primary hypothesis that people who are more inclined to self-affirm spontaneously will experience greater well-being.

Study 2 also provides some support for our exploratory supposition that spontaneous self-affirmation might partially mediate the association between socioeconomic status and well-being. Socioeconomic status was a significant linear predictor of spontaneous self-affirmation and each well-being outcome except flow, such that lower levels of socioeconomic status were associated with less spontaneous self-affirmation and worse well-being. Moreover, mediation analyses revealed that spontaneous self-affirmation partially mediated the associations between socioeconomic status and each of the well-being outcomes with which it was significantly associated. These findings are consistent with the position that people of lower socioeconomic status may be less inclined to self-affirm spontaneously, with attendant negative implications for their well-being.

In Study 3 we employed a longitudinal research design to ascertain whether the relationships reported in Study 2 would hold over time.

Study 3

In Study 3 we assessed spontaneous self-affirmation, socioeconomic status and well-being in a prospective, longitudinal design, to test whether spontaneous self-affirmation would predict measures of hedonic and eudaimonic well-being at one-week and four-week follow-up and to explore whether individual differences in spontaneous self-affirmation would again partially mediate the relationship between socioeconomic status and subsequent well-being.

Method

Participants

At baseline, 225 individuals took part. The sample was predominantly female (62.22%), employed (42.67%) or student (40.00%), and resident in the UK (51.56%). The three most represented nationalities were British (39.56%), Belgian (28.89%), and French (11.56%); no other nationality was reported by more than 5% of the sample. Ages ranged from 18 to 72 years ($M = 32.43$; $SD = 14.29$). Of these, 193 completed measures at one-week follow-up and 176 completed measures at four-week follow-up, representing an overall attrition between baseline and four-week follow-up of 21.78%. One-way analyses of variance and Chi-square analyses revealed no significant differences between participants who completed all three time points and those who completed only the baseline measures in terms of age, gender (female or not female), employment status (employed, student, or other), nationality (British, Belgian, French, or other) or country of residence (UK vs. not UK), all $ps > 0.411$, $\eta p^2 = .00$, *Cramer's Vs* < .05.

Design and procedure.

The study employed a prospective, longitudinal, correlational design. Participants were recruited opportunistically through contacts of two student research assistants using e-mail and social media and invited to take part in a study exploring their values, thoughts, and feelings. The recruitment message contained the link to the baseline online questionnaire. In order to encourage participation and deter attrition, participants who completed all three time points were entered into a cash prize draw. Participants provided electronic informed consent and the study was granted ethical approval by the appropriate body at the University of Sussex.

We conducted a power calculation for the primary hypothesized relationship between spontaneous self-affirmation and well-being using G*Power. This indicated that for linear multiple regression with one predictor a minimum sample size of 55 was required to detect a medium effect size (f^2) of 0.15 with a .80 level of power.

Materials.

The online questionnaires included the following measures[5].
Baseline Questionnaire.
Demographic information. Participants were asked to indicate their age, gender and occupation.

Socioeconomic status. Socioeconomic status was assessed using the same adaptation of the MacArthur Scale of Subjective Social Status (Adler et al., 2000) used in Study 2.

Spontaneous self-affirmation. Spontaneous self-affirmation was assessed using the 13 item version of the SSAM (Harris et al., 2019). The resultant scale was found to have acceptable internal reliability in the present study, α = .89.

Self-esteem. Self-esteem was measured using the ten-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; α = .84). The correlation between spontaneous self-affirmation and self-esteem in the present study was $r(223) = .26$, $p < .001$.

One-Week and four-week follow-up questionnaire. At one-week and four-week follow-up, participants completed an online questionnaire including the same measures of well-being used in Study 2. All measures displayed acceptable internal reliability (αs > .68).

Results

Results for the four-week follow-up well-being data are reported in full below. For concision, results for the one-week follow-up are reported in full in the supplemental online materials and summarized at the end of this results section.

Descriptive statistics are summarized in Table 6. Bivariate correlations are given in Table 7.

