

It's Simple and I Know It!: Abstract Construals Reduce Causal Uncertainty

Social Psychological and
Personality Science
2014, Vol. 5(3) 352-359
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sagepub.com/journalsPermissions.nav
DOI: 10.1177/1948550613499240
spps.sagepub.com



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Abstract

When negative events occur (e.g., a mass shooting, product failure, breakup), individuals naturally ask themselves *why* such things happen. Indeed, the search for explanations appears to be a fundamental aspect of humanity. The present research explores the role that more abstract, higher level construals play in individuals' feelings of causal uncertainty. Specifically, we demonstrate that participants who were led to construe a negative event in a more abstract manner felt less uncertain about why that event happened (Experiments 1 and 2). Further, we demonstrate that participants who were led to construe a negative event more abstractly exhibited a more simplified understanding of the event (Experiment 3a) and that adopting a more simplified understanding of an event decreased participants' causal uncertainty about the event (Experiment 3b). Finally, we discuss the theoretical and practical implications of these findings.

Keywords

attribution, coping, social cognition, abstract thinking, construal level, psychological well-being

The grieving in Newtown turned from shock to contemplation Sunday, as it grappled with the news of who is gone and learned it could face weeks before its biggest question—Why?—is answered.

NBC News

When negative events like the Sandy Hook shooting in Newtown occur, one of the first questions people naturally ask themselves is *why* such things happen (Wong & Weiner, 1981). Indeed, the search for explanations and meaning appears to be such a fundamental aspect of humanity that it motivates a wide range of behaviors (Markman, Proulx, & Lindberg, 2013). People often look to experts and therapists for answers when they experience uncertainty about negative events (Booth, Lofholm, & Curtin, 1999), and when the mystery remains they may turn to drastic measures, such as religion, drugs, and even death (Crammer, 1984; Hogg, Adelman, & Blagg, 2010; Palmer & Daniluk, 2007). Beyond emotional coping, understanding the cause behind negative events also reveals a target to blame (Guimond, Begin, & Palmer, 1989), and hence, a direction for corrective action.

Many studies have examined the antecedents and consequences of individuals' certainty in their judgments (e.g., Dunning, 2012; Tormala & Rucker, 2007). However, little research has examined the factors that increase individuals' sense of causal certainty—that is, how confident people feel they know the causes behind events (Weary & Edwards, 1994). As Helzer and Edwards (2012, p. 532) note, “the efficacy of a number of documented causal uncertainty-reducing strategies has yet to be demonstrated.” In the present research, we test whether construing a negative event more abstractly creates a more

simplified understanding of the event and subsequently less uncertainty about why the event happened.

Causal uncertainty tends to increase individuals' negative emotions and perceived lack of control (for review, see Tobin & Raymundo, 2010). Therefore, individuals who experience causal uncertainty tend to seek out more diagnostic information (Weary & Jacobson, 1997), examine causal explanations more carefully (Tobin & Weary, 2008), and better correct for cognitive biases (Vaughn & Weary, 2003), all in the service of reducing causal uncertainty. Research has identified several variables that are associated with more or less causal uncertainty, including personality traits (e.g., neuroticism), feelings of control, and familiarity with one's environment (Edwards & Weary, 1998; Edwards, Weary, & Reich, 1998; Nezelek, 2007). Importantly, no research has examined whether construing events in a more or less abstract manner affects individuals' feeling of causal uncertainty about events.

Construal Levels

Though the study of construal levels is rooted in cognitive and developmental psychology (e.g., Brown, 1958; Rosch, 1975), construal levels are highly researched across other

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subdisciplines of psychology, including social (e.g., Fujita & Roberts, 2010) and clinical (e.g., Kross, Ayduk, & Mischel, 2005). A hallmark feature of higher level, more abstract construals is that they tend to be relatively simpler and more coherent than lower level, more concrete construals (Trope & Liberman, 2010). This is because more abstract construals of events emphasize superordinate, central features, and omit incidental features that may vary without significantly changing the meaning of events (Trope & Liberman, 2010). This idea is similar to the concept of core features described by Smith, Shoben, and Rips (1974) in their discussion of conceptual representation. For example, construing the Sandy Hook shooting more abstractly would likely involve thinking about more essential, defining aspects of mass shootings, whereas a more concrete construal would highlight idiosyncratic and possibly trivial details about the particular shooting.

