

What Happens Why? Psychological Distance and Focusing on Causes Versus Consequences of Events

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When do people focus more on the *causes* versus the *consequences* of events, and how does differential focus affect downstream judgments and choices? Building on construal level theory (Trope & Liberman, 2010), we propose a bidirectional relationship between psychological distance and causal focus, such that distance (vs. proximity) leads to a greater focus on causes (vs. consequences), and likewise, focusing on causes (vs. consequences) leads to greater estimates of psychological distance from events. This should be the case because causes are features of events that are more high-level relative to consequences (as shown in Experiments 1 and 2). We demonstrate that temporal (Experiment 3) and social (Experiment 4) distances lead to a greater tendency to focus on the causes (vs. consequences) of events and that, conversely, thinking about causes (vs. consequences) leads to greater perceptions of temporal (Experiment 5) and spatial (Experiment 6) distances from events. Additionally, we explored some downstream effects of this distance-dependent focus on causes versus consequences for predictive judgments, experiences, and behavioral choice (Experiments 7, 8, and 9). Broader implications of the results for moral decision making, power and leadership, and self-regulation are discussed.

Keywords: causal thinking, causal inference, psychological distance, construal

Causal thinking is central to understanding, predicting, and controlling our environments (Heider, 1958; White, 1988, 1995). Accordingly, individuals readily think of both causes (Weiner, 1985) and consequences (McKoon & Ratcliff, 1986) of events that are experienced day-to-day and use such information to make decisions and to act. At the same time, causal judgments refer to both proximal and distal events; for example, events can occur to oneself versus to someone else, here versus in a remote location, and now versus in the future or the past. Imagine, for instance, that you have been experiencing elevated levels of stress at work. The

consequence of this stress may be chronic digestive problems. What do you do? Do you focus on the cause (your stress) and enroll in a meditation class? Or do you focus on the consequence (your digestive problems) and resolve to change your diet? Now imagine that this is not happening to you but to an acquaintance you know. What do you think that person would do?

The present research examines the relationship between the psychological distance of events and the tendency to focus on underlying causes versus consequences. As events become further removed from the self (e.g., in time, space, or social distance), we contend that people focus relatively more on the causes (vs. consequences) of those events. Additionally, we predict that this relationship is bidirectional such that thinking about causes (vs. consequences) leads to greater perceptions of psychological distance from events. These predictions are drawn from construal level theory (CLT; Trope & Liberman, 2010). According to CLT, representations of distal events emphasize their high-level, central features, whereas representations of proximal events emphasize their relatively low-level, peripheral features. Causes and consequences are high- and low-level aspects, respectively, because consequences depend on causes (i.e., eliminating or changing the cause affects the consequence) but not vice versa (i.e., eliminating or changing the consequence does not affect the cause), thus making causes more central to the meaning of events. Therefore, we predict that you would be more likely to tackle your digestive issues in the example above if the situation occurred in your own life (i.e., was socially proximal). If it occurred to an acquaintance (i.e., was socially distal), you would be more likely to assume that the acquaintance would tackle the stress.

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Inferring Causes and Effects

A large body of literature suggests that causal thinking is important in everyday life (Gilbert & Malone, 1995; Heider, 1958; Hewstone, 1989; Kelley, 1967; Kelley & Michela, 1980; Ross, 1977; Schank, 1986; Trope, 1986). People seek explanations for their own and others' actions, and much research has been dedicated to better understanding the circumstances under which people ask "why" (Hastie, 1984; for a review, see Weiner, 1985). For one, causal attribution is especially likely for negative outcomes (e.g., Gilovich, 1983; Wong & Weiner, 1981) and for outcomes that are unexpected (e.g., Dechêne, Stahl, Hansen, & Wänke, 2009; Hansen & Wänke, 2008, 2013; Hastie, 1984; Lau & Russell, 1980; Pyszczynski & Greenberg, 1981; Wong & Weiner, 1981). Outcome dependency also affects causal processing of information (Berscheid, Graziano, Monson, & Dermer, 1976; Monson, Keel, Stephens, & Genung, 1982). Berscheid et al. (1976), for instance, found that people are more likely to engage in causal thinking about a person they expect to date versus a person they expect not to date.

Research has shown that much of this causal thinking occurs spontaneously. People form causal explanations when asked to think aloud during the reading of a text (e.g., Trabasso & Magliano, 1996). Similarly, spontaneous verbalizations during or after task completion reveal that causal thinking is prominent (Brunson & Matthews, 1981; Carroll & Payne, 1977; Diener & Dweck, 1978; Gilovich, 1983; Gioia & Sims, 1983; Wong & Wiener, 1981). Using a cued memory paradigm, Hassin, Bargh, and Uleman (2002) found that implied causes (e.g., *pickpocket*) served as efficient retrieval cues for cause-implicating sentences (e.g., *After spending a day exploring beautiful sights in the crowded streets of New York, Jane discovered that her wallet was missing*), thus showing that spontaneous causal inferences had been formed during the initial encoding.

Although research on causes has dominated the field, there is evidence to suggest that people infer consequences of events as well. For instance, McKoon and Ratcliff (1986) demonstrated that implied consequences (*dead*) served as effective retrieval cues for consequence-implicating sentences (*The director and cameraman were ready to shoot close-ups when suddenly the actress fell from the 14th story*), suggesting that consequential inferences had been made during encoding. This work by McKoon and Ratcliff (1986) serves as a complement to the series of studies by Hassin et al. (2002) described previously. In combination, it can be concluded that "the mind not only spontaneously attaches a cause tag—it also attaches an effect tag, hence, spontaneously covering the whole range of causal relations" (Hassin et al., 2002, p. 520).

The Construal Level of Causes and Effects and Psychological Distance

In the present research, we used construal level theory to inform our predictions regarding psychological distance and the extent to which people focus on underlying causes of events versus their resulting consequences. According to CLT, psychological distance systematically changes the level at which people construe the world. High-level construals are abstract representations consisting of the central and primary features of objects and events, while low-level construals are relatively

more concrete representations that retain the peripheral and secondary details. Categories-exemplars, whole-parts, and ends-means are examples of distinctions that map onto high-level and low-level construals, respectively. A core tenet of CLT is that high-level construals are better suited for representing entities that are psychologically distant (e.g., in space, time, and social distance) from the self, whereas low-level construals are better suited for representing proximal entities. This is because high-level construals preserve the essential properties of the representation, are not context-bound, and in that sense, are more stable across different distances. On the other hand, low-level construals include concrete details that are usually peripheral to the core representation and are more context-specific. For instance, representing one's action as "gaining knowledge" rather than "studying for an organic chemistry exam" is more useful for imagining the distant future where the particular class might not be organic chemistry and the action might not necessarily involve studying for a class. Thus high-level construals "travel well" across time, space, social perspective, and counterfactual alternatives to reality. CLT contends that this association between distance and high-level construal and proximity and low-level construal is then overgeneralized and applied to situations where variability is no longer an issue (e.g., even if one knows one will repeat the same organic chemistry class 1 year from now). As distance increases, representations reflect and emphasize features that are central to representations and reflect less on those that are more secondary and incidental (Rim, Trope, Liberman, & Shapira, in press; Trope & Liberman, 2010).

Much research has been conducted to demonstrate this relationship between distance and level of construal (for a review, see Trope & Liberman, 2010). For example, people represented actions (e.g., moving into a new apartment) more in terms of end states (e.g., starting a new life) than in terms of means (e.g., packing and carrying boxes) when those actions were expected to occur in the more distant future (Liberman & Trope, 1998, Study 1). Representations that reflect end states convey more meaning and are more defining of actions than are representations that emphasize means and thus are associated with greater psychological distance. Accordingly, increasing distance leads to greater weighting of desirability (ends-focused) versus feasibility (means-focused) concerns in determining preference (Liberman & Trope, 1998; Todorov, Goren, & Trope, 2007). In one study, Liberman and Trope (1998) asked participants to decide whether to attend a guest lecture in the near or distant future. They manipulated the desirability of the lecture (interesting vs. uninteresting) and the feasibility of going to the lecture (at a convenient vs. inconvenient time). The attractiveness of the desirable but inconvenient lecture increased with distance, while the attractiveness of the undesirable but convenient lecture increased with proximity (see Liviatan, Trope, & Liberman, 2008; Todorov et al., 2007, for similar results for other distance dimensions). As reflected in these examples, the core of construal level theory is the idea that psychological distance leads to representations that emphasize the central and defining, and thus relatively more stable, aspects of persons, events, and objects.

Past research has demonstrated that the relationship between psychological distance and level of construal is bidirectional. That is, not only are distant objects construed at a higher level than are

proximal objects, but high-level construal leads to greater perceptions of psychological distance than does low-level construal, as well. For instance, participants who were led to represent an action (e.g., “Ron is considering opening a bank account”) at a high level (by considering *why* Ron is performing this behavior) estimated that the action would take place in the more distant future than did participants who were led to represent the action at a low level (by considering *how* Ron is performing the behavior; Liberman, Trope, McCrea, & Sherman, 2007).

