

# Responding to Causal Uncertainty Through Abstract Thinking

Jae-Eun Namkoong<sup>1</sup>  and Marlone D. Henderson<sup>2</sup>

<sup>1</sup>Managerial Sciences Department, College of Business, University of Nevada, Reno, and

<sup>2</sup>Department of Psychology, The College of Liberal Arts, The University of Texas at Austin

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## Abstract

The need to understand causality is a powerful motivator. As a result, causal uncertainty, or the sense of not knowing why something happened, can lead to negative psychological consequences and thus activate cognitive processes that can help reduce causal uncertainty. Here, we review the literature that focuses on the relationship between causal uncertainty and abstract thinking. Research shows that causal uncertainty spontaneously motivates people to think more abstractly. This cognitive process has important implications in other domains, such as communication and leadership. For example, when individuals tune in to others on social media during times of causal uncertainty, they prefer more abstract messages, especially when those messages come from socially prominent sources (e.g., leaders). Furthermore, research shows that abstract thinking reduces causal uncertainty by simplifying how causal relationships are cognitively represented. We discuss how these findings relate to previous research and propose directions for future research on the basis of remaining questions.

## Keywords

causal uncertainty, abstract thinking, construal level, motivated cognition

People live in a world full of uncertainty regarding why things happen. Such uncertainty occurs in reaction to mundane events, such as a car failing to start, as well as extraordinary occurrences, such as a mass shooting. Research shows that a sense of not knowing why things happen (or *causal uncertainty*) is associated with negative psychological consequences, including anxiety, depression, and perceived lack of control. This may explain why the need to understand causality is a powerful motivator that activates a variety of cognitive processes. We review the research on one such cognitive process: abstract thinking. Recent studies have shown that the need to reduce causal uncertainty motivates one to think more abstractly and that abstract thinking reduces one's causal uncertainty. In addition to providing a theoretical review of these findings, we discuss practical implications, such as those pertaining to communication and leadership, and propose directions for future research.

and, ultimately, to prevent similar problems from happening again. Such benefits may explain why the need for causal understanding is stronger for negative (vs. positive) events. Whereas causal uncertainty can arise from unanticipated positive events, such as mysterious acts of kindness from strangers, it is more spontaneously experienced after unexpected negative events (Wong & Weiner, 1981). Although much desired, the answer to the why question is often lacking or complicated. For example, many possible causes of mass shootings are discussed, including lax gun laws, mental health issues, weak security, and violent media, but people often have different answers as to what is the primary cause. This complexity can keep causal-uncertainty levels high and negatively impact one's mental health (Edwards & Weary, 1998; Tobin & Raymundo, 2010). Thus, it is important to understand how people react to causal uncertainty, how to communicate with people experiencing causal

## The Goal of Reducing Causal Uncertainty

Understanding the cause of a problem allows people to make better predictions. It also allows them to identify who should be blamed and what needs to be improved

### Corresponding Author:

Jae-Eun Namkoong, University of Nevada, Reno, College of Business, Managerial Sciences Department, MS0028, Reno, NV, 89557

E-mail: jnamkoong@unr.edu

uncertainty, and how to reduce people's feelings of causal uncertainty.

Various cognitive processes are associated with the goal of reducing causal uncertainty. These processes focus on seeking and processing information in ways that help the world seem more "understandable, predictable, and controllable" (Weary & Edwards, 1994, p. 309). Some are intentional, systematic, and effortful cognitive processes driven by the motivation to have a more accurate causal understanding. For example, causal uncertainty may lead people to focus on obtaining more informative answers (Weary & Jacobson, 1997); rely less on cognitive shortcuts, such as stereotypes (Weary, Jacobson, Edwards, & Tobin, 2001); and correct their own biases (Vaughn & Weary, 2003). Another area of research, which is the focus of this article, examines a more spontaneous and automatic cognitive process activated by causal uncertainty: abstract thinking (Helzer & Edwards, 2012; Namkoong & Henderson, 2016).