Construal Level and Causal Uncertainty

Recently, research has shown that when individuals are primed with causal uncertainty, they tend to adopt more abstract construals (Helzer & Edwards, 2012). Further, research has shown that more abstract construals make it easier for individuals to generate causes (e.g., why someone would be hungry) than consequences (e.g., what would happen when someone is hungry; Rim, Hansen, & Trope, 2012). However, it remains an open question as to whether more abstract construals of events actually make individuals feel less uncertain about the cause of those events (e.g., the Sandy Hook shooting).¹ Prior work has highlighted how individuals are motivated to adopt more abstract construals in order to draw inferences about situations in which they lack information. Consider, for example, that individuals think more abstractly when making judgments and predictions about experiences that are distant in time or space (Trope & Liberman, 2010), experiences for which individuals often lack information. Similarly, individuals adopt more abstract construals when faced with novel (Förster, 2009) and unfamiliar (Alter & Oppenheimer, 2008) experiences. Moreover, darkness and dim-lighting conditions, which inherently limit information about the visual world, promote more abstract construals (Steidle, Werth, & Hanke, 2011). But what role does abstraction play in reducing *causal* uncertainty?

Causal uncertainty about an event can be experienced for two reasons. First, individuals may be unaware of the possible causes of an event (Weary & Edwards, 1994). Second, individuals may be aware of too many possible causes of an event (Babrow, 2001). In both cases, we argue that more abstract construals of an event should facilitate a more simplified, coherent understanding of an event, and thus less uncertainty about why the event happened. In the former case, we assume that more abstract construals allow individuals to infer essential causal information about an event through a top-down process, which should then allow individuals to have a more simplified understanding of an event. In the latter case, we assume that more abstract construals allow individuals to extract essential causal information about an event through a bottom-up process, which

should also allow individuals to have a more simplified understanding of an event. These different pathways through which a higher level of abstraction produces a more structured mental representation are consistent with the notion that abstraction can be based on preexisting representations from memory (e.g., see Posner & Keele, 1968; Schank & Abelson, 1977) or new representations constructed from currently available information (e.g., Kruschke, 1992; Medin & Schaffer, 1978). Regardless of the basis of individuals' causal uncertainty, we hypothesize that individuals who construe an event more abstractly should feel less uncertain about why the event happened. The following set of experiments tests this hypothesis.

Experiment 1

In this first experiment, we manipulated high or low causal uncertainty about a negative event (a product failure). Then, to measure whether abstract (vs. concrete) construals impact causal uncertainty, we engaged participants in a construal level task that was either related or unrelated to the negative event. By varying the relatedness of the construal task, we were able to rule out that the impact of construal level on causal uncertainty was due to demand effects. We expected that participants would feel less causally uncertain about a negative event when it was construed in a more abstract manner.

Method

We recruited 194 individuals online in the United States (106 females; $M_{\text{age}} = 34.73$, $SD_{\text{age}} = 13.84$) using Amazon's Mechanical Turk system.²

Uncertainty Manipulation

We first asked participants to recall a recent product failure. Next, we manipulated participants' causal uncertainty about the product failure. We asked participants to either write about aspects of the product failure that they still had difficulty understanding in terms of why it happened (higher causal uncertainty) or aspects of the product failure that they now understood very well (lower causal uncertainty).

Construal Level Manipulation

We manipulated participants' construal level of the product failure using two different types of manipulations. One way in which researchers manipulate individuals' construal level is by manipulating their attention to similarities versus differences (Burgoon, Henderson, & Markman, in press). Therefore, we asked participants to either write about similarities (higher level) or differences (lower level) between their recalled product failure and other product failures.

