



# Meaning mediates the association between suffering and well-being

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“For the meaning of life differs from man to man, from day to day and from hour to hour. What matters, therefore, is not the meaning of life in general but rather the specific meaning of a person’s life at a given moment.”  
– Viktor E. Frankl (1959)

After surviving the Holocaust, Viktor Frankl contended that each moment in life is meaningful, including those wrought with suffering. Given the human tendency to maintain a sense of meaning (Heine, Proulx, & Vohs, 2006; Koole, Greenberg, & Pyszczynski, 2006), even by defending it automatically (Van Tongeren & Green, 2010), experiences of suffering may have a particularly negative effect on perceptions of meaning. According to Park (2010), meaning is reduced when there is a discrepancy between one’s expectations and experiences – when one’s global beliefs (e.g., the world is fair/just) are at odds with one’s specific experiences (e.g., if I am a good person, why did I get cancer?). Suffering is one of the many threats that might cause this type of discrepancy, reducing one’s perceived meaning.

Although prior work has addressed similar topics in relation to pain (Turk & Wilson, 2009), relatively less work has explored how people understand and experience *suffering*, and its associations with meaning. For these studies, we defined suffering as a *prolonged experience of psychological or emotional pain that may follow an unexpected negative event*. In this, we aim to capture a broader experience of suffering rather than a specific event (though we acknowledge that not all negative events lead to suffering). Across

three studies, we sought to examine the relationship between the experience of suffering and meaning by making a personal experience of suffering cognitively salient.

## Meaning in life

Research most commonly defines meaning across three features: purpose (having goals to work towards or finding benefits from a specific event), significance (a sense of feeling value or mattering), and coherence (the feeling that the world and one’s experiences make sense; Heintzelman & King, 2014). Though some research has treated meaning as a unitary construct (Steger, Frazier, Oishi, & Kaler, 2006), there is accumulating evidence suggesting that each component of meaning is distinct and worthy of independent examination (Davis, Nolen-Hoeksema, & Larson, 1998; George & Park, 2013; Martela & Steger, 2016). We suspect that purpose, significance, and coherence may have different functions. First, although these constructs are interrelated, they are not interdependent. Meaning found through having future-oriented goals is not necessarily contingent on feeling as though one matters or that the world makes sense. Previous work suggests that coherence is descriptive and primarily cognitive, whereas purpose and significance are evaluative and primarily motivational (Heintzelman & King, 2014). Accordingly, we examined meaning across the three dimensions, in addition to global perceptions of meaningfulness.

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This study was approved by the second author’s Institutional Review Board, and all participants provided consent before participating. The data and materials will be freely shared with other scholars by contacting the second author.

Please take a moment to think about a time when you suffered. This could be a time from the past or something you are currently experiencing. Below, briefly describe what this felt like and what was happening.

After reflecting and writing on an experience of suffering, participants were asked to report the intensity, duration, and time since their suffering. Intensity was measured by five items: how emotionally intense, unsettling, emotionally upsetting, and negative their time of suffering was, as well as the degree to which the experience challenged one's beliefs. Participants responded on a scale from 0 (*not very*) to 100 (*very*; with the exception of how negative the event was which was from  $-100 = \textit{extremely negative}$  to  $100 = \textit{extremely positive}$  [reverse-coded]). Items were averaged for a mean score ( $\alpha = .76$ ). Participants also indicated the duration of their suffering (how long they had been suffering), as well as whether their experience is current or a prior episode of suffering (77.7% reported a current experience,  $n = 800$ ; 18.2% reported a past experience,  $n = 187$ ; 4.1% reported never having an experience of suffering,  $n = 42$ ).

### Current meanings made

To assess meaning one has made of their experience, participants reported on three dimensions of meaning (purpose, coherence, and significance; adapted from Heintzelman and King's (2014) definition of meaning). Their meanings made were assessed by the following three items (1 = *strongly disagree* to 7 = *strongly agree*): (1) 'My suffering had a purpose/there was a purpose in me suffering,' (2) 'My suffering makes sense/it makes sense that I suffered,' and (3) 'I was significant/I mattered during my suffering.'

### Meaning in life

Participants completed the Meaning in Life Questionnaire (MLQ; Steger et al., 2006), containing two 5-item subscales: presence of meaning ( $\alpha = .94$ ) and search for meaning ( $\alpha = .94$ ), assessed on a 7-point scale (1 = *absolutely untrue* to 7 = *absolutely true*).

### Satisfaction with life

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985;  $\alpha = .86$ ), a 5-item measure, was

used to measure participant's satisfaction with life on a 7-point scale (1 = *strongly disagree* to 7 = *strong agree*).

## Results

### Descriptions of suffering

We first examined the content of what people wrote about as their experiences of suffering. The first author read all responses and categorized each participant's experience into one of seven categories for descriptive purposes (31.4% physical/mental health problems; 18.4% death of a loved one; 13.3% work or financial problems; 10.8% relationship problems; 4.4% suffering of a close other; 4.2% trauma or emotional pain, and; 12.9% other).