### **The Relationship Between Causal Uncertainty and Abstraction**

People can think about events at varying levels of abstraction (Förster, 2012; Reyna, 2004; Trope & Liberman, 2011; Vallacher & Wegner, 1987). Thinking about an event abstractly involves considering the central meaning of the event or identifying overarching themes and fundamental issues that can apply across contexts. Thinking about an event concretely, on the other hand, has a narrower scope because peripheral details about the event become salient.

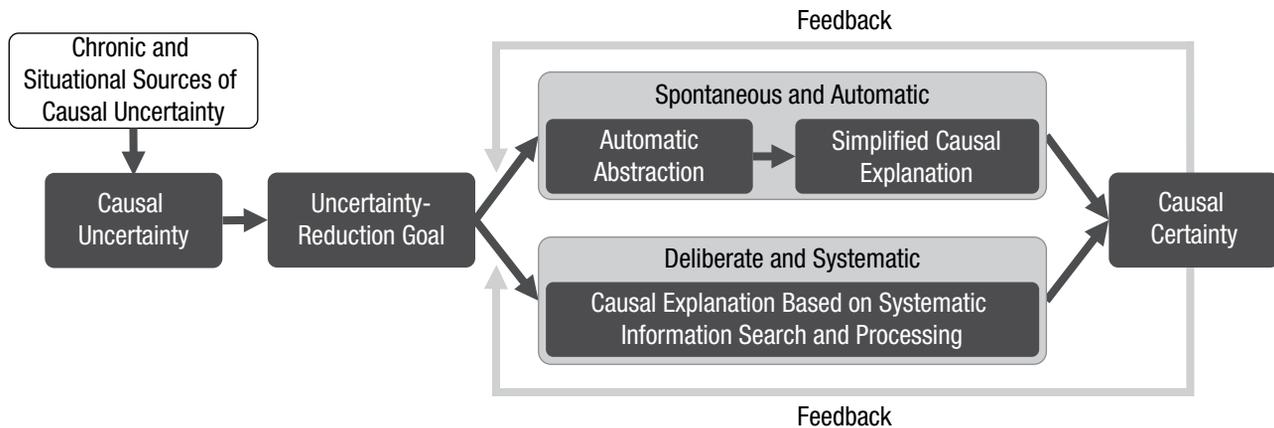
Making causal inferences is an inherently abstract process because it involves uncovering dispositional properties, or "relatively unchanging structures that characterize or underlie phenomena" (Heider, 1958, p. 80). Indeed, research shows that thinking about potential causes of an outcome is more fluent when people are in an abstract (vs. concrete) mind-set (Rim, Hansen, & Trope, 2012). The abstract cognitive process in causal reasoning may take the form of focusing on similarities across events (Namkoong & Henderson, 2014) or explaining behaviors with traits (Helzer & Edwards, 2012) or higher-level goals (Liberman, Trope, McCrea, & Sherman, 2007; Vallacher & Wegner, 1987). For example, thinking about the causes of the Parkland school shooting would likely involve more abstract thinking, such as focusing on similarities between school shootings (e.g., the shooters were all socially isolated, or they all had convenient access to guns), than concrete thinking, such as thinking about the unique details of the shooting (e.g., the shooter took an Uber to get to the school).

Given the role of abstraction in causal reasoning, Namkoong and Henderson (2016) examined whether the goal of reducing causal uncertainty activates a

subsequent cognitive goal to think at a more abstract level. An active goal (e.g., to achieve a high test score) leads to persistent goal-directed behaviors (e.g., studying for the test) even in the face of obstacles (e.g., distracting friends). Once the goal is fulfilled, however, motivation decreases. On the basis of these characteristics of active and fulfilled goals, Namkoong and Henderson demonstrated that for participants manipulated to experience heightened causal uncertainty, whose goal was presumably to think more abstractly, the likelihood of resuming a task after an interruption was higher if the task were perceived to afford more abstract (vs. concrete) thinking. The authors found in another experiment that for participants manipulated to experience heightened causal uncertainty, the desire for abstraction (manifested in a preference for an abstract rather than concrete advertising message) was low after completing an abstract thinking task (indicating the goal had been fulfilled) but high after completing a concrete thinking task (indicating the goal had not yet been fulfilled).