In order to rule out any possible demand effects, we thought it prudent to also manipulate a different group of participants' construal level using a task that was completely unrelated to their recalled product failure. Another way in which researchers manipulate individuals' construal level is by manipulating

Table 1. Means, Standard Deviations of Self-Reported Causal Uncertainty by Conditions in Experiment 1.

	Related Construal Task		Unrelated Construal Task	
	Higher Level	Lower Level	Higher Level	Lower Level
High uncertainty	3.65 (2.05) N = 24	4.62 (2.02) N = 26	3.96 (2.26) N = 24	5.31 (1.94) N = 18
Low uncertainty	4.15 (2.37) N = 24	3.65 (1.87) N = 23	4.38 (2.15) N = 25	4.33 (1.87) N = 30

their breadth of categorization (Burgoon et al., in press), with broader categorization reflecting a higher level of construal. Therefore, we asked another group of participants to categorize 13 daily activities (e.g., doing homework, chatting online) either as broadly (higher level) or as narrowly (lower level) as possible. Construal level manipulations have been repeatedly shown to produce transfer effects (i.e., “mind-sets”) on unrelated events (Burgoon et al., in press). Therefore, we felt confident that having participants engage in the categorization task before they reported their causal uncertainty about their product failure would influence how abstractly they construed the product failure.³

Uncertainty Measure

Finally, we measured causal uncertainty about the product failure by asking participants to indicate the extent to which they agreed with the following two statements: “I feel like I have a very good understanding about why the product failure occurred (reverse coded),” and “I feel like there are many things about the product failure that I still don’t fully understand” (7-point scales; 1 = *not at all*, 7 = *very much*). We averaged across these items ($\alpha = .89$) to create a composite of causal uncertainty.

Results and Discussion

A 2 (causal uncertainty: higher vs. lower) \times 2 (construal level: higher vs. lower) \times 2 (construal task: related vs. unrelated) analysis of variance revealed only a Causal uncertainty \times Construal level interaction effect (see Table 1), $F(1, 186) = 5.66$, $p = .02$, partial $\eta^2 = .03$. Subsequent analyses of this interaction were consistent with our predictions (see Figure 1). That is, among participants who experienced higher causal uncertainty about their product failure, a higher (vs. lower) level of construal led to a greater reduction in participants’ uncertainty about why the product failure happened ($M = 3.80$, $SD = 2.14$, $N = 48$ vs. $M = 4.90$, $SD = 2.00$, $N = 44$; $t(90) = 2.53$, $p = .01$, $d = .53$). Among participants who experienced lower causal uncertainty about their product failure, a higher (vs. lower) level of construal had no effect on participants’ feeling of causal uncertainty ($M = 4.27$, $SD = 2.24$, $N = 49$ vs. $M = 4.04$, $SD = 1.88$, $N = 53$; $t(100) = .56$, $p = .58$, $d = .11$).

Further analysis using a planned contrast revealed that participants who were assigned to the higher causal uncertainty condition who were led to adopt a higher level of construal

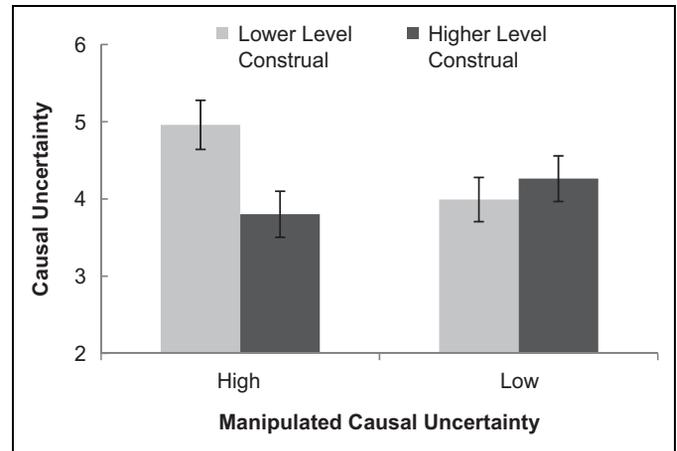


Figure 1. Self-reported causal uncertainty as a result of manipulated causal uncertainty and construal level. Error bars denote one standard error around the mean (Experiment 1).

