Looking for Meaning in All the Wrong Places: The Search for Meaning After Direct and Indirect Meaning Compensation

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ABSTRACT

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Looking for Meaning in All the Wrong Places: The Search for Meaning After Direct and Indirect Meaning Compensation

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When people perceive a lack of understanding or purpose, they typically seek to establish meaning. According to the Meaning Maintenance Model (MMM), when meaning is threatened people affirm indirect sources of meaning to relieve negative feelings rather than directly resolve the source of the violation. Still, research has not investigated the effectiveness of direct compensation for eliminating meaning threats, nor compared whether indirect compensation is as useful as directly emanating the meaning threat. In the present research, I investigate the effectiveness of direct meaning compensation (Study 1) and then compare it to indirect meaning compensation in-lab (Study 2) and online (Study 3). Across all three studies, I exposed participants to a magic trick, and then either told or did not tell them how the trick was done, and assessed participants' feelings of meaninglessness and behavioral meaning-making efforts. Results showed that participants who were not told how the trick done reported greater feelings of surprise and uncertainty than those directly compensated (i.e., told exactly how the trick was done; Study 1). Moreover, direct compensation was more (Study 2) or at least as (Study 3) effective at reducing the surprise and uncertainty associated with the meaning violation. Nevertheless, I observed no reliable differences in behavioral meaning-making efforts across the studies, suggesting either that the psychological

variables were more sensitive to the meaning threat or that the meaning threat had no effect on meaning-making efforts. Taken together, this research suggests that direct compensation for meaning threats is an effective way to reduce feelings of psychological uncertainty in a novel and unexplainable situation.

Keywords: meaning, meaning maintenance model, direct compensation, indirect compensation

DEDICATION

I dedicate this work to all the people whom this project has and will inspire. Your smiles, laughs, and enthusiasm are what makes inspiration possible. I also dedicate this work to my parents—Jane and Wilson—who keep my fire burning bright.

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CHAPTER 1: INTRODUCTION

People have a fundamental *will to meaning* (Frankl, 1946). That is, people are motivated to make sense of and find purpose in life. Researchers have broadly conceptualized this pursuit of meaning as efforts directed toward perceiving a satisfying sense of understanding, significance, and purpose about themselves and their social world (Klinger, 1977; King, Hicks, Krull, & Del Gaiso, 2006; Proulx & Inzlicht, 2012).

Meaning contains two elements: the "what" and the "why" of meaning. The "what" of meaning refers to one's sense of understanding of experiences. People want to feel as though their lives are coherent and devoid of uncertainty and unpredictability. Meaning, however, is more than achieving certainty. Full meaning is perceived when one also knows "why" things happen. Specifically, people experience meaning when they can derive significance and purpose from their environment (Peterson, 1999; 2013). Thus, meaning is a product of seeing both predictability (i.e., the "what" of meaning) and purpose (i.e., the "why" of meaning) in the events that occur in one's world (Proulx & Inzlicht, 2012).

Meaning can be derived from anything that increases perceptions of significance, order, or coherence (e.g., Baumeister, 1991; King et al., 2006; Park, 2010; Proulx & Inzlicht, 2012). Indeed, people can derive meaning from religious traditions (Emmons, 1999; 2005), social groups (Lambert et al., 2010; Krause, 2007), goals (Dittmann-Kohli & Westerhof, 2000; Park, 2010), and beliefs (e.g., in a just world; Janoff-Bulman, 1992; Lerner, 1980). Additionally, people derive meaning from satisfying fundamental human needs, such as self-efficacy and self-worth (e.g., Baumeister, 1991; Ryan & Deci, 2000)

or through feelings of control and overcoming challenges (e.g., Maddi, 1998; Kay, Gaucher, Napier, Callan, & Laurin, 2008). Thus, people derive meaning from anything that helps to create a cohesive narrative that explains their lives (Walker & Skowronski, 2013), or by pursing goals they believe are meaningful (McAdams & Olson, 2010; McAdams, 2013).

Meaning Threat and Restoration

Although meaning has been defined and measured in several different ways (e.g., Baumeister, 1991; King et al., 2006; Park, 2010), currently the dominant way of thinking about meaning is through the lens of the Meaning Maintenance Model (MMM: Proulx & Inzlicht, 2012). According to the MMM, when meaning is threatened people engage in meaning-making efforts to reestablish understanding (i.e., what of meaning) or purpose (i.e., why of meaning). The absence of meaning is associated with physiological and psychological markers of threat. On a physiological level, when a person's meaning is threatened (e.g., by an expectancy violation), they display increased skin conductance, constrained blood vessels, increased heart rate—symptoms that also appear when one is threatened physically (Blascovich, 2000; Townsend, Major, Sawyer, Mendes, 2010). Meaning threats are also accompanied by feelings of anxiety and uncertainty (McGregor, 2006; Proulx & Inzlicht, 2012).

Threats to meaning may come from a variety of sources. For example, people may experience meaning threats when their beliefs about themselves (Steele & Liu, 1983; Ayduk, Gyurak, Akinola, & Mendes, 2011) or the world (Lerner, 1980; Janoff-Bulman, 1992) are undermined. People may also experience meaning threat when they feel a lack

of control (Dickerson & Kemeny, 2004), encounter a situation that challenges their expectations (Mendes, Blascovich, Hunter, Lickel, & Jost, 2007), or are reminded of their own mortality (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Finally, meaning may also be violated from momentary threats to what is expected, such as being shown an anomalous playing card (e.g., a red queen of spades; Proulx & Major, 2013). The MMM proposes that these various meaning threats lead to the same aversive end: meaninglessness.