It is important to note that in the studies conducted by Namkoong and Henderson (2016), the questions for causal uncertainty and abstraction occurred in different contexts (a relationship conflict and an advertisement for an automobile brand, respectively) and were allegedly for unrelated studies. This suggests that causal uncertainty motivates abstraction spontaneously and outside of awareness. Furthermore, Helzer and Edwards (2012) found that causal uncertainty leads people to spontaneously adopt a more abstract mind-set; for example, participants primed with causal uncertainty (compared with those in the control group) were more likely to spontaneously make inferences about others' traits and categorize events broadly. This suggests that people are fairly good at not only activating but also automatically fulfilling an abstract-thinking goal, likely without intentionality or awareness.

The spontaneous desire for abstraction in response to causal uncertainty has downstream consequences on communication effectiveness. People often turn to others for information and support during times of causal uncertainty. And on the basis of earlier research (Helzer & Edwards, 2012; Namkoong & Henderson, 2014, 2016), it can be theorized that people will respond more positively to messages that use more abstract language. Namkoong, Ro, and Henderson (2019) used social media (Twitter) data and experiments to demonstrate that in situations of heightened causal uncertainty, more abstract messages were more positively received and shared (i.e., liked and retweeted). Although the generalizability of these effects should be verified, the preference for abstract language in times of causal uncertainty may influence the effectiveness of other forms of communication, including speeches and news reports.



**Fig. 1.** Model of the cognitive processes stemming from causal uncertainty.

The communication context also provides a unique opportunity to examine the role of the message source. Another finding from Namkoong et al. (2019) was that the benefit of communicating with an audience in more abstract language was even greater when the message source was more socially prominent (e.g., individuals in leadership positions). Messages from socially prominent individuals were expected to be more reliable and informative, which appeals to people experiencing high causal uncertainty who typically strive for accuracy (Weary & Jacobson, 1997; Weary, Tobin, & Edwards, 2010).

Furthermore, the demand for effective leadership during turmoil may be explained in part by people's desire for abstraction in response to causal uncertainty. Powerful or socially influential individuals tend to think and communicate more abstractly (Joshi & Wakslak, 2014; Smith & Trope, 2006), and those who communicate more abstractly are perceived as being more leaderlike (Wakslak, Smith, & Han, 2014). Hence, the reason people turn to powerful individuals or leaders during times of causal uncertainty may be because leaders are expected to—and often do—provide a more abstract perspective to problems.

As reviewed so far, the goal of reducing causal uncertainty motivates people to think more abstractly, but does abstract thinking actually reduce one's feeling of causal uncertainty? Namkoong and Henderson (2014) examined this question through events associated with causal uncertainty, both ordinary (a product failure) and tragic (the Sandy Hook Elementary School shooting), and found that assigning participants to think more abstractly reduced their causal uncertainty. An abstract (vs. concrete) mind-set led participants to discount the importance of a large number of peripheral factors and focus on a few central ones. The resulting causal understanding was thus simpler and easier to grasp. Importantly, these effects held even when the

task used to manipulate mind-set (categorizing mundane daily activities broadly vs. narrowly) was unrelated to the causal-uncertainty event (a product failure). Participants were likely unaware of the purpose of the mind-set task or the extent to which the task influenced their causal uncertainty, which provides further evidence of an automatic cognitive process. This finding is consistent with evidence reviewed earlier suggesting that motivated abstraction occurs spontaneously and automatically in response to causal uncertainty (Helzer & Edwards, 2012; Namkoong & Henderson, 2016).

Figure 1 illustrates the theoretical model of cognitive processes stemming from causal uncertainty. The model describes two cognitive paths, one that relies on spontaneous and automatic cognitive processes (e.g., Helzer & Edwards, 2012; Namkoong & Henderson, 2014, 2016) and another that involves deliberate and systematic cognitive processes (e.g., Vaughn & Weary, 2003; Weary & Jacobson, 1997). The model also depicts feedback loops because learning about the benefit of cognitive processes in terms of reducing causal uncertainty presumably reinforces those cognitive processes.