In our conceptualization, causes are high level and effects are relatively more low level in the representation of events. This is because the presence of effects depends on the presence of causes but the presence of causes does not depend on the presence of effects (Suppes, 1970). In other words, simply by definition, effects are existentially dependent on causes. According to David Hume (1748/1975), “A cause is said to be an object followed by another . . . where, if the first object had not been, the second had not existed,” and John Stuart Mill (1872/1973) defined cause as “the sum total of the conditions positive and negative taken together . . . which being realized, the consequent invariably follows.” In the opening example, “stress” is the cause of “digestive problems” and thus more central to and defining of this situation because taking care of the stress eliminates the digestive problems, whereas alleviating the digestive problems does not eliminate the stress. In this way, effects are dependent on causes, whereas causes are not dependent on effects.

The central role of causes compared to effects in representation has been well-described in the cognitive literature on categorization. A feature that is a cause of another feature has been shown to be more influential in category judgments. For instance, given a target category with Features A and B that are causally related, where Feature A causes Feature B, a novel item is more likely to be judged as a member of the category if it has Feature A than if it has Feature B (Ahn, Kim, Lassaline, & Dennis, 2000). Causal features also have greater weight than effect features in feature induction. For example, people think that if a person always chooses solitary activities, which causes a lack of empathy, then that person is more likely to also be shy than to also be exploitative (Proctor & Ahn, 2007). Therefore, cause features of representations are considered to be more central than effect features because causes are more immutable and afford greater inductive power (Ahn, 1998; Ahn et al., 2000; Kim & Ahn, 2002). Further supporting the centrality of causes, in the text comprehension literature, cause inferences are considered more fundamental to basic comprehension than inferences about consequences (Guéraud, Tapiero, & O’Brien, 2008).

The research reviewed above suggests that causes of events are relatively more high level than are consequences. Given the bidirectional relationship between distance and level of construal postulated by CLT, two main predictions can be derived: (a) Psychological distance (vs. proximity) should trigger a greater focus on underlying causes of events relative to their consequences and lead to corresponding downstream effects on judgments, and (b) thinking about causes rather than consequences should lead to greater perceptions of psychological distance.

The Present Research

Nine experiments investigated the bidirectional relationship between psychological distance and causal focus as well as some of the downstream consequences of this relationship. We first provide empirical evidence for the idea that causes are high level and effects are relatively more low level (Experiments 1 and 2). Next, we demonstrate that temporal (Experiment 3) and social (Experiment 4) distances lead to a greater tendency to focus on causes (vs. consequences) of events. We also show that, conversely, thinking about causes (vs. consequences) leads to greater perceptions of temporal (Experiment 5) and spatial (Experiment 6) distances from events. Lastly, we demonstrate some of the downstream effects of this distance-dependent focus on causes versus consequences for predictive judgments, subjective experiences, and self-regulation (Experiments 7, 8, and 9).

Construal of Causes and Consequences

The first set of studies examined the idea that causes are relatively more high level than consequences. In Experiment 1, our aim was to establish that thinking about causes versus consequences of events leads to a greater tendency to think abstractly about actions. Experiment 2 was designed to demonstrate the bidirectionality of this association by showing that a high-level mindset leads to greater ease of thinking about causes than about consequences, compared to a low-level mindset.

Experiment 1

The purpose of Experiment 1 was to provide evidence that thinking about causes versus consequences affects level of construal. More specifically, we used the Behavioral Identification Form (BIF, Vallacher & Wegner, 1989) to assess the level of abstractness at which participants identified various actions immediately after thinking about either causes or consequences. We predicted that thinking about causes versus consequences of events would lead to more abstract, high-level action identifications.

Method.

Participants and design. Ninety participants were recruited on the Internet (64 female, 26 male) and randomly assigned to one of two conditions in a single-factor (cause versus consequences) between-participants design. Age ranged from 18 to 67 years ($M = 32.32$, $SD = 12.46$). Compensation for participation was \$0.20.

Procedure. This experiment was introduced as a study on thinking about various events. After providing some demographic data, participants were presented with five events that were randomly chosen from a list of 30 events (e.g., *tooth cavity*, *getting a compliment*, *fatigue*, *happiness*, or *thirst*) by the computer. Participants were instructed to generate either as many causes or as many consequences as they could think of. In the cause-generation condition participants read the following instructions:

You should think about the following question: What do you think are CAUSES of this event or activity happening? Try to fill in the

following blank: “is a cause of [provided event].” For example, if the provided event is “getting a sunburn,” you might write down, “overexposure to sunlight” as one of the causes of this event occurring because “overexposure to sunlight” is a cause of “getting a sunburn.”

In the effects generation condition, they read,

You should think about the following question: What do you think are EFFECTS of this event happening? Try to fill in the following blank: “is an effect of [provided event].” For example, if the provided event is “lying in the sun,” you might write down, “getting a sunburn” as one of the effects of this event occurring because “getting a sunburn” is an effect of “lying in the sun.”

Additionally, participants were instructed to generate as many as they could “naturally come up with” without being repetitious.

The events were presented one after the other on separate screens with enough space to write down the responses. Additionally, after each item, participants were asked how easy it was to generate the thoughts on a 5-point scale ranging from *very difficult* to *very easy*.

Next, participants worked on the BIF (Vallacher & Wegner, 1989). We provided participants with a series of actions (e.g., *reading*) and two alternative descriptions of each action. One of the alternatives was always a description that emphasized the concrete means by which the action was performed (e.g., *following the lines of print*), while the other was always more abstract and emphasized the end for which the action was performed (e.g., *gaining knowledge*). For each action, participants were asked to choose the description that best described the action. The proportion of abstract choices served as the measure of abstract, high-level construal.

Results. The proportion of abstract action identifications was submitted to a one-factorial analysis of variance (ANOVA). As predicted, participants who generated causes had stronger preferences for abstract action identification ($M = 0.62$, $SD = 0.22$) than participants who generated consequences ($M = 0.50$, $SD = 0.24$), $F(1, 88) = 5.55$, $p = .021$, $\eta_p^2 = .059$. This finding held when controlling for the number of thoughts generated and the ease of generating the thoughts, $F(1, 86) = 4.46$, $p = .038$, $\eta_p^2 = .049$.

Experiment 2

In this study we examined the converse relationship—that is, whether high-level versus low-level construal leads to greater ease of thinking about causes versus consequences. Participants were initially induced to be in a high- or low-level construal mindset. After the mindset prime, participants were presented with a subset of four events from a pretested set of events. For each event, participants were asked to generate a given number of causes or consequences. Subsequently, they rated the ease of generating causes or consequences. We hypothesized that participants would more easily generate causes versus consequences in a high-level mindset than a low-level mindset.

Pretest. We selected 14 events out of 30 from Experiment 1 for which generation of causes versus consequences were most comparable on the following factors: (a) mean number of generated thoughts ($M_{\text{causes}} = 4.03$; $SD = 0.72$; $M_{\text{consequences}} = 3.99$; $SD = 0.65$, $t < 1$), and (b) mean ease-of-generation ($M_{\text{causes}} = 4.30$; $SD = 0.62$; $M_{\text{consequences}} = 4.56$; $SD = 0.87$,

$t < 1$). This subset of events was pretested to prevent ceiling and floor effects in subsequent studies: For each of the 14 events, pretest participants were instructed to generate the mean frequency of spontaneously generated causes or consequences from Experiment 1. For instance, for the event, “getting a tooth cavity,” the mean frequency of generation from Experiment 1 was three causes and three consequences. Therefore, for this item, participants were asked to generate three causes or three consequences. After each cause- or consequence-generation trial, participants answered two questions on a scale of 1 (*not at all*) to 9 (*extremely*): “How easy was it to generate these causes (effects)?” and “How easy would it have been to generate more causes (effects)?” The two measures of ease were significantly correlated, $r(147) = .74$, $p < .001$, so a composite was created. A subset of eight events was chosen from the 14 that were comparable in terms of ease of generating causes versus consequences (all $ps > .27$). Another criterion was that events were rated toward the middle of the scale (4) on level of ease.

Method.

Participants and design. One hundred seventy-five people (121 female, 52 male) were recruited on the Internet. Age ranged from 18 to 77 years ($M = 35.38$, $SD = 12.40$), and two did not report age and gender. Participants were randomly assigned to one of four conditions in a 2 (Mindset: high-level vs. low-level) \times 2 (Generation Task: causes vs. consequences) between-participants design. Compensation for participation was \$ 0.20.

Procedure. Participants were told that they would complete two thought-generation tasks. Participants were presented with two blocks of trials. In each block, participants were initially induced to adopt either a high-level or low-level construal mindset (cf. Fujita, Trope, Liberman, & Levin-Sagi, 2006). Participants were provided with a series of 20 words in each block. In the high-level construal condition, they were asked to generate a category to which the provided word belonged. For example, for the provided word *dog*, participants might write down “mammal.” In the low-level construal condition, participants were asked to generate an example of each of the presented words. For example, for the provided word *dog*, participants might write down “poodle.” In each block, after 20 trials of generating categories or exemplars, participants were presented with two events (*getting a tooth cavity* and *being fatigued* in Block 1 and *feeling happiness* and *having tears in your eyes* in Block 2) and were asked to generate a certain number of causes (“What are 3 causes of getting a tooth cavity?”) or the same number of effects (“What are 3 effects of getting a tooth cavity?”), which was the mean number generated on the pretests. Participants were given the same cause- and consequence-generation instructions as in Experiment 1 and were again instructed to avoid repetition. After each cause or consequence generation trial, participants answered two questions on a scale of 1 (*not at all*) to 9 (*extremely*): “How easy was it to generate these causes (effects)?” and “How easy would it have been to generate more causes (effects)?” Across the two blocks, participants completed four cause or consequence generation trials in total. The dependent variable was the composite of these two ease measures.