Associations between spontaneous self-affirmation and well-being outcomes

To determine whether the SSAM predicted well-being at four-week follow-up, we regressed each of the indicators of hedonic and eudaimonic well-being onto participants' SSAM scores (Table 8). Participants' SSAM scores were a significant linear predictor of each of the indicators of well-being, accounting for between 3% and 19% of the variance; higher levels of spontaneous self-affirmation were consistently associated with greater well-being.

Spontaneous self-affirmation as a mediator of the relationship between socioeconomic status and well-being

Participants' SSAM scores and each of the measures of well-being at four-week follow-up were first regressed onto SES; SES was a significant ($p < .05$) linear predictor of SSAM scores and the following indicators of well-being: affect balance, flourishing, flow and meaning. Accordingly, using PROCESS (Hayes, 2013) and taking 5,000 boot-strap samples to compute bias corrected confidence intervals, we tested whether spontaneous self-affirmation mediated the relationship between socioeconomic status and each of these indicators of well-being (Figure 3). The resultant analyses revealed significant indirect effects of SES on affect balance ($b = 0.03$, 95% BCa CI [.010, .067]) flourishing ($b = 0.07$, 95% BCa CI [.025, .134]), flow ($b = 0.03$, 95% BCa CI [.008, .082]), and meaning ($b = 0.06$, 95% BCa CI [.016, .121]). In each instance, while the total effect of SES on the indicator of well-being was significant, the direct effect of SES was reduced in magnitude and (with the exception of flow) rendered non-significant when SSAM scores were included in the model. Thus, the impact of socioeconomic status on these indicators of well-being was (partially) mediated through spontaneous self-affirmation.

Table 6. Descriptive Statistics for Spontaneous Self-Affirmation, SES, and Four-Week Follow-Up Indicators of Well-Being, Study 3.

	Min.	Max.	*M*	*SD*	*n*
Baseline					
Spontaneous self-affirmation	1.17	6.62	4.64	0.98	225
SES	2	9	5.70	1.27	225
Four-week follow-up					
Affect balance	1.88	4.78	3.69	0.52	176
Mental well-being	1.57	4.57	3.47	0.55	176
Anxiety	1.00	4.00	2.07	0.65	176
Flourishing	1.00	7.00	5.45	0.89	176
Meaning	1.75	7.00	5.13	1.05	176
Need satisfaction	1.33	7.00	5.20	0.88	176
Flow	2.40	7.00	4.86	0.91	176

Table 7. Bivariate correlations (Pearson's *r*) between Spontaneous Self-Affirmation, SES, and Four-Week Follow-Up Indicators of Well-Being, Study 3.

Variable	2	3	4	5	6	7	8	9
1. SSA	.23***	.35***	.30***	−.19*	.44***	.24**	.31***	.30***
2. SES		.17*	.14	−.07	.23**	.20**	.17*	.14
3. Affect balance			.74***	−.63***	.68***	.53***	.69***	.74***
4. MWB				−.68***	.73***	.58***	.75***	.78***
5. Anxiety					−.50***	−.38***	−.49***	−.55***
6. Flourishing						.59***	.78***	.80***
7. Flow							.73***	.71***
8. Meaning								.84***
9. Need satisfaction								

SSA = spontaneous self-affirmation; MWB = mental well-being.
* *p* < .05, ** *p* < .01, *** *p* < .001

Table 8. Summary of regression analyses predicting indicators of hedonic and eudaimonic well-being at four-week follow-up from spontaneous self-affirmation scores, study 3.

Dependent variable	SSAM β (95% CI)	Model *F*	Model R^2	*df*
Affect balance	.35*** (.21, .49)	24.72***	.12***	1, 174
Mental well-being	.30*** (.16, .45)	17.80***	.09***	1, 174
Anxiety	−.19* (−.33, −.04)	6.25*	.03*	1, 174
Flourishing	.44*** (.31, .58)	42.06***	.19***	1, 174
Flow	.24** (.09, .38)	10.40**	.06**	1, 174
Meaning	.31*** (.17, .45)	18.84***	.10***	1, 174
Need satisfaction	.30*** (.16, .45)	17.58***	.09***	1, 174

* *p* < .05; ** *p* < .01; *** *p* < .001.