reported the same level of causal uncertainty as participants who were assigned to the lower causal uncertainty conditions, $t(147) = .96$, $p = .34$. These results support our argument that more abstract construals reduce causal uncertainty. Importantly, this effect was not qualified by construal task (i.e., we did not observe a three-way interaction, $F(1, 186) = .003$, $p = .95$), ruling out possible demand effects.

Experiment 2

In this experiment, we took a highly publicized negative event (a mass shooting) that elicited much causal uncertainty in the public (Schuppe, Kleinbaum, Feldman, Macht, & Schulz, 2012), and indirectly varied whether participants construed the event at a higher or lower level. Specifically, we framed the event as being in the temporally distant or near past. Previous work has shown that events that occur in the distant rather than near past naturally elicit more abstract construals of events (Semin & Smith, 1999). Therefore, we expected that participants would feel less causally uncertain about a negative event when it was framed as being farther in the past.

Method

We recruited 196 individuals in the United States (105 females; $M_{\text{age}} = 32.2$, $SD_{\text{age}} = 11.0$) using Amazon’s Mechanical Turk system. After briefly reminding participants of the Sandy Hook

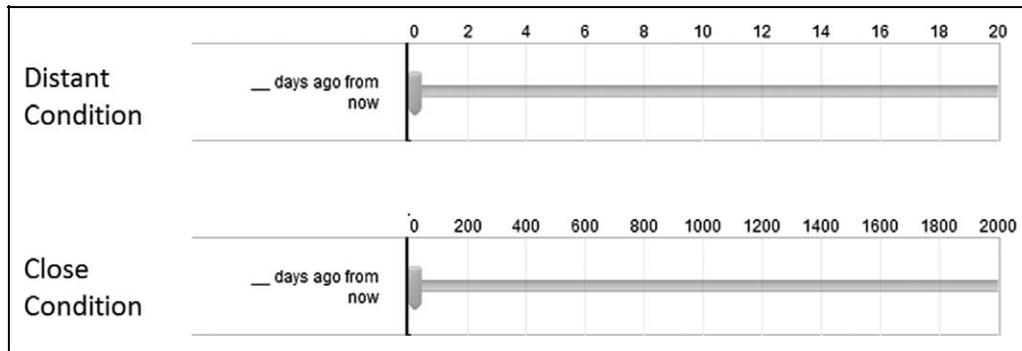


Figure 2. Scales used to make shooting feel temporally distant or close (Experiments 2 and 3a). Instructions: Just to verify that you are reading the instructions carefully, please mark how many days ago the Sandy Hook Elementary School shooting incident occurred on the following scale.

shooting, including how many days had passed since it occurred, we presented participants with a sliding scale designed to manipulate their construal level.

Construal Level Manipulation

Previous work inspired by construal-level theory has shown that increasing temporal distance from an event naturally elicits a higher level of construal (Trope & Liberman, 2010). In fact, the effects of temporal distance on construal level have been so robustly demonstrated that researchers commonly operationalize construal level using temporal distance (e.g., Giacomantonio, De Dreu, & Mannetti, 2010; Lammers, 2012; Plaks, McNichols, & Fortune, 2009). Therefore, in order to manipulate participants' construal of the shooting, we framed the shooting as being temporally distant or close. Specifically, using Ross and Wilson's (2003) procedure we presented participants with a time line and asked them to move a slider from left to right to indicate how many days ago the shooting occurred (see Figure 2).