Results. A 2 (Mindset: high-level vs. low-level) \times 2 (Generation Task: cause vs. consequence) analysis of variance (ANOVA) was conducted with both factors between partici-

pants. We found a main effect of mindset where generation of causes and consequences was easier in a low-level ($M = 4.26$, $SD = 1.15$) versus high-level ($M = 3.81$, $SD = 1.17$) mindset, $F(1, 171) = 7.94$, $p = .005$, $\eta_p^2 = .044$. There was also a main effect of the generation task where causes ($M = 4.51$, $SD = 1.05$) were easier to generate, overall, than consequences ($M = 3.56$, $SD = 1.11$), $F(1, 171) = 35.77$, $p < .001$, $\eta_p^2 = .17$.¹ More importantly, as predicted, the Mindset \times Generation Task interaction was significant, $F(1, 171) = 3.86$, $p = .05$, $\eta_p^2 = .022$. Consequences were easier to generate in a low-level mindset ($M = 3.94$, $SD = 1.18$) compared to a high-level mindset ($M = 3.18$, $SD = 0.90$), $F(1, 171) = 11.12$, $p = .001$, $\eta_p^2 = .061$, while causes were generated with comparable ease under a high-level ($M = 4.45$, $SD = 1.06$) mindset and a low-level ($M = 4.58$, $SD = 1.04$) mindset ($F < 1$; see Figure 1).

Discussion. In Experiment 1, we found that focusing on causes led participants to construe actions at a higher level than focusing on consequences. Results from Experiment 2 complement Experiment 1 by demonstrating that a high-level mindset leads to greater ease of thinking about causes than about consequences, compared to a low-level mindset. Together, these two studies support our claim that thinking about causes is associated with more high-level, abstract construal while thinking about consequences is associated with relatively more low-level, concrete construal.

The Bidirectional Relationship Between Psychological Distance and Causal Focus

Given that causes are relatively more high-level than consequences, we predicted that psychological distance would lead to a greater tendency to focus on causes versus consequences, compared to psychological proximity. We tested this idea in Experiments 3 and 4 with respect to temporal and social distances. Experiment 4 also provided evidence that this effect occurs spontaneously. In Experiments 5 and 6, we examined the bidirectionality of this relationship; in other words, we tested whether focusing on causes versus consequences leads to perceptions of greater temporal and spatial distances from events.

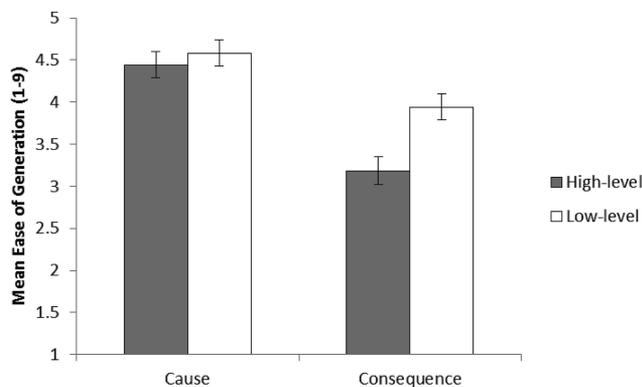


Figure 1. Mean ease-of-generation rating for causes versus consequences as a function of high- versus low-level mindset (Experiment 2). Error bars indicate one standard error above and below the mean.

Experiment 3

This study examined the idea that people find it easier to think about causes of distant future events and consequences of near future events. Participants were initially induced to be in a temporally distal or proximal mindset by imagining their lives “1 year from now” or “tomorrow,” respectively. Subsequently, they were asked to generate causes or consequences for a series of events (e.g., getting a tooth cavity, having tears in one’s eyes, feeling happiness, feeling hunger). Those in the temporally distal condition imagined the events as occurring on the day 1 year from now, which they described before; those in the temporally proximal condition imagined the same events as occurring tomorrow. We predicted that temporal distance of events would lead to greater generation of causes versus consequences, as compared to temporal proximity.

Method.

Participants and design. One hundred twenty-nine New York University undergraduates (82 female, 29 male) participated in this study for course credit. Age ranged from 18 to 22 years ($M = 19.68$, $SD = 0.97$). Participants were randomly assigned to one of four conditions in a 2 (Temporal Distance: 1 year from now vs. tomorrow) \times 2 (Generation Task: cause vs. consequence) between-participants design.

Procedure. Participants were told that they would complete an imagination task followed by a thought-generation task. The purported purpose was to examine the effect of using one’s imagination on subsequent cognitive processing. To prime temporal distance or proximity, half of the participants were asked to imagine their lives 1 year from now (tomorrow) for 5 min. They were instructed to “imagine what you might do, who you might talk to, where you might be, or anything else that comes to mind” and then to write their freely occurring thoughts in the space provided (see Förster, Friedman, & Liberman, 2004, for a similar manipulation). After 5 min, the experimenter stopped the participants and instructed them to proceed to the thought-generation task. In the thought-generation task, participants were presented with the pretested set of eight events (e.g., getting a tooth cavity). They were asked to imagine each event occurring to them on that day they imagined, either 1 year from now or tomorrow. After imagining each event for a moment, their task was to then generate as many causes or consequences of each event as they could. As in Experiment 1, participants were asked to avoid repetitious responses and to list as many as they could “naturally come up with.” The dependent variable was the number of causes or consequences generated.

Results and discussion. A 2 (Temporal Distance: 1 year from now vs. tomorrow) \times 2 (Generation Task: cause vs.

¹ It is not clear why causes were generated with greater ease than consequences, generally, despite the fact that we pretested the items to be comparable on mean rated ease for causes and consequences. Besides random variability between the two samples, we can only speculate that completing a mindset induction task, whether high or low level, for some reason makes it easier for people to think of causes. However, taking into account the means and standard deviations from the pretest, the means for ease of cause and consequence generation obtained are within the range of possibility, and more importantly, we found the predicted interaction with distance. Also, this main effect was not found in Experiment 3.

consequence) ANOVA was conducted with both factors between participants. As expected, there was a significant Distance \times Generation Task interaction, $F(1, 125) = 4.38, p = .038, \eta_p^2 = .034$. Causes were generated with greater frequency for temporally distal events ($M = 3.37, SD = 1.22$) compared to temporally proximal events ($M = 2.79, SD = 0.82$), $F(1, 125) = 6.50, p = .012, \eta_p^2 = .049$, while the frequency of generating consequences was comparable for proximal ($M = 2.95, SD = 0.86$) versus distal events ($M = 2.79, SD = 0.98$; $F < 1$; see Figure 2). No other effects were significant.

The findings provide support for the hypothesis that imagining events occurring in the distant versus near future brings to mind the causes more than the consequences of those events. We used the frequency of cause or consequence generation as a proxy for the ease with which people think about these causal components as a function of temporal distance. As expected, we found that people were able to generate more causes than consequences for events occurring in the distant future as compared to the near future.

Experiment 4

In Experiment 4, we used a spontaneous sentence continuation paradigm to examine spontaneity of thinking about causes and consequences and also to extend the effect of distance-dependent causal focus to social distance (i.e., self vs. other). Majid, Sanford, and Pickering (2007) used a sentence continuation paradigm to assess the extent to which participants spontaneously think about causes versus consequences about minimally descriptive scenarios. They found that the proportion of cause versus consequence continuations depended on the type of event depicted. When the fragment described an interpersonal event (e.g., *Ray kissed Mary*), participants were more likely to spontaneously continue a sentence fragment with a cause (75.9%; e.g., *because he loved her*) than a consequence (15%; e.g., *and she kissed him back*). On the other hand, physical transfer events (e.g., *Ray threw the ball to Mary*) and metaphorical transfer events (e.g., *Ray threw a kiss to Mary*) elicited a greater proportion of consequence (70.1%, 60.3%,

respectively) versus cause (17.4%, 31.25%, respectively) continuations.

In the present study, participants in the socially distant, “other” condition read sentence fragments describing metaphorical transfers (cf. Majid et al., 2007); in the socially proximal, “self” condition, the sentences were slightly modified to include the participant as one of the target actors. It is important to note that in this paradigm participants are not explicitly told what type of sentences to write, and thus responses are considered spontaneous. We predicted that cause continuations would be greater for scenarios involving other, socially distal actors, whereas consequence continuations would be greater for scenarios involving the socially proximal self.

Method.

Participants and design. Thirty-nine New York University undergraduate students (27 female, 12 male) were recruited for course credit. They were randomly assigned to one of two (self vs. other) between-participants conditions. Age ranged from 18 to 27 years ($M = 19.55, SD = 1.80$).