### What features of suffering are related to meaning?

Our first prediction was that intense experiences of suffering would be negatively related to meaning in life. The overall intensity of the suffering was positively related to a search for meaning ( $r = .142, p < .001$ ). In particular, experiences that were emotionally upsetting ( $r = .118, p < .001$ ) and challenged one's beliefs ( $r = .21, p < .001$ ) were modestly correlated with search for meaning. Contrary to predictions, intensity was unrelated to the presence of meaning in life.

The duration of both past and current suffering was unrelated to the presence of meaning (see Table 1). However, it often takes time to recover lost meaning following negative events. Accordingly, time since the event of suffering was positively related to the presence of meaning ( $r = .15, p < .001$ ) and negatively related to a search for meaning ( $r = -.15, p < .001$ ; Table 1). This supports our hypothesis that as more time passes since the event of suffering, overall meaning in life is greater.

### Is experiencing suffering associated with lower meaning and well-being?

We also predicted those describing current suffering would report lower meaning in life than those describing past

Table 1. Interrelations between meaning, well-being, and characteristics of suffering (Study 1).

	1	2	3	4	5	6	7	8	9	10
1. Meaning in life (presence)	1									
2. Meaning in life (search)	-.301***	1								
3. Satisfaction with life	.641***	-.261***	1							
4. Purpose	.237***	.105***	.197***	1						
5. Coherence	.170***	.068*	.159***	.681***	1					
6. Significance	.367***	-.037	.286***	.382***	.384***	1				
7. Duration of current suffering	-.091	.055	.039	-.125	-.203**	-.098	1			
8. Duration of past suffering	.042	-.028	.040	-.028	-.047	-.003	-	1		
9. Time since past suffering	.152***	-.150***	.069	-.086*	-.075*	-.031	-	.148***	1	
10. Intensity of suffering	-.050	.142***	-.129***	.004	-.050	-.024	-.022	.047	.125***	1

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

suffering. Those who were currently suffering reported lower presence of meaning ( $M = 4.49$ ,  $SD = 1.69$ ) than those whose experience of suffering was in the past ( $M = 4.93$ ,  $SD = 1.48$ ),  $t(253.82) = 3.38$ ,  $p < .001$ ,  $d = .28$ .

We also examined whether participants reporting current experiences of suffering would report lower satisfaction with life than those describing previous suffering or that had never suffered. We found that those participants describing current suffering ( $M = 3.84$ ,  $SD = 1.50$ ) reported lower satisfaction with life than those describing past suffering ( $M = 4.60$ ,  $SD = 1.39$ ;  $p < .001$ ), as well as those who had never suffered ( $M = 4.82$ ,  $SD = 1.16$ ;  $p < .001$ ),  $F(2, 1009) = 23.65$ ,  $p < .001$ ,  $\text{partial}\eta^2 = .045$ .

### Does making meaning of suffering translate to current well-being?

Next, we focused on the current meanings made of one's suffering. Participants who had an experience of suffering were asked to report how they feel about their suffering right now (*meaning made*). Participants reported their degree of meaning on three dimensions: purpose, coherence and significance. We hypothesized that current meanings made now about one's past suffering are associated with greater well-being. Finding a purpose ( $r = .24$ ,  $p < .001$ ;  $r = .20$ ,  $p < .001$ ) and making sense of the suffering now ( $r = .17$ ,  $p < .001$ ;  $r = .16$ ,  $p < .001$ ), as well as feeling significance during of suffering ( $r = .37$ ,  $p < .001$ ;  $r = .29$ ,  $p < .001$ ), were positively related to a presence of meaning and satisfaction with life, respectively. Further, finding a purpose ( $r = .11$ ,  $p < .001$ ) and making sense of the suffering now ( $r = .07$ ,  $p = .033$ ) were both positively related to a search for meaning (see Table 1). Therefore, meanings made, now, of one's past suffering are associated with overall meaning in life and greater well-being, as predicted. Moreover, part of making meaning may involve a search for meaning.

### The mediating role of meaning

We examined whether meaning mediates the association between suffering and well-being using PROCESS

(Hayes, 2012), comparing current and past experiences of suffering. Current suffering was related to lower meaning in life ( $b = -.45$ ,  $p < .001$ ) and satisfaction with life ( $b = -.76$ ,  $p < .001$ ). Meaning in life was associated with satisfaction with life ( $b = .59$ ,  $p < .001$ ), and reduced the association of suffering, though it was still significant ( $b = -.50$ ,  $p < .001$ ). Critically, the indirect effect from suffering to satisfaction with life via the presence of meaning over 5,000 bootstrapping iterations was significant (completely standardized indirect effect =  $-.07$ ,  $SE = .02$ , 95% CI =  $-.1157$  to  $-.0296$ ). That is, meaning in life significantly mediated the relationship between suffering and well-being (see Figure 1).