Participants assigned to the close (lower level construal) condition were presented with a large temporal reference point (e.g., 2,000 days), whereas participants assigned to the distant (higher level construal) condition were presented with a small temporal reference point (e.g., 20 days). Hence, when indicating how many days ago the shooting occurred, participants in the close condition moved the slider only a small amount (creating more closeness to the shooting), whereas participants in the distant condition moved the slider all the way to the opposite end of the scale (creating more distance from the shooting). Scale end points were changed each day of data collection.⁴ Specifically, the scale end point in the distant condition matched however many days ago the shooting occurred, and the scale end point in the close condition was set to be 100 times larger than that of the distant condition.

To verify the effectiveness of this subjective distance manipulation for altering participants' construal level, we conducted a pilot study in which another group of participants ($n = 137$, 63 females) sampled from the same population as the main experiment's participants completed our distance manipulation. Specifically, we first manipulated whether the Sandy Hook shooting felt close ($n = 67$) or distant ($n = 70$) using Ross and Wilson's (2003) time line procedure. Second, we measured

the level at which participants construed the shooting by examining how they categorized events related to the shooting. That is, we gave participants a list of 17 events that were related to the shooting (e.g., restoring the school, talking to witnesses). We then told participants to categorize the items into as many or as few groups as they saw fit. As noted earlier, categorizing things into fewer groups is indicative of a higher level of construal (Burgoon et al., in press). As expected, participants in the distant (vs. close) condition utilized a fewer number of categories when thinking about the events related to the shooting ($M = 4.36$, $SD = 1.13$ vs. $M = 4.97$, $SD = 1.91$; $t(135) = 2.29$, $p = .02$, $d = .40$). Therefore, we feel confident that our distance manipulation successfully altered participants' construal of the shooting in the main experiment.

Uncertainty Measure

Finally, we measured participants' causal uncertainty using the same 2 items from Experiment 1, with the focal event being the Sandy Hook shooting. As in Experiment 1, we averaged across these items ($\alpha = .84$) to create a composite measure of causal uncertainty.

Results and Discussion

As predicted, framing the shooting as a temporally distant (vs. close) event led to a significant reduction in participants' uncertainty about why the shooting happened ($M = 5.22$, $SD = 1.61$, $N = 100$ vs. $M = 5.67$, $SD = 1.37$, $N = 96$; $t(194) = 2.13$, $p = .03$, $d = .31$). This supports our argument that construing an event at a higher level instills greater confidence in knowing why it happened.

Experiment 3a

In the present research, we hypothesize that the reason more abstract thinkers feel less causally uncertain about events is because a higher construal level facilitates a more simplified understanding of events. That is, we argue that construing events more abstractly allows individuals to discount peripheral and potentially trivial causal information about events,

which then leads individuals to feel more confident in knowing what exactly caused these events. Hence, in this experiment, we measured the extent to which individuals identified relatively few versus many possible causes behind a negative event (a mass shooting). We expected that participants who construed the event at a higher level would have a more simplified understanding of why the event happened, and thus identify a relatively fewer number of possible causes behind its occurrence.

Method

We recruited 202 individuals in the United States (113 females; $M_{\text{age}} = 34.5$, $SD_{\text{age}} = 13.0$) using Amazon's Mechanical Turk system. We used the same procedure as in Experiment 2, with the following modifications.

Understanding Measure

After manipulating participants' subjective distance from the shooting, we presented participants with a comprehensive list of potential causes of the Sandy Hook shooting that were frequently mentioned in the media and public discourse (i.e., shooter's poor social support, weak security in elementary schools, shooter's personality disorder, loose gun control, parenting of shooter, divine intervention, media highlighting mass shooters, widespread gun retailers, highly negative personal event as trigger of shooting, substance use, violent movies/video games, other causes). To assess the degree to which participants had a simplified understanding of the causes behind the shooting, we instructed participants to indicate the degree to which they believed each cause was responsible for the shooting. Specifically, we asked them "What do you think is the best representation of what factors caused this incident? Assign a percentage value to each cause so they add up to a 100%."