Summary of findings predicting well-being at one-week follow-up

Results for well-being at one-week follow-up (reported in full in the supplemental online materials) largely replicate those found at four-weeks, insofar as spontaneous self-affirmation was a significant predictor of all well-being outcomes and mediated all evident relationships between SES and well-being.
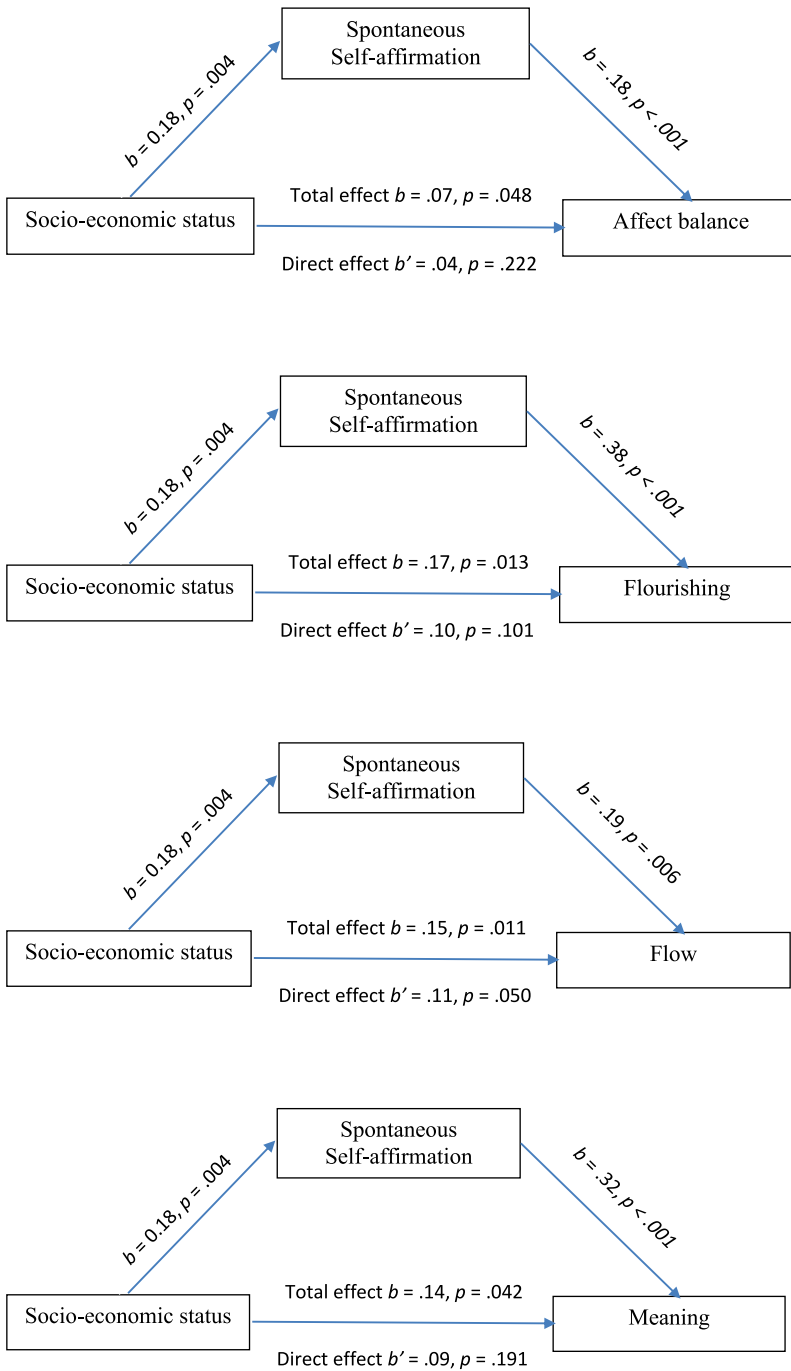
Figure 3. Summary of mediation analyses predicting well-being outcomes at four-week follow-up, Study 3.