### Discussion

Our findings addressed three hypotheses. First, current suffering was related to lower meaning in life and lower satisfaction in life relative to prior suffering. The greater the salience of suffering (current relative to past suffering), the stronger its effect on indices of well-being. Accordingly, intensity was related to greater search for meaning whereas time was related to greater presence and less search for meaning, as predicted. However, duration was not found to be associated with meaning. Second, these results demonstrated that current meanings made – finding purpose, coherence, and significance of one's suffering – is associated with present well-being. Third, we predicted that meaning in life would mediate the relationship between suffering and well-being. Results confirmed that current suffering was associated with lower meaning in life, which, in turn, was associated with satisfaction with life. Insofar as suffering impairs meaning, individuals may experience less life satisfaction. However, to the degree that individuals can find meaning in the midst of their suffering, they reported greater life satisfaction.

These findings suggest initial evidence that suffering is associated with lower meaning, however, being able to make meaning out of one's suffering after the

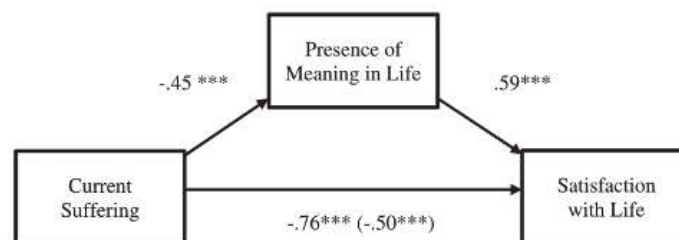


Figure 1. Meaning mediates the relationship between suffering salience and satisfaction with life in Study 1.

Note. \*\*\* $p < .001$ .

experience of suffering, is related to greater well-being. Because Study 1 was correlational, we conducted Study 2 to provide experimental evidence. Given that 77% of participants in Study 1 self-selected to report on a current experience of suffering, this suggests that randomly assigning participants to report on a current or previous experience of suffering would be methodologically feasible.

## Study 2

A power analysis (Cohen, 1992) revealed 64 participants per condition (192 total) were needed to detect a medium effect; we sampled more than 200 participants per condition to ensure the study was well-powered. We predicted that making suffering cognitively salient (i.e., reflecting upon current suffering) would result in lower meaning in life and satisfaction with life than making suffering less salient (i.e., reflecting upon prior suffering) or not salient at all (i.e., a neutral condition). We suspected that current suffering would be more cognitively salient because current suffering is (a) temporally more central, (b) is presently unresolved, and (c) requires more psychological resources as an ongoing threat. Moreover, we again predicted that meaning in life would mediate the effect of suffering on well-being.

## Method

### *Participants and procedure*

Nine-hundred ninety-eight participants recruited from Amazon's Mechanical Turk originally agreed to take the study, but 217 participants did not complete the study or submit their data. This left 781 participants (481 females, 292 males, 8 not reported) who provided complete data and received \$1USD in compensation. Participants ( $M_{age} = 37$ ,  $SD_{age} = 12.39$ ) were primarily Caucasian (78%; 7.9% African American; 6.1% Asian; 4.6% Hispanic/Latino(a); 0.8% Native American; 1.8% Other; 1% not reported) and Christian (54.6%) or not religious (11.9% Agnostic; 10.8% Atheist; 10.2% Not religious; 2.7% spiritual but not religious; with 8.2% Other religious; 1.5% not reported).

This experimental study was conducted through an online medium. After providing consent, participants were randomly assigned to one of three conditions designed to manipulate the cognitive salience of suffering. Participants were instructed to reflect upon and write about (a) a current experience of suffering ( $n = 245$ ), (b) a past experience of suffering ( $n = 260$ ), or (c) their week ( $n = 276$ ). For those in the current or past suffering conditions, participants were asked follow-up

questions on their suffering. All groups then completed a set of self-reported measures.

## Materials

### *Suffering*

After reflecting and writing on an experience of suffering, participants were asked to report the intensity, duration, and time since their suffering. Intensity ( $\alpha = .86$ ) was measured using the five items in Study 1. Participants in the neutral condition did not complete this section.

### *Current meanings made*

Participants were then asked to report on the three dimensions of meanings made, where meaning was measured through the three items assessing purpose, coherence, and significance as in Study 1. Participants in the neutral condition did not complete this section.

### *Meaning in life*

All participants completed both the presence ( $\alpha = .93$ ) and search ( $\alpha = .95$ ) for meaning subscales of the MLQ (Steger et al., 2006).

### *Well-being*

All participants' well-being was measured using the SWLS (Diener et al., 1985;  $\alpha = .85$ ).

## Results

### *Intensity of suffering*

In our initial analysis, we found that participants in the past suffering condition ( $M = 76.17$ ,  $SD = 18.59$ ) reported significantly higher scores on intensity  $F(1, 502) = 16.10$ ,  $p < .001$ , partial  $\eta^2 = .031$  than the current suffering condition ( $M = 69.27$ ,  $SD = 20.04$ ). To ensure that these effects were not simply due to differences in perceived intensity, we ran the following comparisons using an ANCOVA, statically controlling for intensity.