We then created a Herfindahl–Hirschman index score, or HHI, for each participant, which refers to the sum of the squares of probability allocated to each cause in the list. This index is widely used by economists to capture market concentration—whether the market share is monopolized by a fewer number of firms or more evenly distributed across many firms. For this experiment, we computed the HHI score, so that each cause replaced each firm, and the proportion each cause occupied replaced each firm's market share. Consequently, a perfectly even distribution across all causes in the list would result in $HHI = 0$, whereas one cause completely explaining the shooting would result in $HHI = 1$. All other causal attribution outcomes would result in an HHI score between 0 and 1, with a larger value indicating that participants had a more simplified understanding of the causes behind the shooting.

Results and Discussion

As predicted, framing the Sandy Hook shooting as a temporally distant (vs. close) event led participants to feel more confident that the shooting happened because of a fewer number of

possible causes ($HHI = .39$, $N = 108$ vs. $HHI = .33$, $N = 94$; $t(200) = 2.29$, $p = .02$, $d = .32$). This result is consistent with our argument that more abstract construals lead to a more simplified rather than complicated view about causality.

We thought it prudent to verify that a higher HHI score (greater concentration on a fewer number of causes) was indeed positively associated with feeling more certain about why an event happened. Therefore, we conducted a pilot study in which another group of participants ($n = 130$, 65 females) sampled from the same population as the main experiment's participants first completed our understanding measure about the mass shooting. We then measured participants' causal uncertainty about the shooting using the same 2 items ($\alpha = .88$) from Experiment 2. As expected, participants with a higher HHI score felt less uncertain about why the shooting happened ($r = -.19$, $p = .03$). This is consistent with our argument that a more simplified understanding of events is linked to less uncertainty about why events happen.

Experiment 3b

A higher level of construal is known to elicit a more simplified mental representation of information in the world (Trope & Liberman, 2010). Our findings from Experiment 3a are consistent with this idea, as individuals who were led to construe an event more abstractly exhibited a more simplified understanding of why it happened. We posit that the process of mentally representing one's understanding of events in a more simplified manner is the mechanism by which a higher level of construal leads to less causal uncertainty. Experiment 3b examined this hypothesized mechanism by directly manipulating the extent to which individuals thought about the cause behind a negative event in a simplified manner. That is, we manipulated whether individuals focused on relatively few or many possible causes behind an event, and expected that participants who focused on a relatively fewer number of possible causes would feel less uncertain about why the event happened.

Method

We recruited 204 individuals in the United States (81 females; $M_{\text{age}} = 33.01$, $SD_{\text{age}} = 11.82$) using Amazon's Mechanical Turk system.

Understanding Manipulation

We presented participants with the identical list of potential causes used in Experiment 3a. Using this list, we manipulated participants' concentration or spreading of causal attribution. That is, we asked participants to pick from the list that we provided either the two most important causes (more simplified understanding) or six most important causes (less simplified understanding) behind the Sandy Hook shooting.

Uncertainty Measure

Finally, we measured participants' causal uncertainty using the same 2 items used in Experiment 2. As in previous studies, we

averaged across these items ($\alpha = .70$) to create a composite measure of causal uncertainty.

Results and Discussion

As predicted, making participants focus on relatively few rather than many possible causes resulted in lower causal uncertainty ($M = 4.63$, $SD = 1.45$, $N = 101$ vs. $M = 5.10$, $SD = 1.39$, $N = 103$; $t(202) = 2.36$, $p = .02$, $d = .33$). This result is consistent with our argument that a more simplified representation of an event leads to a greater sense of causal understanding about that event.