Discussion

Study 3 provides further support for our principal hypothesis that individual differences in spontaneous self-affirmation would relate to well-being. Specifically, individuals' spontaneous self-affirmation scores were found to predict all indicators of hedonic and eudaimonic well-being at four-week (and one-week) follow-up, such that higher levels of spontaneous self-affirmation were consistently associated with greater well-being. The fact that the relationship between spontaneous self-affirmation and well-being held longitudinally helps counter exogenous alternative explanations for the equivalent cross sectional-finding of study 2 (for example, that Study 2 participants who completed the questionnaire on a sunny day reported both a higher propensity to spontaneously self-affirm and more positive well-being).

The findings of Study 3 also add credence to our exploratory suggestion that spontaneous self-affirmation might partially mediate the relationship between socioeconomic status and well-being. As in Study 2, for each indicator of well-being where socioeconomic status was a significant linear predictor, the relationship was at least partially mediated by spontaneous self-affirmation. As anticipated, individuals lower in socioeconomic status reported less inclination to self-affirm spontaneously and this, in turn, was associated with worse well-being.

General discussion

Over three studies we find consistent support for our primary hypothesis that individual differences in the tendency to report self-affirming in response to threats will be associated with well-being outcomes. Scores on an individual difference measure of spontaneous self-affirmation predicted indicators of both hedonic and eudaimonic well-being, with individuals higher in spontaneous self-affirmation experiencing greater well-being.

By demonstrating that the relationship between spontaneous self-affirmation and well-being held across three studies, the research presented here goes some way to counter concerns that have been levied at psychology research regarding the replicability of findings (see, for example, Shrout & Rodgers, 2018). Indeed, a strength of our research is that associations between spontaneous self-affirmation and well-being were tested – and held – across both experimental and correlational cross-sectional designs (studies 1 and 2) and a longitudinal design (Study 3).

More broadly, the findings are also consistent with the idea that individual differences in the propensity to reflect on such self-related resources as personally important values, strengths and relationships when threatened may have important implications for a range of well-being outcomes. As outlined in the introduction, there is a range of potential direct and indirect mechanisms by which this may be achieved. These include boosts to positive affect, executive function, self-control and feelings of connection to others, alongside reductions in adverse reactions to stress and defensive processing. In addition, Harris et al. (2019) have raised the possibility that those higher in spontaneous self-affirmation may experience the world as less threatening, perhaps because they possess the skill to deploy self-affirmation strategically to diffuse threats. Much remains

to be discovered about the mechanisms by which spontaneous self-affirmation may influence well-being outcomes and this represents a worthwhile avenue for future research.

It is interesting to note that, although all associations between spontaneous self-affirmation and well-being were statistically significant and positive, the magnitude of the relationships varied between well-being outcomes. For example, associations appeared to be smallest for state anxiety and flow. By extension, it is plausible that individual differences in spontaneous self-affirmation may influence some dimensions of well-being more than others. Identifying those dimensions which are most associated with spontaneous self-affirmation also presents an important issue for future research to address.

In addition, future research could profitably investigate whether individuals can be trained to engage in spontaneous self-affirmation and whether this confers the expected attendant benefits for well-being. Study 1 provides some preliminary evidence that a standard self-affirmation manipulation may be effective at bolstering the state well-being of those lower in spontaneous self-affirmation. Nevertheless, it would be of value to explore whether individuals can be encouraged to routinely self-affirm when threatened, and whether this benefits their well-being in the longer term, rather than relying on externally implemented manipulations to bring about potentially short-lived effects. Indeed, if effective, an intervention that trains people to self-affirm spontaneously could conceivably confer long-term benefits for both hedonic and eudemonic well-being in return for relatively little input, addressing concerns that psychological interventions to promote well-being can be time-, labor-, and cost-intensive (Armitage, 2016), and that existing interventions seldom target eudaimonic well-being (Nelson et al., 2014). The development of a spontaneous self-affirmation intervention thus holds much potential and could conceivably build on the promising findings of research that has manipulated self-affirmation by asking people to form contingent plans to affirm in the face of threat (Armitage, 2016; Armitage et al., 2011; Morgan & Harris, 2015).