### *Does the salience of suffering lead to lower well-being?*

Similar to Study 1, we predicted that meaning in life and well-being would be lower when suffering is made salient (i.e., current suffering) than when suffering is made less salient (i.e., past suffering). Those reflecting on current suffering reported significantly lower presence of meaning,  $F(1, 494) = 8.63$ ,  $p = .003$ , partial  $\eta^2 = .017$  and satisfaction with life,  $F(1, 501) = 10.89$ ,  $p = .001$ , partial  $\eta^2 = .021$  than those reflecting on past suffering, when controlling for

**Table 2.** Means (and standard deviation) for the neutral (N) condition from a One-way ANOVA (unadjusted), and means (and standard error) for the current (C) and past (P) condition from a One-Way ANCOVA (adjusted; controlling for intensity) on the reported values on meaning and well-being measures (Study 2).

	Current (C) Mean (SE)	Past (P) Mean (SE)	Neutral (N) Mean (SD)	Difference
Meaning in life (presence)	4.74 (.094)	5.13 (.091)	4.95 (1.49)	C < P**
Meaning in life (search)	4.38 (.11)	4.20 (.11)	4.47 (1.69)	ns
Satisfaction with life	4.33 (.09)	4.75 (.09)	4.63 (1.32)	C < P***

\*\* $p < .01$ ; \*\*\* $p < .001$ .

intensity (see Table 2). The neutral condition (where suffering was not made salient) did not differ significantly from either suffering condition on either dependent variable. There were no significant differences within search for meaning.

### Current meanings made

We then compared participants' meanings made – that is, the meaning participants have made *now* over their experience of suffering in terms of purpose, coherence, and significance. Participants thinking about a past suffering ( $M = 3.84$ ,  $SE = .13$ ) reported significantly greater purpose than those thinking about a current suffering ( $M = 3.74$ ,  $SE = .13$ ),  $F(1, 501) = 88.69$ ,  $p < .001$ , partial  $\eta^2 = .150$ . This was also found for coherence, such that participants thinking about past suffering ( $M = 4.16$ ,  $SE = .13$ ) reported greater coherence than those thinking about current suffering ( $M = 3.88$ ,  $SE = .13$ ),  $F(1, 501) = 109.13$ ,  $p < .001$ , partial  $\eta^2 = .179$ . However, those thinking about a past suffering ( $M = 5.01$ ,  $SE = .11$ ) reported significantly lower significance than those thinking about a current suffering ( $M = 5.36$ ,  $SE = .11$ ),  $F(1, 501) = 313.61$ ,  $p < .001$ , partial  $\eta^2 = .385$ .

### The mediating role of meaning

We again examined the mediating role of meaning in the relationship between suffering and well-being across 5,000 bootstrapping iterations in PROCESS. As

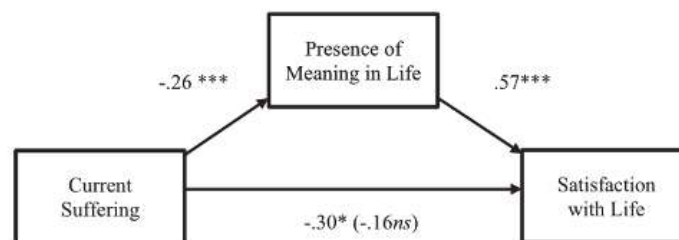
a strict test, we compared current suffering to the past suffering and neutral conditions combined, suggesting that the effects of current suffering are above and beyond recalling prior suffering and no cognitive salience of any suffering. Current suffering was related to significantly lower meaning in life ( $b = -.26$ ,  $p < .001$ ) and satisfaction with life ( $b = -.30$ ,  $p < .001$ ). Meaning in life was associated with satisfaction with life ( $b = .57$ ,  $p < .001$ ), and reduced the association of suffering, such that it was no longer significant ( $b = -.16$ ,  $p = .065$ ). Critically, the indirect effect from current suffering to satisfaction with life via the presence of meaning was significant (completely standardized indirect effect =  $-.05$ ,  $SE = .02$ , 95% CI =  $-.0922$  to  $-.0059$ ). That is, meaning in life significantly mediated the relationship between suffering and well-being (see Figure 2). Making suffering cognitively salient (i.e., current suffering induction) reduced meaning in life, which in turn, was associated with lower satisfaction with life.

### Discussion

In Study 2, we sought to provide experimental evidence for the notion that making current suffering salient reduces perceptions of meaning in life relative to past suffering salience, as well as to understand how participants' perception of their meaning-making process may evolve. Study 2 results provided experimental support that making current suffering salient reduces perceptions of meaning.

Moreover, reflecting on current suffering led to being less likely to see a purpose and make sense of their suffering, than reflecting on a past suffering. However, the opposite occurred with significance. This affirms that these components of meaning have separate functions and may operate differently depending on the context.

Once again, results revealed the effect of priming thoughts of current suffering on satisfaction with life was mediated by perceptions of meaning in life. This experimental data provide evidence that thinking about



**Figure 2.** Meaning mediates the relationship between suffering salience and satisfaction with life in Study 2.

Note. \* $p < .05$ ; \*\*\* $p < .001$ .

one's current suffering causes meaning and satisfaction with life to decrease, relative to thinking about prior suffering or a neutral topic, providing additional support for the importance of meaning in maintaining well-being. To further understand this relationship, we conducted a third study, in which we attempted to also experimentally manipulate the degree to which people perceived meaning in their suffering.