Procedure. Experiment 4 was introduced as a study on thinking about various events. Participants were presented, in random order, with 24 sentence fragments (see Appendix A) that each described a metaphorical exchange interaction between two actors (e.g., *Tim lent a hand to Will*). We decided to use sentence fragments about metaphorical transfers rather than those about interpersonal or physical transfer events because the proportion of causes to consequence continuations was most balanced (approximately 1:2) for those sentences. In the socially proximal condition, these sentences were slightly modified such that the name of one of the two actors was changed to the first-person pronoun, “you” (e.g., *You lent a hand to Will*). Thus, participants in this condition imagined various events in which they themselves were involved. All participants were told to read each sentence fragment, think about the event taking place, and come up with an appropriate continuation for each one. They read the following instructions:

On each trial, you will first be presented with the sentence fragment for a few seconds. During this time, you should think about the situation described, and come up with an appropriate continuation. On the next screen, which appears automatically, you can type in your continuation. There are no right or wrong answers.

Each sentence fragment remained on the screen for a fixed duration of 5 s before participants could type in their continuation. This was to ensure that they actually thought about the events before making their responses.

Results and discussion. Two coders, blind to condition and hypothesis, coded the spontaneous continuations as (1) cause, (2) consequence, or (3) neither (i.e., elaboration) using the guidelines established by Majid et al. (2007; see Appendix B). The interrater reliability was high ($\kappa = .72; p < .001$), 95% CI [.67, .76]. Across the 24 sentence fragments, the mean number of causes, consequences, and elaborations (continuations that simply elaborated on the event taking place in the fragment, e.g., “Tim lent a hand to Will *yesterday*”) were computed for each participant. Since the main prediction concerned only the cause and consequence continuations, the mean elaboration

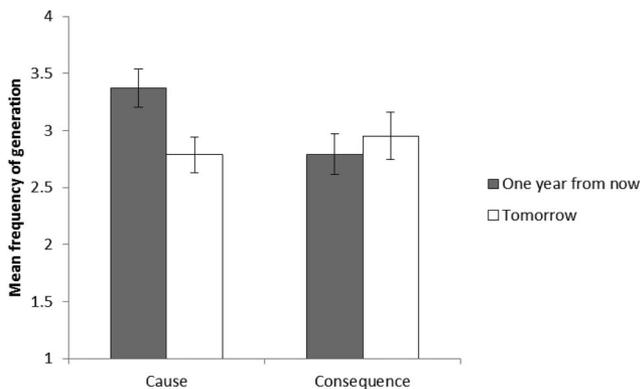


Figure 2. Mean frequency of generating causes versus consequences as a function of temporal distance (Experiment 3). Error bars indicate one standard error above and below the mean.

score was not included in any of the following analyses.² We conducted a 2 (Social Distance: self vs. other) \times 2 (Type of Continuation: cause vs. consequence) repeated-measures ANOVA with the last factor within participants. First, there was a main effect of Type of Continuation such that cause continuations ($M = 12.6$, $SD = 3.29$) were more frequent than consequence continuations ($M = 6.3$, $SD = 3.36$), $F(1, 37) = 49.80$, $p < .001$, $\eta_p^2 = .57$. Second, we found the predicted interaction between social distance (other vs. self) and the number of cause vs. consequence continuations, $F(1, 37) = 7.14$, $p = .011$, $\eta_p^2 = .16$.³ As expected, cause continuations were more frequent for sentence fragments involving other people ($M = 13.92$, $SD = 3.60$) versus those involving the self ($M = 11.28$, $SD = 2.40$), $F(1, 37) = 7.36$, $p = .01$, $\eta_p^2 = .17$; the opposite was true for consequence continuations that were more frequent for sentence fragments involving the self ($M = 7.33$, $SD = 3.10$) versus other people ($M = 5.16$, $SD = 3.34$), $F(1, 37) = 4.42$, $p = .042$, $\eta_p^2 = .11$ (see Figure 3).

Participants spontaneously thought more about the causal underpinning of events when they imagined them occurring to others rather than to themselves and more about the consequences arising from the events when they imagined them occurring to themselves than to others. The sentence continuation paradigm enabled participants to think and respond freely. Thus, the present experiment provides strong evidence that distance-dependent focus on causes versus consequences occurs spontaneously, under conditions of minimal experimenter intervention. Importantly, this study extends the present work by showing that it is not only temporal distance but also social distance (indicating that it is not a specific distance dimension, but psychological distance, in general) that affects the way people process information about causes and consequences.

Besides random variability between the populations tested, we do not know why there was a main effect showing a preference for cause over consequence continuations even though previous research using metaphorical sentence fragments showed the opposite. We were primarily interested in the effect of distance on cause and consequence continuations and found the predicted interaction. The only reason we used metaphorical transfer fragments was to minimize floor and ceiling effects, and possible moderators of Majid et al.'s (2007) findings are beyond the scope of this article but should be explored in future research.

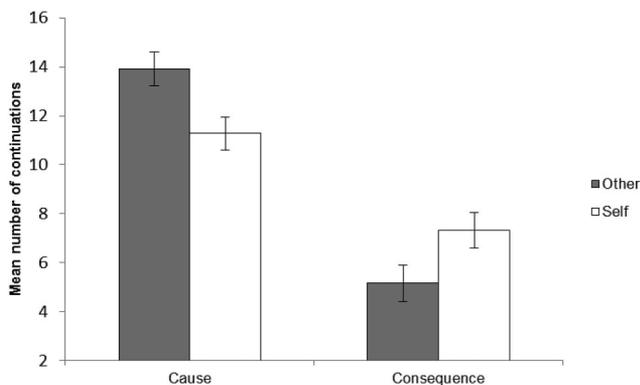


Figure 3. Mean number of spontaneous cause and consequence continuations as a function of social distance (Experiment 4). Error bars indicate one standard error above and below the mean.

Experiment 5

Experiment 5 examined the effect of generating causes versus consequences of events on the perceived temporal distance of the events. Participants generated either causes or consequences of eight events that included a fictitious protagonist, J. D. For instance, they were asked to imagine *J. D. having a tooth cavity* and then to generate either causes or consequences of this event. They then indicated how far in the future the event would happen to the protagonist. We predicted that participants would perceive the events to occur later in time when they thought about the events in terms of their causes as compared to their consequences.

Method.

Participants and design. Ninety participants were recruited on the Internet (61 female, 29 male) and randomly assigned to one of two conditions in a single-factor (causes versus consequences) between-participants design. Age ranged from 18 to 70 years ($M = 34.1$, $SD = 12.27$). Compensation for participation was \$0.50.

² The mean number of elaborations that were neither causes nor consequences did not differ by social distance condition. There was a tendency for the mean number of elaboration continuations to be more frequent in the self ($M = 5.35$, $SD = 2.60$) condition versus the other ($M = 4.61$, $SD = 3.07$) condition, but this was not significant, $t(37) < 1$.

³ In Majid et al. (2007; see Experiment 5), roughly half of the sentences were described as containing Goal-Source verbs (e.g., *Tom got a hug from Janet*), and the other half were described as containing Source-Goal verbs (e.g., *Lindsay lent a hand to Will*). Similarly, we had 11 of the former type (see Sentences 1–11 in Appendix A) and 13 of the latter type (see Sentences 12–24 in Appendix A). We had no a priori hypothesis of the effect of this factor on spontaneous continuations and did not manipulate this systematically, but we explored its effect on spontaneous continuations. We computed the proportion of cause- and consequence-continuations for each type of verb within distance condition and conducted a 2 (Type of Verb: goal-source and source-goal) \times 2 (Type of Continuation: cause and consequence) \times 2 (Social Distance: self vs. other) ANOVA with the last factor between participants. This factor did not affect spontaneous continuations ($p > .16$), which is consistent with Majid et al. (2007; Experiment 5); other than the main effect of Type of Continuation where cause-continuations were more prominent than consequence-continuations, $F(1, 37) = 49.27$, $p < .001$, $\eta_p^2 = .57$, and the predicted Distance \times Type of Continuation interaction, $F(1, 37) = 8.46$, $p = .006$, $\eta_p^2 = .19$, no other effects were significant ($ps > .16$).

Within the near (self) condition, we can additionally examine the effect of whether the pronoun “you” replaced the actor that is the source of the transfer (i.e., source-actor) or the actor toward whom the transfer is directed (i.e., goal-actor). This may affect whether participants focus more on the source-actor versus the goal-actor in the sentence. We had no a priori hypothesis of the effect of this factor on spontaneous continuations in the self condition, so the following analysis is, again, post hoc and should be treated with caution. Of the 11 Goal-Source sentences, “you” replaced the goal-actor in six and the source-actor in five. Of the 13 Source-Goal sentences, “you” replaced the goal-actor in seven and the source-actor in six. We computed the proportion of cause- and consequence-continuations for each of the four types of trial. We ran a 2 (Type of Verb: goal-source and source-goal) \times 2 (Participant Role: goal-actor and source-actor) \times 2 (Type of Continuation: cause and consequence) with all factors within participants. This revealed a Type of Continuation \times Participant Role interaction, $F(1, 19) = 18.67$, $p < .001$, $\eta_p^2 = .50$, where the proportion of cause-continuations was greater than consequence-continuations when the pronoun “you” replaced the source-actor, $F(1, 19) = 22.81$, $p < .001$, $\eta_p^2 = .55$, while it was comparable when “you” replaced the goal-actor, $F < 1$. No other effects reached significance ($ps > .09$). We did not manipulate these variables systematically in our study, but future studies should explore whether making the goal-actor versus the source-actor the focus of attention meaningfully affects the relationship between distance and causal continuations.