Important to the present work, the MMM proposes that when people feel meaninglessness they are motivated to engage in compensatory efforts to reducing the aversive arousal (McGregor, Nash, Mann, & Phills, 2010). These efforts, also called *fluid compensation strategies,* are focused on relieving aversive arousal rather than of directly resolving the source of the threat (Proulx & Inzlicht, 2012). For example, when people notice that their actions do not align with their behavior, focusing on positive aspects of their worldview (e.g., their belief in God) is sufficient to reduce the negative arousal they experience (Randles, Inzlicht, Proulx, Tullett, & Heine, 2015). Relatedly, people spontaneously affirm their religious convictions when reminded of a time where they felt a lack of personal control (Kay et al., 2008), affirm their moral beliefs by punishing a criminal more harshly after their expectations for the world are violated (Proulx & Heine, 2008), identify more with their culture after reading an absurd and meaningless parable (Proulx, Heine, & Vohs, 2010), and validate their justice worldviews after being reminded of their mortality (Burke, Martens, & Faucher, 2010). Finally, and relevant to the present work, when meaning is threatened people also show an increased tendency to

perceive meaningful patterns in ambiguous stimuli. For instance, in one study, after receiving unexpected feedback on a task, people perceived marginally more objects in snowy or grainy images even when images do not actually exist (Whitson & Galinsky, 2008).

Direct and Indirect Meaning Compensation

The MMM proposes that people may resolve meaning threats through fluid compensation efforts. Nevertheless, people's fluid compensation efforts can only indirectly resolve meaning threats. Indeed, they prioritize relieving negative feelings rather than directly resolving the source of the violation. By contrast, other research suggests that direct compensation efforts (i.e., reducing the meaning threat itself) should also restore meaning, and perhaps do so better (e.g., Galinsky, Stone, & Cooper, 2000; Shepherd, Kay, Landau, & Keefer, 2011; Stone, Wiegand, Cooper, & Aronson, 1997; Tullett, Teper, & Inzlicht, 2011). For example, research on cognitive dissonance finds that people prefer dissonance reduction strategies that relate to the source of the threat. In one study, researchers induced dissonance by encouraging participants who value condom use to list the times they did not use condoms. Afterwards, the researchers gave participants the opportunity to either donate to an AIDS prevention program or a project to feed the homeless. Stone et al. (1997) observed that participants donated more to the charity related to the dissonance threat (i.e., AIDS program) than the charity unrelated to the dissonance threat (i.e., supporting homeless). Relatedly, people who perceive a lack of control prefer to defend aspects of their cultural worldviews that specifically restore

order (e.g., norms and rules) than aspects of cultural worldviews that do not (Shepherd et al., 2011).

These studies suggest that people may prefer direct over indirect meaning compensation strategies as fluid compensation may not resolve the source of the meaning threat. Indeed when a source of a threat remains unresolved, it increases the likelihood that the same threat will occur again. Consistent with the notion that fluid compensation may leave unresolved meaning threats, researchers in one study induced participants to feel dissonance by encouraging them to prepare a counter-attitudinal speech. Next, the researchers gave participants the opportunity to indirectly compensate for the dissonance by affirming various worldviews unrelated to the dissonance induction (i.e., religion, economics). Finally, as a manipulation, the researchers gave some participants negative feedback about their worldview preferences suggesting that they were counter-normative. Specifically, the experimenter presented participants with information that their two highest valued worldviews were below the average among other participants. Interestingly, negative feedback about worldviews caused participants to subsequently experience more dissonance than those not given negative feedback (Galinsky et al., 2000). In other words, the initial meaning violation (i.e., dissonance) is reinstated when indirect compensation methods are challenged.

CHAPTER 2: THE PRESENT RESEARCH

Although people appear to prefer direct to indirect meaning compensation (e.g., Shepherd at al. 2011), to date no research has manipulated direct meaning compensation and examined its effectiveness at reducing further meaning-seeking relative to no compensation or indirect compensation. In the present study, I aimed to fill this gap by examining whether direct meaning compensation would be effective in reducing meaning-seeking, and whether it would outperform indirect compensation in reducing further meaning-seeking efforts. Moreover, I also examined the effectiveness of promising direct compensation (i.e., promise to directly resolve meaning in the future) for reducing further meaning-seeking. Indeed, to the extent that meaning is defined by clear expectations (Proulx & Inzlicht, 2012), I argue that psychologically altering participants' expectation of future certainty should also restore lost meaning.

In three studies, I investigated the hypothesis that direct compensation for a meaning threat (i.e., eliminating the meaning violation directly) would reduce peoples' sense of meaninglessness and their further meaning-making attempts. In two of these studies, I also compared direct and indirect (i.e., affirming a worldview) compensation to examine whether direct compensation is as effective, or even better than indirect compensation in reducing meaninglessness and further meaning-making attempts.

In all three studies, participants watched a magic trick, inducing a meaning violation. In Study 1, the performer then either revealed the trick, in full, to participants (direct compensation), promised to reveal the trick at the end of the experiment (future direct compensation), or did not reveal the trick (no compensation). Participants then

reported their feelings of surprise, uncertainty, and completed a task that assessed whether participants identified patterns in images where there were none. Studies 2 and 3 extended on Study 1 by including a manipulation of indirect compensation (i.e., values-affirmation), a different magic trick (i.e., a second type of meaning violation), and a different measure of meaning-making attempts (i.e., a task where participants endorsed conspiracy theories).

Study 1

Study 1 represented an initial test of the hypothesis that direct meaning compensation can reduce feelings related to meaninglessness (e.g., uncertainty, surprise) and subsequent attempts to establish meaning.

Study 1: Method

Participants

Undergraduate students (N = 187; Female = 70%; White = 83%) participated in exchange for credit toward a course research requirement. This sample size provided statistical power of 1-B = .86 to detect a medium omnibus effect (Cohen's f = .25; Cohen, 1988) of condition at $\alpha = .05$ (Faul, Erdfelder, Lang, & Buchner, 2007).

Design and Procedure

After participants consented, a researcher performed a "magic"[1] trick using a deck of playing cards. At the outset of the trick, the researcher asked the participant to verbally name a card in the deck, to imagine they had that card in their hand, and then to imagine

[1] Although we wish we possessed magical powers, no actual magic was performed in this study. The researcher performed the magic trick described in this section using a trick deck of cards and sleight of hand. As self-aware Muggles, the study personnel remain firmly agnostic on the existence of actual magic.

placing their chosen card face down in the deck while all other cards were face up. Next, the researcher sorted through the deck face up and revealed a single card that was flipped face down. The researcher then removed that card from the deck and revealed it to the participant, who saw that the card was, in fact, the one that the participant had named initially.