### Study 3

A power analysis (Cohen, 1992) revealed 45 participants per condition (180 participants total) were needed to detect a medium effect; we sampled more than 200 participants per condition to ensure the study was well-powered. We examined the interactive effects of suffering salience and meaning of suffering on perceptions of meaning in life and well-being. We predicted that suffering salience (i.e., current suffering) would result in lower meaning in life and satisfaction with life than less suffering salience (i.e., prior suffering), unless participants were able to imbue their suffering with meaning (i.e., high meaning condition). Moreover, we again predicted that meaning in life would mediate the effect of suffering on well-being.

## Method

### Participants and procedure

Participants ( $N = 1,048$ ) were recruited from Amazon's Mechanical Turk for \$1USD. Data from 21 participants were excluded from analysis due to invalid writing responses (i.e., did not accurately complete the prime), leaving 1,027 participants (579 females, 444 males; 4 not reported) providing complete data. Participants ( $M_{age} = 38$ ,  $SD_{age} = 12.99$ ) were primarily Caucasian (73.9%; 10% African-American; 6.7% Hispanic/Latino; 6.6% Asian; .6% Native American; 1.8% other; .4% not reported) and Christian (57.7%; 13.6% Agnostic; 10.3% not religious; 9.1% Atheist; 5.5% other religious; 1.8% spiritual but not religious; 1.9% other; .8% not reported).

We employed a 2 (suffering: current vs. prior)  $\times$  2 (meaning: able to find meaning in their suffering vs. unable to find meaning in their suffering) experimental design. Data were collected through an online medium. After providing consent, participants were asked to write about an experience of suffering in one of four experimental conditions: for a 2  $\times$  2 of time (current vs. past experience) and meaning (could make meaning vs. could not make meaning of the experience). Participants then responded to questions related to their experiences and completed a set of self-reported measures.

## Materials

### Suffering

After reflecting and writing on an experience of current or prior suffering, participants were asked to report the intensity, duration, and time since their suffering. Intensity ( $\alpha = .77$ ) was measured using the five items as in Studies 1 and 2.

### Meaning and well-being

All participants reported on meanings made, as measured through three items assessing purpose, coherence, and significance, completed both the presence ( $\alpha = .91$ ) and search ( $\alpha = .94$ ) for meaning subscales of the MLQ (Steger et al., 2006), and the SWLS (Diener et al., 1985;  $\alpha = .82$ ), as in Studies 1 and 2.

### Mental health

All participants also completed three mental health questionnaires: post-traumatic stress disorder symptoms (PTSD; 8-items; Price, Szafranski, van Stolk-Cooke, & Gros, 2016;  $\alpha = .94$ ; e.g., 'How much did you have repeated, disturbing, and unwanted memories of the stressful experience in the past month?'), general anxiety (GA; 7-items; Spitzer, Kroeke, Williams, & Löwe, 2006;  $\alpha = .94$ ; e.g., 'Over the last two weeks, how often have you been bothered by feeling nervous, anxious, or on edge?'), and depression (9-items; Kroenke, Spitzer, & Williams, 2001;  $\alpha = .95$ ; e.g., 'Over the last two weeks, how often have you been bothered by feeling down, depressed, or hopeless?').

## Results

### Intensity of suffering

Again, we found that participants reflecting on past suffering ( $M = 72.98$ ,  $SD = 19.14$ ) reported significantly higher scores on intensity than participants reflecting on current suffering ( $M = 66.08$ ,  $SD = 20.81$ ),  $F(1, 983) = 29.43$ ,  $p < .001$ , partial  $\eta^2 = .029$ . We also found that participants reflecting on experiences in which they could not make meaning ( $M = 71.36$ ,  $SD = 19.58$ ) reported significantly higher scores on intensity than participants reflecting on experiences in which they could make meaning ( $M = 67.88$ ,  $SD = 20.78$ ),  $F(1, 983) = 4.81$ ,  $p < .001$ , partial  $\eta^2 = .008$ . Therefore, we ran all following comparisons statistically controlling for intensity (unless otherwise specified) in order to confirm that any differences between the groups were not simply due to differences in intensity.

### Current suffering leads to lower well-being

We examined the interactive effects of suffering salience (past vs. current experience of suffering) and meaning salience (whether or not participants could make meaning from the experience of suffering) on the indices of well-being. Notably, it appeared that the meaning induction was not effective. There were no significant interactions on the presence of meaning ( $p = .268$ ), search for meaning ( $p = .881$ ), satisfaction with life ( $p = .810$ ), or mental health (PTSD,  $p = .835$ , general anxiety,  $p = .607$ , depression,  $p = .372$ ). There was also no main effect of meaning on well-being (presence of meaning,  $p = .08$ , search for meaning,  $p = .864$ , PTSD,  $p = .540$ , general anxiety,  $p = .755$ , depression,  $p = .794$ ), with the exception of satisfaction with life,  $F(1, 978) = 6.71$ ,  $p = .010$ , partial  $\eta^2 = .007$ , where participants thinking about an experience where they could make meaning ( $M = 4.59$ ,  $SE = .06$ ) reported greater satisfaction with life than those thinking about an experience where they could not make meaning of it ( $M = 4.37$ ,  $SE = .06$ ). In short, the meaning induction was not potent. Perhaps participants regularly and naturally make meaning of suffering (cf. Van Tongeren & Green, 2010); we return to this point in the discussion.