## Remaining Questions

Although studies show a clear relationship between causal uncertainty and abstract thinking, there are remaining questions for future research. It remains unclear, for example, when causal uncertainty would lead to spontaneous and automatic abstraction or more deliberate and systematic cognitive processes. The latter requires more effort than the former; thus, the strength of one's goal of reducing causal uncertainty (determined by both the desirability and the attainability of the goal) is a moderator worth investigating. The desire to reduce causal uncertainty is likely to be stronger for negative (vs. positive) events and for negative events with high (vs. low)

personal relevance. Such events may thus activate a more deliberate and systematic cognitive process.

But even when causal understanding is strongly desired, it may feel unattainable for issues that are too complex for one's level of expertise, in which case, individuals may resort to automatic abstraction that can provide a feeling of understanding through simpler causal representations (Namkoong & Henderson, 2014). It is indeed common to observe people relying on oversimplified causal explanations when addressing important but complex social issues. Condemning violent video games for triggering mass shootings, blaming undocumented immigrants for economic problems, or attributing natural disasters to divine intervention masks the complexity behind such issues and creates an illusion of causal understanding.

It is also possible that cognitive processes evolve dynamically to improve causal understanding, moving between an automatic cognitive process and a more deliberate one when needed (Förster & Jostmann, 2012). For example, one may engage in automatic abstraction in response to causal uncertainty but later realize that the understanding is oversimplified and switch to a more systematic process that reintroduces relevant details.

Individual differences in the need to resolve causal uncertainty can also moderate one's inclination to seek abstraction. People vary in the extent to which they experience causal uncertainty (Weary & Edwards, 1994). The need for cognitive closure (Webster & Kruglanski, 1994)—or the need to quickly arrive at definitive conclusions—also varies by individual. Future research should test whether those with a greater need for clear answers show a stronger propensity for abstraction in situations of high causal uncertainty. Similar moderators may be studied at the global level. Cognitive consequences of causal uncertainty, including the desire to think more abstractly, may be less pronounced in countries where tolerance for uncertainty is relatively higher than in the United States, such as Singapore (Hofstede, 2001).

When examining the downstream consequences of motivated abstraction activated by causal uncertainty, previous research has focused on more reactive behaviors (e.g., changes in mind-sets and preferences). But could the cognitive process also predict proactive behaviors? It is possible that the attempt to reduce causal uncertainty through abstraction and simplified causal explanations leads people to hold more extreme views. If this results in ideological, political, or religious extremism, it may affect behaviors such as social engagement and voting. Compromises and negotiations can also become more challenging if people hold more simplistic views that ignore complexities and nuances about the causes behind events. These consequences should be investigated in future research.

## Concluding Comment

Recent studies have shown that when people experience heightened causal uncertainty, they become motivated to think more abstractly. Importantly, thinking about an event more abstractly reduces causal uncertainty associated with the event. This self-regulatory cognitive process has broad implications for communication, leadership, and marketing in various domains. The literature shows that there are both spontaneous and deliberate cognitive processes activated by causal uncertainty. Future research should extend our current understanding of the antecedents and consequences of these processes and how these processes interact.

## Recommended Readings

- Burgoon, E. M., Henderson, M. D., & Markman, A. B. (2013). There are many ways to see the forest for the trees: A tour guide for abstraction. *Perspectives on Psychological Science*, 8, 501–520. doi:10.1177/1745691613497964. A comprehensive overview of methods used to study abstract cognitive processes.
- Namkoong, J.-E., Ro, J. H., & Henderson, M. D. (2019). (See References). An article that reviews, builds on, and extends previous research on causal uncertainty and abstract thinking by focusing on their relationship in the context of social media communication.
- Weary, G., Tobin, S. J., & Edwards, J. A. (2010). (See References). A comprehensive, updated review of the literature on causal uncertainty.

## Action Editor

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## ORCID iD

Jae-Eun Namkoong  <https://orcid.org/0000-0002-8133-5317>

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