Participants were randomly assigned to either a reveal, future reveal, or a no reveal condition. In the *reveal* condition, the researcher completely explained the magic trick immediately after performing it before participants proceeded with the study. In the *future reveal* condition, the researcher promised to reveal the magic trick at the end of the study. In the *no reveal* condition, participants simply proceeded with the study without any information about how the trick was performed.

Next, participants reported their surprise for the trick, as well as general feelings of surprise and uncertainty. Then, they completed the snowy pictures task (Whitson & Galinsky, 2008). Specifically, participants saw a series of white boxes with black dots across them (i.e., a "snowy" picture). These boxes looked like grainy images (See Appendix A). Half of the boxes ($N = 11$) contained an object inside the snowy picture, while the remaining half ($N = 11$) did not contain an object. Participants read that some of the boxes would not contain an object and that their task was to identify as many correct objects in the snowy images as possible. For each snowy image, participants indicated what they thought the object in the snowy image was or noted that there was no image. After the participants completed all the study measures, the researcher debriefed and thanked them for their time.

Measures

Surprise for trick. All participants reported their feelings of surprise after being shown the trick (M = 6.16, SD = 1.08) on a scale ranging from (1) *not at all* to (7) *very much*.

Uncertainty. Participants indicated how uncertain (M = 3.05, SD = 1.71) and generally how surprised (M = 5.23, SD = 1.56) they felt in the present moment on a scale ranging from (1) *not at all* to (7) *very much.*

False positives. When participants reported that there was an object in an image in the Snowy Pictures Task that did not contain an object, I counted this as a false positive. I summed all instances of false positives to create a false positives score for each participant (M = 3.66, SD = 2.93).

Analyses

Using a series of linear regressions, I examined the role of compensation condition on surprise, uncertainty, and false positives. To do so, I created two orthogonal contrast codes. The first contrast code (reveal = .67, no reveal = -.33, future reveal = -.33) compared responses between the reveal condition and the average of the other two conditions. Thus, this code tested the hypothesis that participants who had the trick revealed to them would feel less surprised, uncertain, and would be less likely to commit false positives than those who did not have the trick revealed, including those in the future reveal condition. The second contrast code (reveal = 0, no reveal = .5, future reveal = -.5) compared responses between the no reveal condition and future reveal condition. Specifically, it tested the hypothesis that participants who did not have the trick revealed

to them would be more surprised, uncertain, and more likely to commit false positives than those who believed they would learn the trick at the end of the study.

Study 1: Results

Table 1 presents the means and standard deviations for surprise, uncertainty, and false positives in each condition.

Table 1

Study 1 statistics for dependent variables by condition.

Condition	Future Reveal (n = 60) $M(SD)$	Reveal (n = 67) $M(SD)$	No Reveal (n = 60) $M(SD)$
Surprise for Trick	6.35 (1.06)[a]	5.93 (1.17)[b]	6.24 (0.97)[a]
Uncertainty	3.28 (1.81)[a]	2.60 (1.48)[b]	3.37 (1.77)[a]
Surprise	5.68 (1.50)[a]	4.73 (1.48)[b]	5.32(1.58)[a]
False Positives	3.60 (2.73)[a]	3.25 (2.68)[a]	4.18 (3.32)[a]

Note. Different subscripts differ significantly at $p < .05$.

Surprise for Trick

The results of a linear regression revealed that participants who had the trick revealed to them felt significantly less surprised by the trick than did those in either the no reveal or future reveal conditions, b = -0.37, SE = 0.16, t = -2.25, p = .03, $r_{partial}$ = -

0.16. Participants in the no reveal and future reveal conditions were equally surprised by the trick, b = -0.11, SE = 0.20, t = -0.57, p = .57, $r_{partial}$ = -0.04.

Uncertainty

Participants who had the trick revealed to them felt significantly less uncertain, b = -0.73, SE = 0.26, t = -2.80, p = .01, $r_{partial}$ = -0.21, and surprised, b = -0.77, SE = 0.23, t = -3.32, p = .01, $r_{partial}$ = -0.24, than did those in either the no reveal or future reveal conditions. Participants in the no reveal and future reveal conditions felt equally uncertain, b = 0.09, SE = 0.31, t = 0.30, p = .77, $r_{partial}$ = 0.02, and surprised b = -0.36, SE = 0.28, t = -1.30, p = .20, $r_{partial}$ = -0.10.

False Positives

False positives did not differ between any of the conditions. That is, participants who had the trick revealed to them committed an equal number of false positives as did those in the no reveal or future reveal conditions, b = -0.64, SE = 0.45, t = -1.44, p = .15, $r_{partial}$ = -0.11 (see Figure 1). Similarly, participants in the no reveal and future reveal conditions committed an equal number of false positives, b = 0.58, SE = 0.53, t = 1.10, p = .28, $r_{partial}$ = 0.08.

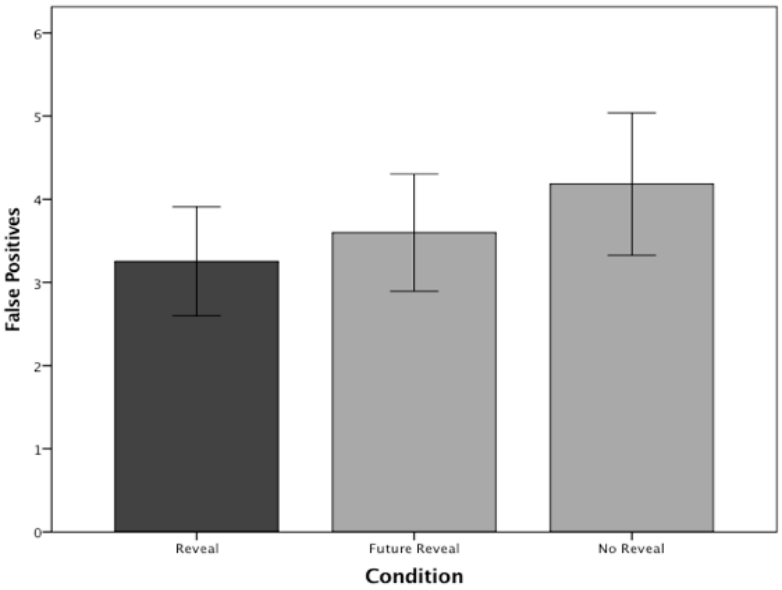

Figure 1. Study 1 false positives by condition.