However, replicating the effects of Studies 1 and 2, there was a significant main effect of suffering salience (current vs. prior) on well-being (see Table 3). Participants thinking about current experiences of suffering reported lower presence of meaning,  $F(1,971) = 4.08$ ,  $p = .044$ , partial  $\eta^2 = .004$ , and satisfaction with life,  $F(1, 978) = 10.73$ ,  $p < .001$ , partial  $\eta^2 = .011$ , and greater search for meaning,  $F(1,971) = 9.082$ ,  $p = .003$ , partial  $\eta^2 = .009$ , than participants reflecting on past suffering. Further, participants thinking about current suffering reported greater levels of PTSD,  $F(1,968) = 28.23$ ,  $p < .001$ , partial  $\eta^2 = .028$ ), general anxiety,  $F(1,969) = 17.96$ ,  $p < .001$ , partial  $\eta^2 = .018$ , and depression symptoms,  $F(1,961) = 14.35$ ,  $p < .001$ , partial  $\eta^2 = .015$ , than those thinking about past suffering.

**Table 3.** Means (and standard error), adjusted when controlling for intensity, for main effects of time (current [C] vs. past [P]) on reported values on meaning and well-being measures (Study 3).

	Current (C) Mean (SE)	Past (P) Mean (SE)	Difference
Meaning in life (presence)	4.81 (.07)	5.00 (.07)	C < P*
Meaning in life (search)	4.63 (.07)	4.31 (.07)	C > P**
Satisfaction with life	4.33 (.06)	4.62 (.06)	C < P*
PTSD symptoms	2.52 (.05)	2.16 (.05)	C > P***
General Anxiety	2.03 (.04)	1.81 (.04)	C > P***
Depression	1.90 (.03)	1.72 (.03)	C > P***

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

### Meanings made

We then compared participants' meanings made – that is, the meaning participants have made *now* over their experience of suffering across purpose, coherence and significance. The interactive effect of time and meaning on reported purpose or significance made now was not significant. However, there were significant main effects of time and meaning on reported purpose, such that participants thinking about a past experience ( $M = 4.25$ ,  $SE = .08$ ) reported greater purpose than those thinking about a current experience ( $M = 3.97$ ,  $SE = .08$ ),  $F(1,981) = 5.77$ ,  $p = .016$ , partial  $\eta^2 = .006$ ; and, as we may expect, participants who could make meaning of the event ( $M = 5.06$ ,  $SE = .08$ ) reported greater purpose in the event than those who could not make meaning of the event ( $M = 3.15$ ,  $SE = .08$ ),  $F(1,981) = 283.91$ ,  $p < .001$ , partial  $\eta^2 = .224$ . Further, there were significant main effects of meaning on reported significance now, such that participants who could make meaning of the event ( $M = 4.52$ ,  $SE = .08$ ) reported greater significance now than those who could not make meaning of the event ( $M = 5.45$ ,  $SE = .07$ ),  $F(1,980) = 77.925$ ,  $p < .001$ , partial  $\eta^2 = .074$ ; however there was not a significant main effect of time ( $p = .062$ ). This suggests that finding purpose in the suffering occurs more so after time has passed; however, time does not affect how significant one feels during the event. Also, being able to make meaning was a good predictor of perceiving the event as having purpose and how significant they felt during the suffering event.

On the other hand, there was an interaction effect of time and meaning on reported coherence,  $F(1,978) = 5.06$ ,  $p = .025$ , partial  $\eta^2 = .005$ . Therefore, analyses of the simple main effects for time and for meaning, separately, were performed (see Figure 3). There was a significant difference in meaning for those who thought about a past experience,  $F(1, 978) = 156.82$ ,  $p < .001$ , partial  $\eta^2 = .138$ , as well as for those who thought about a current experience,  $F(1,978) = 83.38$ ,  $p < .001$ , partial  $\eta^2 = .079$ , such that those who could make meaning reported greater coherence than those who could not. There was also a significant difference in time for those who could make meaning from their experience,  $F(1, 978) = 6.43$ ,  $p = .011$ , partial  $\eta^2 = .007$ , such that those thinking about a past experience reported greater coherence than those thinking about a current experience; but not for those with who could not make meaning from their experience ( $p = .530$ ). This suggests that time allowed for greater coherence (i.e., the event made more sense) only when people were able to make meaning of the event; however, time did not play a role when participants were unable to make meaning of the event – such events were incoherent.