Procedure. As in the previous experiments, the study was introduced as a study on thinking about various events. Participants were presented with 8 events in random order (i.e., *J. D. having a tooth cavity*, *J. D. being fatigued*, *J. D. being happy*, *J. D. being hungry*, *J. D. sweating*, *J. D. having tears in eyes*, *J. D. being thirsty*, and *J. D. drinking coffee*). They were instructed to imagine the events and then to generate a specific number of possible causes or consequences, determined by pretests (see Experiment 2) to be the mean generated, for each of the events. The events were presented one after the other on separate screens with space to write down the specified number of causes or consequences. After each item, participants indicated how far in the future the event would happen. In order to reduce potential confusion, we further instructed the participants,

It is possible that you will feel that you do not have enough information to adequately respond to this question. If this occurs, do not worry. There are no right or wrong responses to the questions; we are just interested in your intuitive judgments (cf. Wakslak, 2012).

In line with previous research in which this temporal distance measure was used (Liberman & Förster, 2009; Liberman et al., 2007; Stephan, Liberman, & Trope, 2010), we coded the time estimates by translating them into days (e.g., *2 weeks* was coded as 14 in day units, *3 hr* was coded as 3/24 or 0.125 days). Nonnumeric responses were translated into numeric values, according to the following convention: *Couple* was coded as 2 (e.g., *couple of days* was coded as 2, *couple of months* was coded as 60); *few* and *a number of* were coded as 3 (e.g., *a few hours* was coded as 3 hr, that is 3/24 or 0.125 in day units); ranges were coded as the mean value (e.g., *2–4 hr* was coded as 3/24 or 0.125 days). Also transformed into numbers were the following answers, which comprised 10.5% of the responses: *Now*, *immediately*, and *ASAP* were assigned the value of the minimum response within the data set; *long time from now* was assigned the maximum value within the data set. Responses such as *always*, *never*, *someday*, *when X happens* or *don't know* were coded as missing values (9.3%; see Liberman et al., 2007; Stephan et al., 2010, for similar coding schemes).

Results. Since the estimates of temporal distance were positively skewed, we log-transformed the estimates to achieve homogeneity of the error variances and averaged the estimates across events before submitting them to a one-factorial ANOVA. As hypothesized, the mean estimated temporal distance of the eight events was longer for participants who generated causes ($M = -0.11$, $SD = 2.12$) than for participants who generated consequences ($M = -1.53$, $SD = 2.46$), $F(1, 88) = 8.56$, $p = .004$, $\eta_p^2 = .089$. This finding supports the prediction that focusing on causes versus consequences leads participants to perceive events as more distant in time.⁴

Experiment 6

In Experiment 6, we sought to replicate the finding of Experiment 5 with another distance dimension. That is, we asked participants to estimate how far away in space events were going to happen. Again, we predicted that generating causes versus conse-

quences would lead participants to perceive the events to be farther away in space.

Method.

Participants and design. Fifty-eight NYU undergraduate psychology students (39 female, 19 male) took part in this study in exchange for course credit. They were randomly assigned to one of two conditions in a single-factor (causes versus consequences) between-participants design. Age ranged from 18 to 21 years ($M = 18.86$, $SD = 0.99$).

Procedure. The procedure was comparable to the procedure of Experiment 5 with the following differences: We administered the study as a paper-and-pencil study in which each of the eight events was presented on a separate page. Participants wrote down their thoughts (causes versus consequences) directly underneath the event. Further, instead of temporal distance, participants were asked to indicate how far away in space (in miles) the event would happen. For instance, they were asked to imagine a person with initials J. D. having a tooth cavity and then they were asked, "How far away from you will this event happen?" As in Experiment 5, we told participants,

It is possible that you will feel that you do not have enough information to adequately respond to this question. If this occurs, do not worry. There are no right or wrong responses to the questions; we are just interested in your intuitive judgments (cf. Wakslak, 2012).

Results. Since the estimates of spatial distance were positively skewed, we log-transformed the estimates to achieve homogeneity of the error variances and averaged the estimates across events before submitting them to a one-factorial ANOVA. As hypothesized, the mean estimated spatial distance was greater for participants who generated causes ($M = 2.47$, $SD = 2.2$) than for participants who generated consequences ($M = 1.27$, $SD = 1.49$), $F(1, 56) = 5.90$, $p = .018$, $\eta_p^2 = .095$. Again, this finding supports the prediction that focusing on causes versus consequences leads participants to perceive events as farther away in space.

Discussion. In two studies we found that thinking about causes versus consequences of events led participants to subjectively experience them as occurring farther away in time (Experiment 5) and space (Experiment 6). These studies establish the bidirectional relationship between distance and causal thinking and

⁴ In some cases, the causal mechanisms that bring out certain events operate on longer time scales compared to consequences that may be more immediate. For example, eating too much sugary foods may result in a cavity eventually but not immediately, whereas a consequence of a tooth cavity, pain, would take place immediately. Thus, an alternative explanation might be that thinking about causes leads to perceptions of greater temporal distance because causes operate on longer time scales as compared to consequences. However, this is certainly not always the case. Another consequence of a cavity is losing a tooth, which would occur only after a substantial amount of time without treatment has passed. In the particular case of a "tooth cavity," it may be difficult to think of immediate causes. However, for the remainder of our items (being fatigued, being happy, being hungry, sweating, having tears in eyes, being thirsty, and drinking coffee), it is easy to imagine both causes and consequences that operate on short versus long time scales. For example, months of working overtime (delayed cause) versus running 5 miles (immediate cause) can cause fatigue, and fatigue can lead one to be unproductive at work (immediate consequence) or to weight loss (delayed consequence). Moreover, Experiment 6 provides convergent evidence with spatial distance and cannot be explained in the same way.

further extend the current phenomenon to another distance dimension: spatial distance. Therefore, we can conclude that psychological distance is associated with thinking that is focused on underlying causes, whereas psychological proximity is associated with thinking that is more attuned to consequences. The fact that consideration of causes (vs. consequences) leads to greater estimates of distance suggests that causes promote thinking about remote situations and thus serve to broaden people's spatiotemporal horizons, whereas consequences promote a focus on proximal situations and thus contract one's mental horizons.

Downstream Effects of Distance-Dependent Causal Focus

In the following set of studies, we demonstrate some of the downstream consequences of differential causal focus for psychologically distant versus proximal events. In Experiment 7, we examined whether distance affects the extent to which cause-versus consequence-related information is weighted in making predictive judgments. Experiment 8 was designed to test the idea that distance affects the subjective experience of causally related issues (e.g., low-energy caused by stress). In Experiment 9, we examined the effect of distance on preference to regulate the cause or the effect of a self-regulatory issue.

Experiment 7

In this experiment, participants learned about clinical patients with two causally related mental illness symptoms, and they were asked to rate the likelihood of each patient possessing two additional, unknown symptoms either *tomorrow* or *1 year from now*. One symptom was related to the known cause symptom (but not to the known consequence-symptom) and the other symptom was related to the known consequence-symptom (but not to the known cause-symptom). The prediction was that participants would rate cause-related symptoms as more likely to be experienced by the individuals in the distant future and consequence-related symptoms as more likely in the near future.

Method.

Participants and design. One hundred thirty-nine people (84 female, 55 male) were recruited for this study using the Internet. Age ranged from 18 to 81 years ($M = 34.57$, $SD = 12.71$), and eight did not report age and gender. Participants were randomly assigned to one of four conditions in a 2 (Temporal Distance: 1 year from now vs. tomorrow) \times 2 (Symptom: cause-related vs. consequence-related) mixed-design with the second factor within participants. Additionally, as control factors we varied the order of the symptoms in the initial presentation of the symptoms, which of the two symptoms was assigned to be cause-related versus consequence-related, and in which order the questions regarding the symptoms were presented. Compensation for participation was \$0.20.

Procedure. Participants were told that they would be presented with brief descriptions of individuals with various mental disorders. The files were purportedly obtained from actual clinicians with whom the experimenter had teamed up to examine "the relationship between the types of diagnoses people make and social-psychological variables." First, the two symptoms were presented (e.g., "S. S. has recurrent suspicions about her husband's

fidelity and requires excessive attention"). Then, the causal relationship was stated (e.g., "S. S.'s recurrent suspicions about her husband's fidelity *cause* her to require excessive attention"). In this example, "recurrent suspicions about her husband's fidelity" is the cause-symptom which brings about the consequence-symptom, "require excessive attention." These stimuli were taken from Proctor and Ahn (2007). Subsequently, participants were asked to make predictive judgments about two symptoms, one cause-related and the other consequence-related either for the distant (1 year from now) or for the near (tomorrow) future. For instance, participants were asked to rate on a scale of 1 (*very unlikely*) to 11 (*very likely*), "How likely do you think it is that S. S. will have doubts about the loyalty of her friends 1 year from now (tomorrow)?" which is related to the known cause-symptom (having recurrent suspicions about her husband's fidelity), and "How likely is it that S. S. will fish for compliments about her appearance 1 year from now (tomorrow)?" which is related to the known consequence-symptom (requiring excessive attention). Importantly, for half of the participants the cause- and the consequence-related symptoms were interchanged (e.g., "S.S.'s need for excessive attention *causes* her to have recurrent suspicions about her husband's fidelity"), to control for any effect of the specific content of cause-versus consequence-symptoms. A pretest in the original article (Proctor & Ahn, 2007) from which these stimuli were taken indicated that both directions were regarded as highly plausible ($M_s > 4.5$ on a 1–7 scale).