Study 1: Discussion

Study 1 offered initial support for the hypothesis that direct compensation may reduce the psychological feeling of meaninglessness. Specifically, participants who had the trick revealed to them (i.e., reveal condition) felt less uncertain and surprised—both for the trick and in general. However, their meaning making efforts did not differ, suggesting that meaning the compensation conditions worked primarily to reduce the psychological feeling of meaninglessness, but did not influence meaning-seeking behaviors. Nevertheless, it is possible that our measure of meaning making was not sensitive enough. Indeed, the average number of false positives was less than 1/3 of the total possible false positives. These responses were consistent with the original snowy pictures task (Whitson & Galinsky, 2008), which demonstrated similar levels of false

positives and only a marginal effect of meaning threat on false positive. As such, it is possible that a more sensitive measure might prove useful.

Study 1 also demonstrated that attempts to place participants mind at ease through promises of future certainty (i.e., future reveal condition) were relatively ineffective. Indeed, across all dependent measures those in the future reveal condition reacted identically to those in the no reveal condition.

Study 2

One primary limitation of Study 1 was that it did not include a comparison between direct and indirect compensation methods. Thus, it remains unclear whether direct and indirect compensation methods are equally effective in reducing meaninglessness and the need for meaning-seeking. To address this limitation, I included a manipulation of indirect compensation (i.e., a values-affirmation task) in Study 2. I also included two different measures of meaning-seeking to increase the sensitivity of the behavioral measures. Thus, Study 2 extends on the findings of Study 1 by providing a more focused test of the hypothesis that direct compensation can reduce meaning-seeking efforts more than indirect compensation.

Study 2: Method

Participants

Undergraduate students (N = 372; Female = 62%; White = 85%) participated in exchange for credit toward a course research requirement. Of these participants, 31 (8.3%) were dropped for failing to correctly respond “yes” to an attention check question

asking "Are you human?". The remaining sample (N = 341) was used in all subsequent analyses.

Design and Procedure

After participants consented to participate, the researcher performed the same magic trick used in Study 1. Participants were then randomly assigned to either a direct compensation, an indirect compensation, or no compensation condition. In the *direct compensation* condition, the researcher completely explained the magic trick immediately after performing it. In the *indirect compensation* condition, participants read a list of seven important human values (e.g., religion, justice, loyalty) and selected the most important one. Participants then wrote a short paragraph about why their chosen value is important (consistent with Cooke, Trebaczyk, Harris, & Wright, 2014; Fein & Spencer, 1997). In the *no compensation* condition, participants proceeded with the study without any information about how the trick was performed and without writing an essay. Next, participants completed a variety of dependent measures that assessed uncertainty, perceived meaning, and meaning-seeking.

Measures

Surprise for trick. As in Study 1, all participants reported their feelings of surprise after being shown the trick on a scale ranging from (1) *not at all* to (7) *very much* (M = 5.95, SD = 1.33).

Uncertainty. As in Study 1, participants indicated how uncertain (M = 3.79, SD = 1.82) and generally surprised they felt (M = 5.20, SD = 1.64) "in the present moment" on a scale ranging from (1) *not at all* to (7) *very much.*

State meaning. Participants completed the 4-item purpose in life scale (PIL: Crumbaugh & Maholick, 1964). Specifically, the four items included, "In life, I have very clear goals and aims," "My personal existence is very purposeful and meaningful," "I have clear goals and a satisfying purpose in life," and "I regard my ability to find a meaning, purpose, or mission in life as very great." To capture state feelings, participants responded respond to these items based on how they felt in the present moment (e.g., "Right now, I feel I have very clear goals and aims.") All items were measured on a scale ranging from (1) *strongly disagree* to (7) *strongly agree* ($\alpha = .89$, $M = 5.90$, $SD = 1.06$)

Meaning-seeking. Participant's responded to two meaning-seeking measures: conspiracy perceptions and perceptions of non-randomness in completely random events.

Participants read and imagined themselves as the main character of two short scenarios that ambiguously presented a conspiracy between the story's antecedents (i.e., behaviors of the characters) and consequences (i.e., outcome of the story; Whitson & Galinsky, 2008; see Appendix B). After reading the story, participants indicated the extent to which they believed the behaviors of the characters were connected to each story's outcome on a scale ranging from (1) *not at all* to (7) *very much*. The In the first story, participants imagined themselves as a business employee who is ostensibly up for promotion. During the day they expect to earn about their promotion, a nearby coworker and their boss exchange emails at an atypically high rate. At the end of the day their boss does not offer them a promotion. In the second story, participants imagined that they bought stock in local construction companies. Participants then read that the families of

the construction company owners met at their spouses' hotel. Finally, participants read that after the meeting stock prices of the construction companies rise drastically.

I used perceptions of a link between each story and its outcomes (i.e., conspiracy) as a measure of meaning-making efforts. Together, participants' conspiracy perceptions of Story 1 ($M = 5.05$, $SD = 1.24$) and Story 2 ($M = 4.20$, $SD = 1.79$) correlated only weakly ($r = .29$, $p < .001$). Thus, I analyzed them separately.

Second, the researcher presented participants with a series of completely random coin flip results that varied in the perceived predictability of their randomness patterns (e.g., HTHHTT; HHHHHH; H = heads and T = tails). Past research using this paradigm (e.g., Kahneman & Tversky, 1972) indicated that people believe that coin flips that alternate between heads and tails are truly random (e.g., HTHTHT) whereas those containing several runs in a row of the same side of the coin are biased (e.g., HHHHHH). In total, participants evaluated 10 coin flips (5 "predictable" $M = 4.79$; $SD = 1.28$; $\alpha = .94$; and 5 "unpredictable," $M = 3.64$; $SD = 1.28$; $\alpha = .87$) and evaluated the likelihood of each coin flip occurring. Participants evaluated all coin flips on a scale ranging from (1) *not at all likely* to (7) *very likely*. Higher likelihood judgments for coin flips which follow predictable patterns of randomness indicate greater meaning-making efforts.