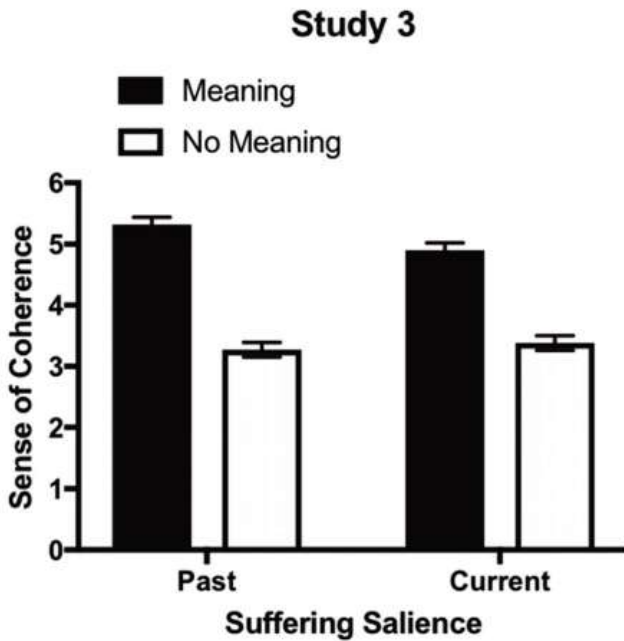


Figure 3. Effect of meaning on sense of coherence in Study 3.

**The mediating role of meaning**

Once again, we examined the effects of making suffering salient on well-being (i.e., satisfaction with life) via meaning in life (while statistically controlling for intensity), by estimating the indirect effect over 10,000 bootstrapping iterations using PROCESS. Current suffering was related to significantly lower meaning in life ( $b = -.19, p = .047$ ) and satisfaction with life ( $b = -.29, p = .001$ ) relative to prior suffering. Meaning in life was associated with satisfaction with life ( $b = .58, p < .001$ ), and reduced the association of suffering, though it was still significant ( $b = -.18, p = .007$ ). Critically, the indirect effect from current suffering to life satisfaction via presence of meaning was significant (completely standardized indirect effect =  $-.04, SE = .02, 95\% CI = -.0801$  to  $-.0004$ ). Once again, meaning in life significantly mediated the relationship between suffering and well-being (see Figure 4).

In the same way, we also examined whether meaning in life mediated the effect of making suffering salient on mental health outcomes. That is, is part of the negative effect of making suffering cognitively accessible due to reduced meaning in life? Indirect effect analyses revealed that meaning significantly mediated the association between suffering salience and anxiety (completely standardized indirect effect =  $.02, SE = .01, 95\% CI = .0017$  to  $.0449$ ), depression (completely standardized indirect effect =  $.03, SE = .01, 95\% CI = .0027$  to  $.0596$ ), and posttraumatic stress symptoms (completely standardized indirect effect =  $.02, SE = .01, 95\% CI = .0021$  to  $.0439$ ) (see Figure 5). Thus, part of the deleterious effects of suffering on mental health is explained because of reductions in perceived meaning in life.

**Discussion**

In Study 3, participants were asked to reflect on a time of suffering that was either a current or past experience and was either an event of which they could or could not make meaning. We were able to replicate and extend the findings from Study 2, such that participants for whom a current experience of suffering was made salient reported lower presence of meaning and well-being (including greater psychological distress) than participants in which a past experience of suffering was made salient. However, the meaning manipulation was not effective. It seems that participants' need to preserve meaning (Heine et al., 2006) was stronger than our manipulation; even after a threat to meaning, participants nonconsciously defended their sense of meaning (Van Tongeren & Green, 2010). Similarly, it is possible writing provided a positive coping process that then lead to making meaning within creating a coherent story (Singer, 2004).

Again, global meaning mediated the association between suffering salience and well-being (as assessed by satisfaction with life and mental health). This suggests that a pernicious aspect of suffering is how it undermines one's sense of meaning, which can have

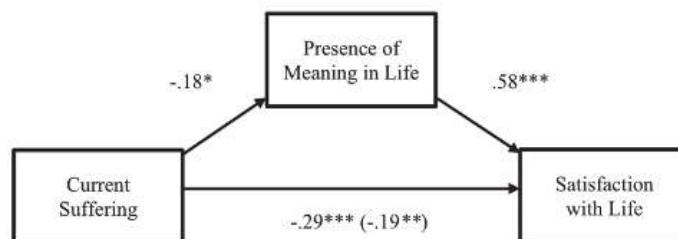


Figure 4. Meaning mediates the relationship between suffering salience and satisfaction with life in Study 3.