Before the six experimental trials, participants completed one practice trial. The order of the six patient descriptions was fixed, but the following control factors were counterbalanced: order of symptoms in the initial description, causal status (cause vs. consequence) of each symptom, and order of the two questions (cause-related first vs. consequence-related first). The dependent variable was the rating of likelihood. The prediction was that cause-related symptoms would be rated as more likely in the distant future while consequence-related symptoms would be rated as more likely in the near future. In other words, cause-features have greater weight in predictive judgments about the distant future while consequence-features have greater weight in predictive judgments about the near future.

Results and discussion. A 2 (Temporal Distance: 1 year from now vs. tomorrow) \times 2 (Symptom: cause-related vs. consequence-related) \times 2 (Order of Symptoms) \times 2 (Causal Status of Symptoms) \times 2 (Order of Questions) ANOVA was conducted with the second factor within participants. We found the predicted interaction between distance and question type, $F(1, 123) = 4.06$, $p = .046$, $\eta_p^2 = .032$. As expected, cause-related symptoms were seen as more likely to be another symptom experienced by the patient in the distant ($M = 7.86$, $SD = 1.16$) than in the near ($M = 7.38$, $SD = 1.25$) future, $F(1, 123) = 5.61$, $p = .019$, $\eta_p^2 = .044$ (see Figure 4). Likelihood of consequence-related symptoms was comparable in the near ($M = 7.92$, $SD = 1.42$) versus the distant ($M = 7.81$, $SD = 1.42$) future ($F < 1$). There were no significant main effects or interactions of the counterbalancing, control factors with our critical interaction term.

In making prospective judgments about others based on known, causally related features, participants placed less weight on cause information than on consequence information when making predictions about the target in the near future (tomorrow), compared to when making predictions about the distant future (1 year from

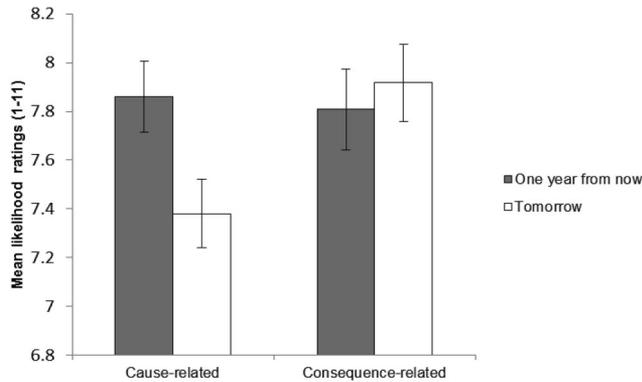


Figure 4. Mean likelihood ratings for cause- and consequence-related symptoms as a function of temporal distance (Experiment 7). Error bars indicate one standard error above and below the mean.

now). This result is in line with our prediction regarding distance-dependent focus on causes versus consequences and extends the effect to predictive judgments. Furthermore, this experiment demonstrated that the distance-dependence of cause- versus consequence-focus applies in the social domain; specifically, to situations in which people make predictions about other people. We counterbalanced which symptoms were presented as causes versus consequences, and this counterbalancing factor had no effect on the results. Thus, the specific content of the cause and consequence symptoms cannot explain the present results.

Experiment 8

Focusing on causes versus consequences may also have downstream effects on feelings and experiences. Often feelings are causally related: stress, for instance, can cause fatigue, or surprise can cause happiness. Since individuals focus relatively more on causes than on effects when events are distant versus proximal, distance should shift the focus on different feelings and, consequently, affect experiential states, too, when these feelings are causally related. This hypothesis was tested in Experiment 8. Participants were first induced to adopt a temporally distant versus proximal mindset and then to think about one of two statements that causally related stress to fatigue (i.e., “High-stress causes low-energy” or “Low-energy causes high-stress”). We expected that distance would lead participants to report experiencing more stress than fatigue when they elaborated on the statement “High-stress causes low-energy,” and more fatigue than stress when they elaborated on the statement “Low-energy causes high-stress.” Proximity, in contrast, would lead participants to report experiencing more fatigue than stress when they thought about the statement “High-stress causes low-energy,” and more stress than fatigue when they thought about the statement, “Low-energy causes high-stress.” In other words, a distal mindset should lead participants to feel the “cause-experience” (i.e., the experience that is the cause of another experience) more intensely than the “consequence-experience” (i.e., the experience that is the consequence of another experience) and vice versa for a proximal mindset.

Method.

Participants and design. Ninety-nine students from the University of Salzburg took part in this experiment in exchange for

course credit and a soft drink. Two participants were excluded because they did not complete the dependent measures. The remaining sample consisted of 97 participants (56 female, 41 male). Age ranged between 18 and 48 years ($M = 22.7$, $SD = 3.6$). Participants were randomly assigned to a 2 (Distance: distant versus proximal) \times 2 (Experience: cause-related vs. consequence-related) mixed-design with the second factor within participants. We counterbalanced whether stress or fatigue served as cause-related or consequence-related experience, respectively—that is, participants received either the sentence “low-energy causes high-stress” or the sentence “high-stress causes low-energy.”

Procedure. As in Experiment 3, participants were first asked to imagine their lives either 1 year from now (temporal distance) or tomorrow (temporal proximity) and to write about it in a few sentences. Next, all participants completed a thought-generation task: Half of the participants were presented with the statement “Low-energy causes high-stress,” and the other half was presented with the statement “High-stress causes low-energy.” Participants indicated whether the statement applied to themselves by marking one of the two response options, “Yes, sometimes” or “No, never.” These asymmetric response options were given to suggest agreement with the statement to all participants. As intended, most participants (93%) chose the positive option. Additionally, participants were asked to generate and write down one good reason why the statement might apply to them to ensure that participants elaborated on the statement. Next, they were asked the following two questions: “How exhausted and fatigued have you felt over the last few days?” and “How stressed and busy have you felt over the last few days?” on a 5-point scale ranging from 1 = *not at all* to 5 = *extremely*.

Results and discussion. The counterbalancing factor of whether stress or fatigue served as the cause-related or consequence-related experience did not interact with the proposed effect and was omitted from the following analyses. The emotion scores were analyzed in a 2 (Distance: distant versus proximal) \times 2 (Experience: cause-related versus consequence-related) ANOVA with the first factor between subjects. We found a significant interaction between Distance and Experience, $F(1, 95) = 4.25$, $p = .042$, $\eta_p^2 = .043$ (see Figure 5). Participants experienced the consequence more intensely when primed with a proximal mindset ($M = 3.24$, $SD = 0.89$) than when primed with a distal mindset

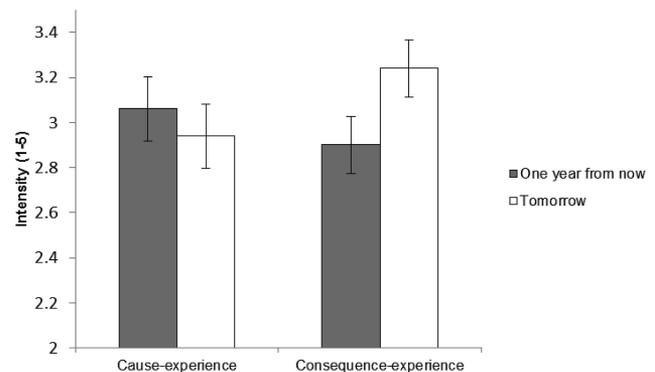


Figure 5. Intensity of cause and consequence experience as a function of temporal distance (Experiment 8). Error bars indicate one standard error above and below the mean.

($M = 2.90$, $SD = 0.88$), $F(1, 95) = 3.82$, $p = .054$, $\eta_p^2 = .039$. Intensity of the cause-experience was comparable when primed with distal ($M = 3.06$, $SD = 0.93$) versus proximal mindset ($M = 2.94$, $SD = 1.05$), $F < 1$.

Based on distance-dependent causal focus, we predicted and found that distance affects the extent to which people experience issues that are causally related. When people were primed with a temporally proximal mindset, they had a tendency to feel the experience that was a consequence more intensely than the experience that was the cause and vice versa when they were primed with a temporally distal mindset. These results demonstrate that distance not only affects judgments via differential focus on causes versus consequences but also subjective experiences.

Experiment 9

Distance-dependent causal focus should have downstream consequences for self-regulation. Given a self-regulatory issue with two causally related problems, such as stress causing low-energy, does distance affect whether people prefer to regulate the cause or the consequence? Participants were first induced to be in a temporally distal versus proximal mindset. Next, they were presented with one of two self-regulatory issues and were asked choose between two possible behaviors to deal with the issue: one behavior that would regulate the cause and another that would regulate the effect. They were asked to choose the behavior that they would engage in first. We predicted that temporal distance would lead to a greater preference to engage in a self-regulatory behavior that targeted the problem that was the cause versus a behavior that targeted the problem that was the consequence of that cause.

Method.