Analysis

I examined the role of condition on surprise, uncertainty, state meaning, and meaning-seeking using linear regression. As in Study 1, I created two orthogonal contrast codes. The first code (no compensation = .67, direct compensation = -.33, indirect

compensation = -.33) compared responses in the no compensation condition to the average responses in the other two conditions. The second code (direct compensation = -.5, indirect compensation = .5, no compensation = 0) compared responses between the direct compensation and indirect compensation conditions.

Study 2: Results

Table 2 presents the means and standard deviations for all dependent measures in each condition.

Table 2.

Study 2 statistics for dependent variables by condition.

Condition	Indirect Comp (n = 109) $M(SD)$	Direct Comp (n = 117) $M(SD)$	No Comp (n = 115) $M(SD)$
Surprise for Trick	5.85 (1.33)[a]	5.72 (1.29)[a]	6.27 (1.05)[b]
Uncertainty	3.81 (1.82)[a]	3.11 (1.68)[b]	4.46 (1.84)[ab]
Surprise	5.11 (1.72)[a]	4.68 (1.56)[b]	5.81 (1.42)[ab]
Meaning	5.74 (1.16)[a]	5.93 (0.98)[a]	6.18 (0.83)[b]
Conspire Story 1	4.92 (1.18)[a]	5.17 (1.28)[a]	5.04 (1.26)[a]
Conspire Story 2	3.90 (1.73)[a]	4.44 (1.91)[b]	4.25 (1.70)[a]
Predictable Flips	4.74 (1.27)[a]	4.76 (1.33)[a]	4.87 (1.24)[a]
Unpredictable Flips	3.62 (1.20)[a]	3.60 (1.35)[a]	3.70 (1.30)[a]

Note. Different subscripts differ significantly at $p < .05$.

Surprise for Trick

The results of a linear regression revealed that participants who were not compensated reported significantly more surprise for the trick than did those who were compensated either directly or indirectly, $b = 0.48$, $SE = 0.15$, $t = 3.22$, $p = .01$, $r_{partial} = 0.17$. However, participants in the indirect and direct compensation conditions reported equal surprise for the trick, $b = 0.14$, $SE = 0.18$, $t = 0.77$, $p = .44$, $r_{partial} = 0.42$.

Uncertainty

Participants who were not compensated reported significantly more uncertainty, $b = 1.00$, $SE = 0.20$, $t = 5.02$, $p = .01$, $r_{partial} = 0.26$, and surprise, $b = 0.92$, $SE = 0.18$, $t = 5.09$, $p = .01$, $r_{partial} = 0.27$, than did those who were compensated either directly or indirectly. Moreover, participants in the indirect compensation condition reported significantly more uncertainty (see Figure 2), $b = 0.70$, $SE = 0.23$, $t = 3.00$, $p = .01$, $r_{partial} = 0.16$, and surprise (see Figure 3), $b = 0.44$, $SE = 0.21$, $t = 2.08$, $p = .04$, $r_{partial} = 0.11$, than those in the direct compensation condition.

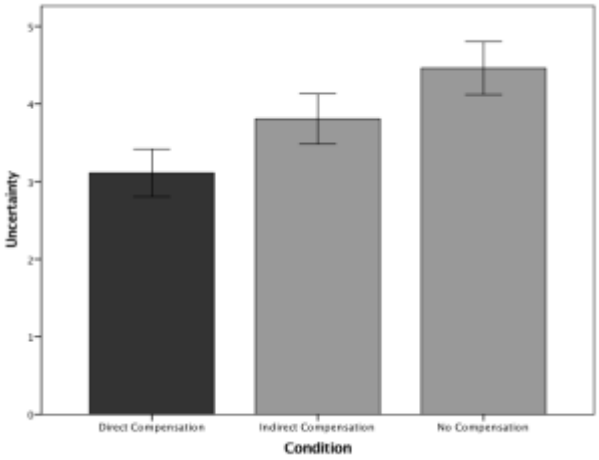

Figure 2. Study 2 uncertainty by condition.

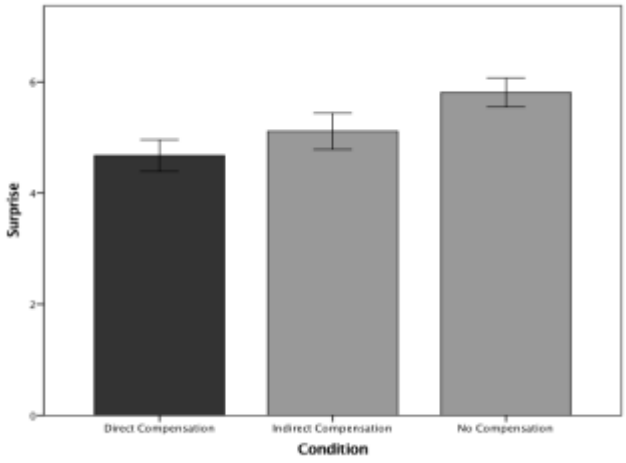

Figure 3. Study 2 surprise by condition.

State Meaning

Surprisingly, participants who were not compensated for the trick reported significantly more state meaning than did those who were compensated either directly or indirectly, $b = 0.36$, $SE = 0.11$, $t = 3.12$, $p = .01$, $r_{partial} = 0.17$. However, participants in the indirect and direct compensation conditions reported equal degrees of state meaning, $b = -0.19$, $SE = 0.13$, $t = -1.42$, $p = .16$, $r_{partial} = -0.08$.

Conspiracy Perceptions

Regarding the first conspiracy story, both those who were and were not compensated endorsed equal conspiracy perceptions, $b = -0.01$, $SE = 0.14$, $t = -0.01$, $p = .99$, $r_{partial} = -0.01$. Similarly, both those who were indirectly and directly compensated endorsed equal conspiracy perceptions, $b = -0.26$, $SE = 0.17$, $t = -1.54$, $p = .13$, $r_{partial} = -0.08$.

Regarding the second conspiracy story, both those who were and were not compensated endorsed equal conspiracy perceptions, $b = 0.85$, $SE = 0.21$, $t = 0.42$, $p = .68$, $r_{partial} = 0.02$. Unexpectedly, participants in the indirect compensation condition endorsed conspiracy perceptions significantly less than did those in direct compensation condition, $b = -0.53$, $SE = 0.24$, $t = -2.26$, $p = .03$, $r_{partial} = -0.12$.