The findings of the present program of research also provide preliminary support for our more tentative and exploratory suggestion that spontaneous self-affirmation might mediate the association between socioeconomic status and well-being. Specifically, we found that spontaneous self-affirmation partially mediated the impact of socioeconomic status on each of the indicators of well-being with which socioeconomic status was associated, both cross-sectionally and longitudinally. More research is required in order to establish how important spontaneous self-affirmation is as a pathway linking socio-economic status and well-being. However, the present research highlights the intriguing possibility that people of lower socioeconomic status might be less able or inclined to spontaneously self-affirm when faced with a threat which, in turn, might adversely affect their well-being. Identifying mechanisms that underpin the adverse impact of lower socioeconomic status on well-being offers promise in terms of tailoring interventions to undermine this detrimental relationship. Indeed, it is plausible that an intervention which successfully promotes spontaneous self-affirmation might particularly advantage the well-being of those lower in socioeconomic status, as they appear less likely to routinely accrue any benefits of this strategy.

It is noteworthy that subjective social status can be experimentally manipulated (e.g., Cheon & Hong, 2017; Kraus et al., 2010). It may be of interest to explore whether such a manipulation might affect people's propensity to spontaneously self-affirm. If so, this would

add weight to the argument that socioeconomic status is causally linked to spontaneous self-affirmation. However, it is likely that individual differences in spontaneous self-affirmation are influenced over time by an accumulation of variables and experiences associated with socioeconomic status; hence it may be unrealistic to expect relatively transient manipulations of social status to have an appreciable impact on spontaneous self-affirmation.

Further research should address the limitations of the current studies. Participants were recruited opportunistically through the contacts of the student researchers working on each study, which may have introduced sampling biases. Indeed our samples are unlikely to be representative of the general population and it is apparent that certain characteristics (e.g., female gender, student status, younger age groups) are over-represented in some studies. By extension, we cannot be certain that the findings reported here would hold across a representative sample. Although Emanuel et al. (2018) have presented preliminary evidence of an association between spontaneous self-affirmation and well-being in a US national sample, it would be useful to establish whether the patterns of findings reported here are replicated in stratified samples drawn both from the UK and from other countries. Furthermore, given that the time to follow-up in Study 3 was relatively short, it would be of benefit to explore the patterns of interrelationships between SES, spontaneous self-affirmation and well-being over a longer timeframe, perhaps – ideally – over the course of a lifetime.

Conclusion

The present research identifies spontaneous self-affirmation as an important individual difference variable in terms of its potential implications for well-being. It also offers preliminary evidence indicating that spontaneous self-affirmation may mediate the relationship between socioeconomic status and well-being. Future research should seek to identify the mechanisms underpinning the association between spontaneous self-affirmation and well-being and investigate the possible benefits of interventions that encourage people to spontaneously self-affirm. Such benefits could potentially include improvements to the well-being of those typically disinclined to spontaneously self-affirm and, conceivably, a reduction in the harmful impact of lower socioeconomic status on well-being.

Notes

1. Different student research assistants provided the contacts for each study.
2. Materials, data files and syntax files for the main analyses are available for all three studies via the supplemental online materials. None of the studies were pre-registered and there were no data collection stopping rules based on sample size; rather data were collected within the timeframes available. Data were analyzed only once data collection was complete. No participants who completed the studies were excluded.
3. We did not include the interaction effect in this power calculation, as there appears to be little consensus regarding how best to compute power calculations for such moderation effects.
4. This pattern of findings was also evident for affect-balance and flourishing, albeit the corresponding interaction effects only approached significance ($ps < .10$); please see supplemental online materials for corresponding simple slopes analyses.
5. The questionnaires from studies 2 and 3 included a number of additional measures which were not relevant to the present research aims and hypotheses. Only those measures relevant to the present research hypotheses are described here. The full study materials

are given in the online supplemental materials. No other papers have been published from these data sets and we have no current plans to publish any further papers from them.

6. Unfortunately, a problem with the online questionnaire meant that the following three negative emotion clusters of the original Modified Differential Emotions Scale were not assessed in studies 2 and 3: angry, irritated, or annoyed; disgust, distaste, or revulsion; stressed, nervous, or overwhelmed.

7. The assessment of whether or not each indirect effect is statistically significant is based on inspection of the confidence intervals; where these do not cross zero the effect is considered to be significant.

Disclosure statement

Availability of data and material

Data sets and materials are available via the supplemental online materials.

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