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



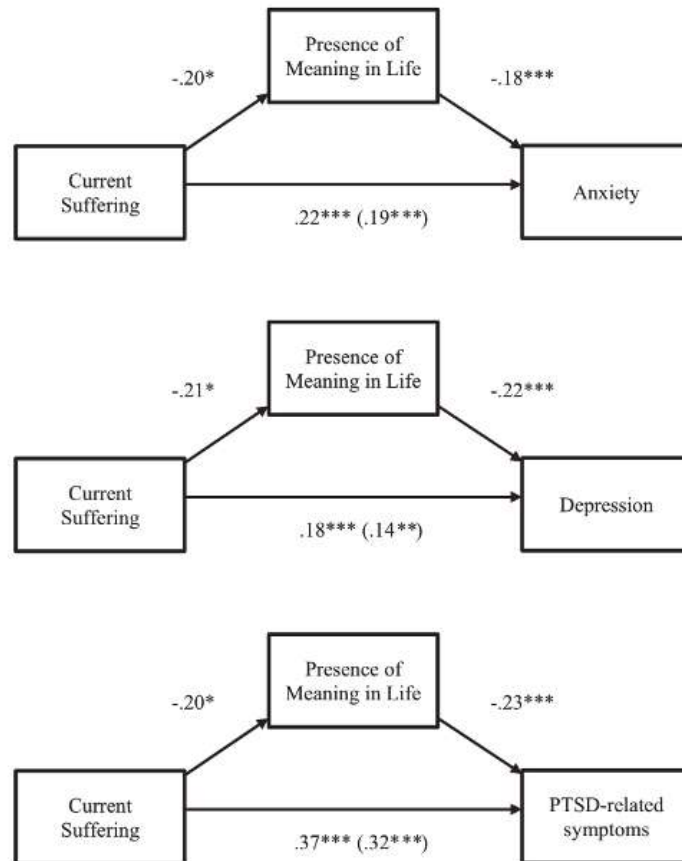


Figure 5. Meaning mediates the relationship between suffering salience and mental health in Study 3.

Note.  $^*p < .05$ ;  $^{**}p < .01$ ;  $^{***}p < .001$ .

deleterious downstream effects on indicators of well-being and mental health.

Additionally, Study 3 also provided evidence for the differing effects of time on the three components of meanings made. Results suggest that it takes time for one to perceive purpose and make sense of experiences of suffering. This may be expected, that if in the *present*, one is unable to make meaning of the experience, then time should not have an effect on coherence. On the other hand, time did not have an effect on perceived significance. This supports the value of measuring these components of meaning separately.

### General discussion

The overarching goal of our research was to provide evidence that suffering is associated with lower meaning in life, and that meaning mediates the relationship of suffering and well-being. Whereas past research has examined specific events, we sought to focus on the *experience* of suffering itself (regardless of specific adverse events) that any individual may experience; it appears that most people have or are experiencing suffering of

some type (96% of participants in Study 1). Thus, this research has external validity and is highly generalizable. We examined meaning globally (i.e., presence, search) and across three components (i.e., purpose, coherence and significance). Three studies supported the idea that current suffering is related to lower perceived meaning in life and that meaning mediates suffering and one's overall well-being.

Study 1 provided correlational evidence that current suffering is associated with lower meaning and well-being and time was associated with greater presence of meaning. Further, making meaning of a past experience of suffering is related to greater meaning and well-being, consistent with other findings on suffering and meaning (Park et al., 2008; Silver et al., 1983; Updegraff et al., 2008; Davis et al., 1998). Studies 2 and 3 provided experimental evidence that when current suffering is made salient, participants reported lower meaning and well-being than when prior suffering is made salient. Similarly, participants currently suffering reported lower purpose and coherence (but not significance) than when prior suffering is made salient. More work needs to be done here to fully assess these differences. The

results from Studies 2 and 3 align with research suggesting that purpose, coherence, and significance should be analyzed separately, as they are distinct components of meaning and may respond differently (Martela & Steger, 2016). Further, all three studies provide evidence that meaning in life is a mediator between current suffering and well-being as assessed by satisfaction with life and mental health.

### Limitations and future research

We built on previous research to understand suffering and its association with meaning in life and well-being. Because data from Study 1 were correlational and precluded causal statements, Studies 2 and 3 were conducted to provide experimental evidence. However, we encourage future researchers to continue to build on these findings with further experimental designs to provide more conclusive causal evidence. Past research indicates that posttraumatic growth is the experience of positive change after challenging experiences (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Tedeschi & Calhoun, 2004); but recently, retrospective work on posttraumatic growth has come under scrutiny (Jayawickreme & Blackie, 2014). Our experimental design attempted to address some of those concerns. Future research should track individuals over time, in a longitudinal study, to trace how meaning and perceptions of meaning change across time, to provide stronger evidence for the mediation model. It is possible that assigning people to current suffering may have led them into choosing smaller issues than they may have experienced in the past, as reflected by the difference in intensity. However, individuals assigned to consider current suffering reported lower meaning and satisfaction with life relative to past sufferers, suggesting that this may not be the case. We also encourage future research that treats the different components of meaning (purpose, coherence, and significance) separately to further understand how they differ in function and effect. Finally, our sample population was a majority Caucasian and Christian, and more diverse samples are needed in future work.

### Conclusion

Because maintaining meaning is a central concern for humans (Heine et al., 2006), suffering is a considerable threat to lowering meaning by creating discrepancies in our beliefs and experiences (Park, 2010). Our data suggest suffering is associated with lower meaning and well-being, and purpose may be the most prevalent component that is missing; finding purpose primarily occurs after suffering. This work suggests that future

research at the interface of suffering and meaning may prove fruitful.

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