Randomness Patterns

None of the groups differed significantly in their perceptions of coin flips as random. That is, perceiving predictable coin flips as random did not differ as a function of compensation, $b = 0.12$, $SE = 0.15$, $t = 0.83$, $p = .41$, $r_{partial} = 0.45$, nor directness compensation, $b = -0.03$, $SE = 0.17$, $t = -0.17$, $p = .87$, $r_{partial} = -0.01$. Similarly, perceiving unpredictable coin flips as random did not differ as a function of compensation, $b = 0.10$, $SE = 0.15$, $t = 0.68$, $p = .50$, $r_{partial} = 0.04$, nor directness of compensation, $b = 0.02$, $SE = 0.17$, $t = 0.12$, $p = .91$, $r_{partial} = 0.01$.

Study 2: Discussion

I designed Study 2 to replicate Study 1's findings by examining whether direct compensation would reduce the negative feelings (i.e., surprise and uncertainty) associated with a meaning violation. Similarly to Study 1, Study 2 showed that participants who were not compensated for the trick reported more surprise and uncertainty than those compensated in some way. However, contrary to expectations, participants who were not compensated for the trick also reported more state meaning than did those who were compensated. This finding is particularly unexpected because

participants who were not compensated still reported more uncertainty and surprise than those who were compensated. Thus, the exact reason for this result is unclear.

Nevertheless, the primary purpose of Study 2 was to compare the effectiveness of direct and indirect compensation strategies for resolving meaning violations. To this end, participants in the indirect compensation condition reported more feeling more surprise and uncertainty than did those in the direct compensation condition. However, state meaning did not differ between the indirect and direct compensation conditions. Overall, these results provide support for the idea that the negative feelings associated with meaning violations persist to a greater extent following indirect rather than direct compensation.

Still, behavioral meaning-seeking efforts, as assessed through random coin flip patterns, aimed at reducing these negative feelings did not differ between the indirect and direct compensation conditions. Regarding the second meaning-seeking measure, conspiracy perceptions, participants who were indirect compensated endorsed less conspiracy perceptions than those who were directly compensated.

Study 3

To follow up on Study 2's results, I conducted a conceptual replication to generalize Study 2's findings to another magic trick and a non-student population.

Study 3: Method

Participants

Amazon.com Mechanical Turk workers (N = 220; Female = 45%; White = 81%) participated in exchange for $0.88. Of these participants, I omitted 66 (30%) from the

analyses for failing to correctly respond "yes" to the attention check "Are you human?" or because they reported that the trick was unsuccessful (it could not be unsuccessful, indicating participant error). I used the remaining sample (N = 154) in all subsequent analyses[2].

Design and Procedure

Study 3 was identical to Study 2 with two exceptions. First, instead of seeing a card trick preformed in front of them, participants watched a "mind reading" video on YouTube (https://www.youtube.com/watch?v=sLN0FVG8VWA). Specifically, a man asked participants to choose a card from a matrix of cards, instructed them to point at the card, and then instructed them to make a variety of up/down or left/right moves from their original card. Several times throughout the video, the man removed cards that he claimed the participant did not have their finger on. Finally, the man picked the card the participant's finger landed on to reveal that he had labeled it "your card" from the beginning.

The second difference from Study 2 involved the direct compensation condition. After the magic trick video finished, participants in the direct compensation condition read a short explanation that revealed that the trick was based on a mathematically foregone conclusion. The other two conditions, dependent measures, and analyses are identical to Study 2.

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[2] The results were the same with the entire sample included in the analysis.

Study 3: Results

Table 3 presents the means and standard deviations for all dependent measures in each condition.

Table 3.

Study 3 statistics for dependent variables by condition.

Condition	Indirect Comp (n = 54) $M(SD)$	Direct Comp (n = 50) $M(SD)$	No Comp (n = 50) $M(SD)$
Surprise for Trick	4.00 (2.15)[a]	3.46 (2.29)[a]	5.26 (1.72)[ab]
Uncertainty	2.11 (1.24)[a]	2.32 (1.70)[a]	2.94 (1.58)[ab]
Surprise	3.31 (2.13)[a]	3.04 (2.14)[a]	4.78 (1.95)[ab]
Meaning	5.55 (1.36)[a]	5.22 (1.57)[a]	5.24 (1.53)[a]
Conspire Story 1	5.11 (1.69)[a]	5.00 (1.68)[a]	4.96 (1.31)[a]
Conspire Story 2	4.52 (2.05)[a]	4.10 (1.95)[a]	4.42 (2.10)[a]
Predictable Flips	5.46 (1.25)[a]	5.30 (1.36)[a]	5.37 (1.22)[a]
Unpredictable Flips	3.54 (1.20)[a]	3.53 (1.29)[a]	3.65 (1.33)[a]

Note. Different subscripts differ significantly at $p < .05$.

Surprise for Trick

As in Study 2, participants who were not compensated reported significantly more surprise for the trick than did those who were compensated either directly or indirectly, *b*

= 1.53, *SE* = 0.36, *t* = 4.30, *p* = .01, $r_{partial}$ = 0.33. Moreover, participants in the indirect and direct compensation conditions felt equally surprised by the trick, *b* = 0.54, *SE* = 0.41, *t* = 1.33, *p* = .19, $r_{partial}$ = 0.11.

Uncertainty

As in Study 2, participants who were not compensated reported significantly more uncertainty, *b* = 0.72, *SE* = 0.26, *t* = 2.78, *p* = .01, $r_{partial}$ = 0.22, and surprise, *b* = 1.60, *SE* = 0.36, *t* = 4.49, *p* = .01, $r_{partial}$ = 0.34, than did those who were compensated either directly or indirectly. Moreover, participants in the indirect and direct compensation conditions felt equally uncertain, *b* = -0.21, *SE* = 0.30, *t* = -0.70, *p* = .48, $r_{partial}$ = -0.06, and surprised, *b* = 0.28, *SE* = 0.41, *t* = 0.68, *p* = .50, $r_{partial}$ = 0.06.