Participants and design. Ninety-seven people in a New England university community sample participated in the study for a payment of \$5. One participant was excluded for not following instructions on the distance manipulation task (she or he did not write about tomorrow but wrote about random life events and future aspirations). The remaining sample consisted of 96 participants (59 female, 37 male). Age ranged between 18 and 60 years ($M = 23.39$, $SD = 6.40$). Participants were randomly assigned to a 2 (Distance: distant versus proximal) \times 2 (Causal Status of Symptoms: stress causes low-energy and trouble sleeping causes low productivity vs. low-energy causes stress and low-productivity causes trouble sleeping) \times 2 (Scenario Type: stress and low-energy vs. trouble sleeping and low productivity) \times 2 (Order of Choice: cause-regulating first vs. consequence-regulating first) between-participants design. As a dependent variable, we measured whether participants chose a behavior that regulates the cause or one that regulates the consequence.

Procedure. Participants were told that they would be asked to imagine various situations and to answer questions about them. As in Experiments 3 and 8, participants were either asked to imagine their lives 1 year from now or their lives tomorrow for 5 min. Next, they were presented with a self-regulatory issue with two causally related problems (e.g., *Imagine that you're under a lot of stress at work/school, which causes you to suffer from low-energy at work/school*). There were two types of self-regulatory scenarios, and participants saw one of the two: stress at work/school causing low-energy at work/school or trouble sleeping causing low productivity at work/school. We counterbalanced which issue in the

pair would be the cause and which one would be the effect. For a period of 15 s, they were asked to "imagine that this is the situation in your life tomorrow (1 year from now)," depending on which distance induction task they initially completed.⁵ Finally, they were presented with two possible behaviors: one that would regulate the cause (e.g., *Take a weekly "De-stress and Renew" yoga class offered at your community center*, if stress was the cause) and a comparable behavior that would regulate the consequence (e.g., *Take a weekly "Energize and Invigorate" yoga class offered at your community center*, if low-energy was the consequence). We counterbalanced the order in which the two choices were presented such that half of the time, the cause-regulating option was presented first, and the other half of the time, the consequence-regulating option was presented first. They were asked to choose the behavior that they would engage in first. We predicted that temporal distance would lead to a greater preference to engage in a self-regulatory behavior that targets the problem that is the cause versus one that targets the problem that is a consequence of that cause. The dependent variable was behavioral choice.

Results and discussion. We conducted a chi square analysis to examine the effect of distance, our main independent variable of interest, on self-regulatory behavioral choice. As expected, temporal distance affected the percentage of participants who chose the cause-regulating behavior over the consequence-regulating behavior. In the near future condition, 38% of participants chose the cause-regulating behavior as compared to 62% in the distant future condition, $\chi^2(1, N = 96) = 4.11$, $p = .04$.

A binary logistic regression was conducted to examine the effect of the counterbalancing variables and any interactions. Consequence-regulating choice was coded as 0, and cause-regulating choice was coded as 1. Distance, Causal Status, Scenario Type, and Order of Choice variable were centered. There was no general preference for one behavior (cause-regulating vs. consequence-regulating) over the other: 46 participants chose the consequence-regulating behavior and 50 chose the cause-regulating behavior ($p > .60$). The predicted main effect of distance remained significant in the model ($B = 0.42$, Wald = 3.79, $p = .05$), $Exp(B) = 1.52$, and there were no other main effects ($ps > .12$). Moreover, distance did not interact with any of the counterbalancing variables ($ps > .23$), although there was a marginal Order of Choice \times Scenario Type interaction ($p = .08$).

Distance affected what people choose to regulate when faced with a self-regulatory problem. Imagining events in the distal versus proximal future led to a greater preference to engage in a behavior that would regulate the cause rather than the consequence. We found this effect across two different scenarios, allowing generalization to other self-regulatory issues. Furthermore, we counterbalanced which problem in the causal pair was the cause and which one was the consequence, so we can conclude that the specific content of the cause versus consequence problem does not influence the effect of distance on choice of self-regulatory behavior. These results suggest that a distal perspective will facilitate more long-term versus short-term change via regulation of the

⁵ Since participants in the near condition needed to imagine a situation at school or work "tomorrow," we only ran the study on weekdays, Monday through Thursday.

problem that is the root cause rather than the problem that is simply a derivative of that cause.

General Discussion

Causes are more central to the meaning of events than effects because the presence of effects depends on the presence of their causes, whereas the presence of causes does not depend on the presence of their effects. This makes causes more high-level and effects relatively more low-level. Based on prior research on the association between construal level and psychological distance (Trope & Liberman, 2010), we examined the idea that psychological distance would affect the extent to which people focus on causes relative to consequences. We found consistent results for distance-dependent causal focus across nine experiments, demonstrating both directions of causality.

In the first set of studies, we demonstrated the link between thinking about causes and consequences and construal level. Thinking about causes versus consequences led people to adopt a more high-level mindset (i.e., they described actions more abstractly; Experiment 1), and a high-level mindset facilitated thinking about causes versus consequences more than a low-level mindset (Experiment 2). We explored the bidirectional relationship between psychological distance and causal thinking in the second set of studies. We found that increasing temporal distance from events makes it easier for people to think about those events in terms of causes as compared to consequences (Experiment 3). In Experiment 4, we extended this effect to social distance and showed that people are more likely to spontaneously think about what caused certain events to occur when those events involve other people than when they involve the self, while people are more likely to think about the consequences of those same events when the events involve the self than when they involve other people. In Experiments 5 and 6, we found that thinking about causes (vs. consequences) leads to greater estimates of temporal and spatial distance from the events. The last three studies explored downstream effects of distance-dependent causal focus. First, we found that people weight cause- (vs. consequence-) information more in making temporally distal (vs. proximal) predictive judgments (Experiment 7). Second, given two problems that are causally linked (e.g., stress causing low-energy), proximity led people to experience the consequence (e.g., fatigue) more intensely than the cause (e.g., stress) compared to distance (Experiment 8). Finally, people preferred to engage in a regulatory behavior that would tackle the problem that was the cause versus the problem that was the consequence when the situation was imagined as occurring in the distal versus proximal future (Experiment 9).

This effect is not limited to a single dimension of psychological distance but holds for temporal, spatial, and social distances. This demonstrates that distance, generally, leads to a greater relative focus on causes versus consequences compared to proximity. Furthermore, distance-dependent focus on causes versus consequences does not only occur when individuals are explicitly asked to think about causes or consequences. In Experiment 4, participants were presented with sentence fragments depicting social events and were simply asked to complete them in any way they saw fit. No explicit instructions were given as to how to complete the sentences, and since this was a very simple task, no example

trials were presented, which could have biased participants' responses. People were more likely to spontaneously think about the causes of various social events when they occurred to other people than when they occurred to themselves but to think more about the consequences of those events when they occurred to themselves than when they occurred to other people.

Understanding Causal Thinking

As we reviewed in the introduction, causal thinking occurs readily and spontaneously (Hastie, 1984; Weiner, 1985) and is functional in the sense that it affords control and predictability (Heider, 1958). The present findings should not be interpreted as suggesting a completely dichotomous relationship where causes are *only* important for distal events and consequences are *only* important for proximal events. The findings show a *relative* effect where distance leads to a greater tendency to focus on causes versus consequences as compared to proximity: In both studies designed to test the effect of distance on causal focus (Experiments 3 and 4), people generally focused more on causes than on consequences, but this difference was magnified for distant events. Given the centrality of causes and the spontaneity of causal thinking, these findings are not surprising.

Interestingly, in the three studies on downstream consequences (Experiment 7–9), we did not find the same main effect of greater consideration of causes versus consequences. We speculate that at a basic level, thinking about causes is more prominent than thinking about consequences. However, for downstream judgments that utilize cause versus consequence information and especially in situations where one must choose between two courses of action as in Experiment 9, distance significantly affects how cause versus consequence information will be weighted. In the kinds of situations we created, one might say that it is fairly easy to tackle both the cause and the consequence at the same time. However, in many real life situations, one may lack the resources in terms of time or money to pursue more than one course of action. For example, imagine that you live in a city where most people take public transportation, and there is an issue with littering on the subways. If you are a policy-maker, what do you do? Do you focus on the cause of the littering and ban eating on the subways, or do you focus on the consequence and propose to install more trash receptacles and hire more cleaning staff?⁶ These kinds of choices are not artificial and figure in our day-to-day lives.

This research extends existing work on when people think about "why" (e.g., Hastie, 1984; Weiner, 1985). As reviewed earlier, much research has elucidated the factors that affect causal thinking. The most frequently studied are valence, expectancy (or subjective probability), and outcome dependency. Among these factors, some have argued that expectancy or subjective probability of events subsumes the others (Hastie, 1984; Kanazawa, 1992; but see Bohner, Bless, Schwarz, & Strack, 1988). For example,

⁶ In this particular example, it might be argued that installing more trash receptacles is a more feasible course of action than changing the rules about food on the subways. Thus, an alternative explanation for why policy-makers might favor more trash receptacles tomorrow versus 1 year from now is because of a greater focus on feasibility concerns (Liberman & Trope, 1998). However, we have shown in Experiment 9 that the effect of distance on weighting of causes versus effects is not dependent on the actual content of this information, which we counterbalanced.