General Discussion

Life often does not provide clear answers for why negative events happen, as in the case of mass shootings. Prior research has shown that individuals adopt a higher level of construal in order to draw inferences about situations in which they lack information (e.g., Förster, 2009; Trope & Liberman, 2010). Moreover, prior research has shown that when people are primed with causal uncertainty they tend to adopt a higher level of construal (Helzer & Edwards, 2012). However, an important question has gone unexamined, namely whether a higher level of construal of events actually reduces causal uncertainty. Therefore, the present research provides a valuable contribution to both the construal level and causal uncertainty literature by showing that even subtle shifts in construal level can induce a more simplified understanding of events and less uncertainty about why events happen. The present research also complements prior research on construal level and causal thinking (Rim et al., 2012), which has shown that abstract construals increase the accessibility of causal thoughts. While this past research focused on how easy it is for individuals to generate causes of general events, our findings illustrate the impact of construal level on the representation of causal relationships in specific contexts that involve high causal uncertainty. Overall, our findings can be considered “impressive effects,” as they fit both criteria of having a minor manipulation and a resistant dependent variable (Prentice & Miller, 1992).

Causal uncertainty is associated with a host of negative psychological states (Tobin & Raymundo, 2010; Weary & Edwards, 1994). Not surprisingly, people are therefore strongly motivated to reduce causal uncertainty (Crammer, 1984; Palmer & Daniluk, 2007). More abstract construals have been shown to help individuals deal with mood problems (e.g., Kross et al., 2005; Mergenthaler, 1996), and our findings imply that more abstract construals may be particularly helpful as individuals cope with traumatic events that are entrenched with uncertainty. Certainty about what causes tragic events like a mass shooting not only helps people feel better but also gives them a sense of direction for action. People launching petitions for government actions, constituents voting for policies, or even consumers boycotting against products that malfunction are often motivated by their certainty about the causes behind negative events. Our findings imply that eliciting more abstract

construals of events should increase this state of understanding and subsequently foster greater behavioral conviction.

Of course, individuals' motivation to understand and make sense of events is so robust that individuals will even seek understanding and meaning for positive experiences (Wilson, Centerbar, Kermer, & Gilbert, 2005). Consequently, future research should examine the role of abstract thinking in causal uncertainty of positive events. Theoretically, we make similar predictions about the role of abstract construals in reducing causal uncertainty; that is, abstract construals should simplify the way causal explanations are represented, regardless of the valence of events. It is, however, possible that positive (vs. negative) events are more easily construed in a more abstract manner, due to the fact that positive mood induces higher level thinking (e.g., Labroo & Patrick, 2009). For example, with positive (vs. negative) events, individuals may be more inclined to spontaneously adopt more abstract construals when faced with causal uncertainty. Ultimately, whether abstract construals operate similarly in terms of reducing causal uncertainty about positive events is an empirical question, and we look forward to future research that addresses it.

Coda

The present research provided a novel demonstration of the effects of more abstract construals on people's causal uncertainty about negative events, and we look forward to continued research that examines the consequences of construal level on judgments and behavior more broadly.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Helzer and Edwards (2012) also reported a pilot study in their General Discussion, which found that participants who generated traits that described an actor's behavior felt more causally certain about their own life than individuals who simply indicated the last time they saw an actor's behavior.
2. Our sample size in Experiment 1 was determined by a rule of thumb (25–30 participants per cell). For the remaining experiments, our sample size was informed by prior studies in our lab. As we predicted the manipulations in Experiments 2–3 to be quite subtle, we adhered to a larger sample size for them.
3. Readers may question why we do not include a group in which construal level is not manipulated. Individuals must operate at some level of construal and participants vary from experiment to experiment in their chronic construal level. Consequently, the interpretation of the comparison between experimental groups and any group in which construal level is not manipulated is ambiguous in different construal studies, which is why such a group is often

purposefully not included in construal studies (e.g., Fujita, Trope, Liberman, & Levin-Sagi, 2006; Henderson, 2013; Ledgerwood & Callahan, 2012; Wakslak, 2012).

4. The number of days that passed did not alter the pattern of results in Experiments 2 or 3a when included in the model.

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