State Meaning

Unlike Study 2, none of the conditions differed in state meaning. Indeed, state meaning did not differ as a function of compensation, *b* = -0.14, *SE* = 0.26, *t* = -0.56, *p* = .58, $r_{partial}$ = -0.05. nor the directness of compensation, *b* = 0.34, *SE* = 0.29, *t* = 1.15, *p* = .25, $r_{partial}$ = 0.09.

Conspiracy Perceptions

Conspiracy perceptions did not differ between any of the conditions. Perceptions of conspiracies did not differ as a function of compensation in either first conspiracy story, *b* = -0.10, *SE* = 0.27, *t* = -0.35, *p* = .73, $r_{partial}$ = -0.03, or the second conspiracy story, *b* = 0.11, *SE* = 0.35, *t* = -0.32, *p* = .75, $r_{partial}$ = 0.03, Similarly, perceptions of conspiracies did not differ as a function of directness of compensation in either the first

conspiracy story, $b = 0.11$, $SE = 0.31$, $t = 0.36$, $p = .72$, $r_{partial} = 0.03$, or the second conspiracy story, $b = 0.42$, $SE = 0.40$, $t = 1.05$, $p = .30$, $r_{partial} = 0.09$.

Randomness Patterns

None of the groups differed significantly in their perceptions of coin flips as random. That is, perceiving predictable coin flips as random did not differ as a function of compensation, $b = -0.01$, $SE = 0.22$, $t = -0.06$, $p = .95$, $r_{partial} = -0.01$, nor directness compensation, $b = .16$, $SE = 0.25$, $t = 0.65$, $p = .52$, $r_{partial} = 0.05$. Similarly, perceiving unpredictable coin flips as random did not differ as a function of compensation, $b = 0.12$, $SE = 0.22$, $t = 0.53$, $p = .59$, $r_{partial} = 0.04$, nor directness of compensation, $b = 0.01$, $SE = 0.25$, $t = 0.02$, $p = .99$, $r_{partial} = 0.01$.

Study 3: Discussion

Study 3 represented a conceptual replication of Study 2 using a different meaning violation (i.e., a different magic trick) and sampling online rather than in-lab. Consistent with Study 2's findings, participants in the no compensation condition reported more surprise and uncertainty than did those who were compensated directly or indirectly. However, in contrast to Study 2, there were no significant difference in state meaning between the no compensation and compensation conditions.

Moreover, the data did not support the hypothesis that direct compensation would be more effective in resolving the meaning violation than indirect compensation. Indeed, across all dependent measures, I observed no significant differences between direct and indirect compensation. That said, a notable 30% of the sample was dropped for attention issues or because the trick failed. The large omission rate may speak to both the quality

of online sampling and/or the strength of the new meaning violation used. Thus, the value of Study 3's results is limited.

CHAPTER 3: GENERAL DISCUSSION

The purpose of the present project was to investigate the general and relative (to indirect compensation) efficacy of direct compensation in reducing meaninglessness (i.e., surprise and uncertainty) and the search for further meaning (e.g., pattern perception). To this end, I hypothesized that participants who were directly compensated for a meaning violation would feel less surprise, uncertainty, and show fewer meaning-making efforts than would those who were indirectly compensated or not compensated.

Across three studies, participants watched someone perform a magic trick (a meaning violation) and then responded to a variety of meaning-related measures (e.g., surprise, uncertainty, false positives, conspiracy perceptions). In Study 1, the performer either revealed the trick completely (direct compensation), promised to reveal the trick at the end of the experiment (future reveal), or did not reveal the trick (no compensation). Participants in the direct compensation condition felt less surprised and uncertain than did those in either the future reveal or no compensation conditions. Thus, Study 1 suggested that direct compensation can reduce psychological states related to meaninglessness after a meaning violation. Nevertheless, compensation did not influence the number of false positives participants committed on the meaning-making measure.

Studies 2 and 3 examined whether direct compensation worked better than indirect compensation in reducing uncertainty, surprise, and meaning making efforts. Consistent with Study 1, participants who either learned the nature of the trick (direct compensation) or who affirmed an important worldview (indirect compensation) reported fewer feelings of surprise and uncertainty than did those who were not compensated.

Consistent with the notion that direct compensation can outperform indirect compensation, in Study 2, those who were compensated directly reported feeling less surprise and uncertainty than did those compensated indirectly. However, in Study 3, surprise and uncertainty were equal between those directly and indirectly compensated. Together, these findings indicate that, in general, direct compensation is equal to indirect compensation; however, when the conditions did differ, direct compensation was better at reducing the psychological feeling of meaningless.

Nevertheless, with the exception of one finding, in none of the studies did the primary behavioral meaning-seeking measures (i.e., snowy pictures, conspiracy perceptions, and coin flip patterns) differ significantly between groups. The only exception occurred on one measure of conspiracy perceptions in Study 2, when those in the indirect compensation condition endorsed conspiracy perceptions less than did those in the direct compensation condition. Although this finding is inconsistent with the primary hypothesis, one possible explanation is that revealing the magic trick (i.e., direct compensation) temporarily heightened participants' belief in conspiracies. In other words, revealing a secret (i.e., the magic trick effect) may have encouraged participants to believe that there are other secrets or conspiracies that exist. That said, this particular finding did not replicate in Study 3.

Implications and Applications

The present investigation has at least three important implications. First, direct compensation may be an effective route for reducing meaninglessness, and, as a result, increasing mental health and wellbeing (e.g., Janoff-Bulman, 1992; Krause, 2007).

Studies 2 and 3 suggested that direct compensation could reduce the negative feelings of meaninglessness (e.g., uncertainty) just as well, if not better, than indirect compensation. Thus, the present results imply that both compensation strategies—direct and indirect—are effective and people should use whatever method is easiest to implement.

Second, the effectiveness of direct compensation may assist people in obtaining the "what" of meaning (i.e., understanding). According to the MMM, understanding is critical for helping people determine what is real, what to expect, and ultimately, how to behave (Proulx & Inzlicht, 2012). That said, the present results imply that direct compensation is an effective strategy for reducing uncertainty and restoring a clear sense of understanding or coherence.