Pyszczynski and Greenberg (1981, p. 32) stated that it is unlikely that perceivers will indiscriminately engage in causal analysis for all behaviors of others on whom they are dependent; it is more likely that people try to explain unexpected or surprising behavior. Furthermore, failures are usually unexpected compared to successes (Irwin, 1953; Marks, 1951; Miller & Ross, 1975). Kanazawa (1992) conducted a study that disentangled valence and expectancy and found that only expectancy affects the extent to which people spontaneously engage in causal attribution. In a different line of research based on construal level theory, subjective probability has been linked to psychological distance and has been studied as another dimension of distance, with similar effects on processing and decision making as time, space, and social distance (Wakslak, 2012; Wakslak & Trope, 2009; Wakslak, Trope, Liberman, & Alony, 2006). Thus, conceptualizing subjective probability as psychological distance, past work on expectancy and causal thinking fits within our framework of distance-dependent causal focus.

It is also interesting to think about the properties of causes and consequences themselves that might strengthen their association to distance versus proximity, respectively. The abnormal-conditions focus model (Hilton & Slugoski, 1986; see also Hart & Honore, 1956/1961; Mackie, 1974/1980) contends that causes are usually somewhat abnormal (i.e., distant), whereas enabling conditions are more ordinary (i.e., proximal). This view cannot explain the association we found between psychological distance and causal focus because we counterbalanced the content of the cause and consequence in Experiments 7–9 and found that the specific content of causes and consequences did not affect the relationship between distance and weighting of cause versus consequence information in judgments. However, it would be interesting to explore distance-dependent focus within causes and within consequences in future research. For example, McClure, Hilton, and Sutton (2007) found that when people think about events (e.g., a forest fire), they consider both distal causes (a youth sets a shrub on fire) and proximal causes (and a stranger walking by fans the flames) within a causal chain as equally good explanations. It is possible that distancing events from the self could lead to a tendency to prefer more distal versus proximal explanations.

Implications and Future Directions

Self-regulation. Self-regulation refers to the general process of managing one's thoughts, feelings, and behaviors to be in line with certain goals that one has adopted (e.g., Carver & Scheier, 1982, 1990; Fujita, 2011). As we have shown, temporal distance shifts what people choose to regulate in a given situation. Often times, a particular salient issue or problem is, in actuality, a derivative or consequence of a different, preexisting issue or problem. For instance, as in the opening example and in Experiment 9, someone may suffer from digestive problems that are a result of chronic stress at work. In these types of situations, which part of the cause-effect chain do people focus on and regulate to bring about positive change? We have shown that temporal distance affects behavioral choice in a self-regulation context. It would be interesting for future research to extend this effect to other distances, such as social distance, and to examine behavioral outcomes in addition to self-reported behavioral choice.

Relatedly, in the domain of health and coping, researchers have been interested in understanding how people deal with adverse events,

such as illness or loss of a loved one, in their lives (Coehlo, Hamburg, & Adams, 1974; Lazarus, 1966; for a review, see Folkman & Moskowitz, 2004). Researchers have distinguished problem-focused from emotion-focused coping strategies (Folkman & Lazarus, 1980). Problem-focused coping entails dealing with the source of the stressor, namely, the problem itself, while emotion-focused coping is concerned with alleviating the negative emotions that are a derivative of the problem and often accompany perceptions of stress. The current research suggests that the more psychological distance one experiences from a stressor, the more one will tend to focus on underlying causes, and consequently, center one's coping efforts on dealing with those causes. This can be considered consistent with the problem-focused coping approach. On the other hand, as psychological distance to a stressor decreases, the more one will tend to focus on the immediate, and usually more salient, consequences and correspondingly, engage in coping strategies tailored to ameliorate them. Accordingly, it has been found that as distance to a stressor (a bar exam) decreased in time, problem-focused coping (e.g., active planning) decreased while coping strategies aimed at mitigating the emotional consequences of the stressor (e.g., social support seeking, alcohol/drug use, or praying) increased (Iida, Green-Rapaport, Gleason, Bolger, & Shrout, 2012).

Power. Our work also has interesting implications for how interpersonal power affects causal focus. Past work has shown that power (vs. powerlessness) engages a more distal perspective and is associated with a greater tendency to engage in high-level construal (Smith & Trope, 2006). If this is the case, then power should also lead to a greater focus on causes than consequences. In organizations, it may be the case that powerful people are better able to identify the underlying source or cause of various problems and to initiate action to address that cause, whereas those further down the corporate ladder are more focused on the immediate consequences and on coming up with solutions to ameliorate them. This divergent focus on causes versus consequences may be built into the hierarchy of social order as it is often the case that those at the top of the chain focus on resolving underlying issues more than surface-level problems. For example, imagine that a defective product leads to an overflow of phone calls to the customer service unit of one's company. As a manager, one's responsibility and focus is on making sure there are enough customer service representatives to respond to customer complaints. On the other hand, the CEO of the company is more likely to be concerned with the source of the problem itself—the defect—and in taking action to fix the problem at its source.

Moral reasoning. There are also implications of this research for moral reasoning. How do people determine who is morally responsible, how much blame to assign, and whether or not to punish? Attribution researchers typically agree that the three most prominent factors that weigh in on this determination are causal control, intentionality, and foreseeability (Alicke, 2000; Shaver, 1985). Causal control refers to the link between a person's behavior and a particular outcome: Did the person cause the event to occur? This describes a physical or mechanical causation and does not take into consideration the mental state of the agent. Intentionality refers to whether or not the agent intended or desired the event to occur, and foreseeability is whether or not the agent could anticipate that the event would occur. An increase in these factors leads to an increase in perceptions of the agent's blameworthiness.

The current research suggests that a distal perspective will engage greater consideration of *why* (reasons for a transgression), whereas a

proximal perspective will lead to greater attunement to *what* (consequences of a transgression). This is important for understanding how people make judgments about who is responsible, to what degree, and the level of punishment that should be assigned. According to this reasoning, as events are further removed from the self in the here-and-now, the more individuals will weigh the causal factors that bring about the events, such as causal control, intentionality, and foreseeability, in their judgments of blame and responsibility. On the other hand, with decreasing distance, the more people will weigh the actual consequences (whether harm actually resulted or not as a result of the agent's behavior).

Conclusion

The present research demonstrates that psychological distance is associated with a greater relative focus on causes versus consequences as compared to psychological proximity. We conceptualize causes as high-level and effects as relatively low-level because causes are more central and defining in representation than effects. Our results build on construal level theory's notion that distance is associated with a focus on high-level, central features while proximity is associated with a focus on relatively low-level, secondary features of the same events. The many downstream consequences of this effect have only just begun to be explored. The implications of distance-dependent causal focus for self-regulation, power and leadership, and moral decision making remain to be examined in future research.

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(Appendices follow)

Appendix A

Experimental Materials for Experiment 4

Item number	Item
1	Joy caught a glance from Keith . . .
2	Tom got a hug from Janet . . .
3	Cindy got respect from Kyle . . .
4	John received praise from Claire . . .
5	Megan heard a rumor from Randy . . .
6	Amy learned a new language from Allen . . .
7	Courtney accepted a compliment from Brian . . .
8	Craig took abuse from Pam . . .
9	Ben grabbed the limelight from Ed . . .
10	Greg snatched a kiss from Heather . . .
11	Nate inherited patience from Rachel . . .
12	Jack threw a glance to Ellie . . .
13	Gordon handed the floor to Stacey . . .
14	Steven tossed a kiss to Cathy . . .
15	Erin sent conflicting signals to Bill . . .
16	Mary told a secret to Rick . . .
17	Holly passed the blame to Jason . . .
18	Lauren offered support to Matt . . .
19	Lindsay lent a hand to Will . . .
20	Gwen taught manners to Sean . . .
21	Sam brought joy to Alison . . .
22	Casey sold the idea to Jack . . .
23	Ray showed kindness to Jenna . . .
24	Kevin paid attention to Emily . . .

Appendix B

Coding for Experiment 4

Cause

A continuation was coded as a cause if it began with *because*. When the word *because* was not used, as in Majid et al. (2007) the criterion of “necessity in the circumstances” was used (Mackie, 1974/1980; see also Einhorn & Hogarth, 1986; Trabasso & Sperry, 1985). If the main clause would not have happened had the continuation not happened, then the continuation was coded as cause. For example, for the clause *John loved Mary*, the following would be coded as cause: *Because she was so sweet, Cause of her personality, and She was irresistible*.

Consequence

A continuation was coded as a consequence if it began with *so* (or some equivalent, e.g., *and so*). When such words were not used, as in Majid et al. (2007), we assumed that “the consequence is dependent in some manner on the cause or that the cause determines the consequence” (Trabasso & Sperry, 1985). A continuation was coded as a *consequence* if had the event in the main clause not happened then the event in the continuation would not

have happened. For example, for the clause *John loved Mary*, the following would be coded as consequences: *And so he brought her flowers* and *He could not live without her*. Continuations that described what happened after the event in the main clause were also coded as consequence (i.e., continuing *John apologized to Mary* with *And then they went for pizza*).

Simple Elaboration

A simple elaboration would be a continuation that provided information that modified the target event in some way. For instance, a continuation would be coded as a simple elaboration “if the location or time the event happened or the manner in which the event was carried out was mentioned” (Majid et al., 2007), for example, *John apologized to Mary in the garden, John apologized to Mary in the morning, John apologized to Mary loudly, and John apologized to Mary’s friend*.

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