Third, the present study also suggests another manipulation of meaning violation. Manipulations like magic tricks can serve as a useful methodological tool for understanding the meaning restoration process after direct compensation. Unfortunately, the majority of meaning violation procedures used in the meaning literature widely ignore the idea of direct compensation despite it being a clear way to restore meaning. For example, Proulx et al. (2010) induce a meaning violation by asking participants to read an absurd parable and then assess indirect compensation efforts. Although indirect compensation strategies may effectively resolve meaning, a clearer way to restore meaning is simply to give a sensible conclusion (i.e., direct compensation) to the absurd parable. The present research demonstrates that direct compensation is an effective way to resolve uncertainty and should be considered as an alternative to indirect compensation methods.

Limitations and Future Directions

The present research was limited in at least four ways. First, across all three studies, the manipulations did not affect the behavioral meaning-making measures (e.g., snowy pictures, conspiracy perceptions). Moreover, although the snowy pictures and conspiracy perception measures were adopted from existing literature (Whitson & Galinsky, 2008), the effects in the original report were weak and thus may have been more difficult to replicate. The effect size of the present findings raises questions as to how sensitive these meaning-seeking measures are at detecting differences between conditions.

Moreover, although the present research could have employed self-report measures (e.g., Meaning in Life scale; Steger & Frazier, 2005), self-report assessments do not capture people's active or behavioral search for meaning. That said, the meaning literature appears to lack a reliable behavioral measure of meaning-seeking. Thus, future research should aim to create a good measure of behavioral meaning making. For example, future research could expand the snowy pictures task to improve its sensitivity. Alternatively, future research could create a new measure of behavioral meaning-seeking. Eye tracking procedures, for instance, could be useful for assessing how long participants spend searching for meaning and what types of meaning (direct or indirect) they prefer to gaze at.

Second, the conditions differed in ways other than the nature of the compensation. The control conditions involved continuing the experiment immediately, without addressing the meaning threat. The direct compensation manipulation involved either

listening to or reading an explanation of the trick. The indirect compensation involved writing an essay. The in-equivalency between these conditions is potentially problematic for four reasons. For one, time passes differently in the conditions. Those in the control condition (i.e., those without compensation) responded to the dependent measures sooner than did those in the direct and indirect compensation conditions. Thus, it is possible that there is an effect of time on the outcomes (i.e., people become less surprised and uncertain over time). Also, the control and direct compensation conditions did not involve writing. Without holding the act of writing constant, participants' feelings of meaning may have been affected. Third, participants in the reveal conditions were more engaged with the researcher than the other two conditions. Finally, participants in the reveal conditions were more passive (i.e., passively listening to the trick's reveal) than participants in the indirect compensation conditions (i.e., actively affirming values). Given the lack of equivalency between conditions, future research would benefit from employing manipulations which hold the effects of time, writing, and engagement constant.

Third, some might argue that the magic trick and revelation of the trick did not necessarily affect perceived meaning in so much as they affected feelings of uncertainty. That is, the experimental procedures might have affected the "what" of meaning (i.e., seeing the world as predictable) without influencing the "why" of meaning (i.e., seeing life as purposeful). Indeed, although uncertainty is a crucial part of meaning definition (Proulx & Inzlicht, 2012), full meaning is only achieved when people perceive a satisfying sense of purpose, significance, and coherence. However, I do not believe this

limitation is problematic because all meaning violations engender meaninglessness—regardless of whether the violation affects uncertainty (i.e., the what of meaning) or purpose (i.e., the why of meaning; Proulx & Inzlicht, 2012). Indeed, past research in the meaning literature have used similar meaning violation procedures that are arguably less powerful and have little effect on significance and purpose (i.e., the why of meaning), such as exposure to anomalous playing cards (e.g., a red queen of spades; Proulx & Major, 2013).

Finally, there are also limitations with the quality of the online sample and overall effectiveness of the meaning violation. In Study 3, I omitted roughly 30% of the total sample because of inattentiveness (i.e., failing to respond correctly to an attention check) or because the trick was unsuccessful (i.e., the man in the video did not guess their chosen card). This latter issue—people saying the trick was ineffective in Study 3—is particularly concerning because it threatens the viability of the data. That said, the trick only worked if people followed instructions. Thus, it is likely that people who said the actor did not guess their card were either inattentive or did not follow instructions. In an online environment, it is much harder to control how closely participants follow the instructions of the video than it is in lab. Still, in the present work lab participants were all undergraduates. Thus, although Study 2 benefited from a controlled laboratory experiment, we need to establish this effect in non-undergraduate populations. Further, future research aimed at establishing generalizability should also use other meaning violations.

Conclusion

People desire to search for meaning when they perceive a lack of understanding or purpose. According to the MMM, people often restore meaning by indirectly affirming their cherished beliefs or values (i.e., indirect compensation). The central goal of the present investigation was to examine the effectiveness of direct meaning compensation for reducing meaninglessness and the active search for meaning. Across 3 studies, direct compensation was at least as, if not more effective than indirect compensation for reducing the negative feelings associated with meaninglessness (i.e., surprise, uncertainty). Thus, the present research was the first to demonstrate the effectiveness of direct compensations in resolving meaninglessness. Still, I observed few differences in behavioral meaning seeking between conditions. As such, future research should investigate whether direct compensation can also reduce meaning making behaviors.

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APPENDIX A: SNOWY PICTURES TASK

Example of a snowy picture with an image (i.e., fish).

Example of a snowy picture without an image.

APPENDIX B: CONSPIRACY SCENARIOS

Scenario 1

Imagine that you are one of the top administrators in your organization. You are in charge of running a number of aspects of the organization, including tracking the hours of all employees and their email and internet usage. You will soon be up for promotion. The day before your scheduled meeting with your superiors, you notice that the number of emails between your boss and the coworker sitting next to you jumps precipitously. When you meet with your boss, you are told you're not getting the promotion.

To what extent do you think your coworker may be connected to you not getting the promotion?

Scenario 2

Imagine that you buy stock in one of the three construction companies that service your area. One day, your spouse, who runs the local bed and breakfast, notes that the families of all three company owners have checked into the B&B recently. Later, the prices all three companies offer for their services have risen drastically. Because of the higher prices, all three companies post very high profits, and you make a lot of money off of the stock you own.

To what extent do you think the visits to the bed and breakfast may be connected to the earnings you made off your stocks?

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