Research Report

Spatial Distance and Mental Construal of Social Events

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ABSTRACT—*Construal-level theory proposes that increasing the reported spatial distance of events leads individuals to represent the events by their central, abstract, global features (high-level construal) rather than by their peripheral, concrete, local features (low-level construal). Results of two experiments indicated that participants preferred to identify actions as ends rather than as means to a greater extent when these actions occurred at a spatially distant, as opposed to near, location (Study 1), and that they used more abstract language to recall spatially distant events, compared with near events (Study 2). These findings suggest that spatially distant events are associated with high-level construals, and that spatial distance can be conceptualized as a dimension of psychological distance.*

An extensive literature has examined how individuals represent spatial distances of objects (e.g., Tversky, 2003, 2005). Research has shown, for example, that representations of spatially near objects are linked to body orientation, referencing visual and proprioceptive input (e.g., Bryant & Tversky, 1999). Representations of spatially distant objects, in contrast, rely on schematic knowledge, eliminating the need to encode all possible metric distances, but also leading to systematic biases in judgments of spatial distance (e.g., Huttenlocher, Hedges, & Duncan, 1991; McNamara, 1986). Research on spatial distance, however, has yet to be extended to the representation of social events or objects. Given that individuals frequently think and make decisions about social events or objects that are reported to be located at spatially near or distant locations, it is important to address what influence this information has on mental representations and decisions. In the present article, we examine how the meaning of the same social event changes depending on whether it is believed to occur at a spatially near or distant location.

Construal-level theory (CLT; Trope & Liberman, 2003) suggests that increasing the reported spatial distance of social objects or events should have effects on mental representation analogous to those of increasing distance on other dimensions of psychological distance, such as temporal and social distance. CLT states that as individuals become removed from the direct experience of an event, information about the event becomes less available or less reliable, leading them to rely on schematic, prototypical information. Consequently, individuals tend to represent psychologically distant events by their essential, abstract, and global features (high-level construals) and psychologically near events by their peripheral, concrete, and local features (low-level construals). This association between distance and construal level is thought to be overgeneralized such that construals of a given event are more abstract when it is psychologically distant versus psychologically near, even if the information known about the event is equivalent.

Studies have shown, for example, that increasing temporal distance from future events leads individuals to categorize objects associated with the events in fewer, broader categories (Liberman, Sagristano, & Trope, 2002). Perceivers also organize information about other people using generalized, abstract concepts such as traits and stereotypes when the targets are either socially distant (e.g., Fiedler, Semin, Finkenauer, & Berkel, 1995; Idson & Mischel, 2001; Linville, Fischer, & Yoon, 1996; Nisbett, Caputo, Legant, & Marecek, 1973) or temporally distant (Nussbaum, Trope, & Liberman, 2003; Ross, 1989). Moreover, differences in construal are revealed in judgments and decisions made about psychologically distant versus near events. For example, individuals' decisions are increasingly based on superordinate features (ends) more than subordinate features (means to the ends) as future events become more temporally distant (Liberman & Trope, 1998; Sagristano, Trope, & Liberman, 2002). These findings suggest that psychologically distant objects and events are indeed represented by high-level construals, and that construals have systematic effects on judgments and decisions.

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In the present study, we extended CLT beyond temporal and social distance to spatial distance. We propose that spatial distance is a dimension of psychological distance with similar effects on the representation of social objects and events. We hypothesize that increasing the reported spatial distance of a given event will enhance the tendency to activate high-level construals, that is, to represent the event by its abstract and global features. In two experiments, we manipulated information about the spatial distance of an event and assessed the level at which participants construed the event. If increasing the spatial distance of an event tends to activate high-level construals, participants should prefer to identify actions associated with spatially distant locations as ends for which the actions are performed, rather than as means by which the actions are performed (Study 1). They should also use more abstract language to describe events that occur at a spatially distant, rather than a spatially near, location (Study 2).

STUDY 1: ACTION IDENTIFICATION

In Study 1, participants imagined engaging in behaviors at a spatially distant or near location. For each behavior, participants indicated their preference between two alternate descriptions or action identifications of it (Vallacher & Wegner, 1987, 1989): a low-level action identification (description emphasizing the means by which the action is performed) or a high-level action identification (description emphasizing the end for which the action is performed). If spatially distant events activate high-level construals, participants should prefer high-level rather than low-level action identifications for such events, as high-level action identifications represent more abstract, superordinate descriptions of the behaviors. In contrast, participants should prefer low-level, rather than high-level, action identifications for spatially near events, as low-level action identifications represent more concrete, subordinate descriptions.

Method

Participants
Sixty-eight students (43 females) at New York University participated in the study in exchange for course credit. Participants were randomly assigned to condition.

Materials and Procedure
Participants were asked to imagine a scenario in which they were helping a friend move into a new apartment. The apartment was described as located "outside of New York City, about 3 miles away from here" (spatially near condition) or "outside of Los Angeles, about 3,000 miles away from here" (spatially distant condition). Participants were then asked to imagine performing a number of behaviors related to this event. These behaviors were adapted from the Behavior Identification Form (BIF; Vallacher & Wegner, 1989), a questionnaire designed to

measure individual differences in action identification. Each item presented a target behavior (e.g., "locking a door") and asked participants which of two alternate descriptions they preferred: one describing the behavior in terms of its means (how it is performed; e.g., "putting a key in the lock") and one describing it in terms of its ends (why it is performed; e.g., "securing the house"). Only 13 of the original 25 items from the BIF were presented to participants, as they related to the topic of "helping a friend move" (see Table 1). Preference for the low-level identification for any item was coded as 0, whereas preference for the high-level identification was coded as 1. These item scores were then summed to create an index of level of action identification ranging from 0 to 13, with higher scores indicating stronger preferences for high-level action identifications.

Participants were then asked to answer several questions designed to address potential confounds. They were asked how familiar they were with the apartment's location, how knowledgeable they were about that location, and how often they thought about the location. These three questions served as measures of familiarity ($\alpha = .91$). To measure evaluations, we asked participants how positive and negative (reverse-scored) their attitudes were toward the target location ($\alpha = .82$). Additionally, they rated how difficult it was to imagine the scenario. Responses to all six items were recorded on 9-point Likert-type scales from 1 (*not at all*) to 9 (*extremely*).

Results
As predicted, participants who imagined the event at a spatially distant location had stronger preferences for high-level action identifications ($M = 9.88$) than did those who imagined the event at a spatially near location ($M = 8.47$), $t(66) = 2.25$, $p = .03$, $p_{rep} = .94$, $r = .27$ (see Table 1). This suggests that participants used high-level construals to represent events occurring in spatially distant locations.

The effect of spatial distance on construal, however, does not appear to be explained by differences in familiarity, evaluation, or difficulty of imagining the scenario. Although participants in the two conditions did not differ significantly in how difficult the situation was to imagine, participants in the spatially near condition were more familiar with the location of the scenario, $t(66) = 11.47$, $p < .001$, $p_{rep} > .99$, $r = .82$, and evaluated the location more positively, $t(66) = 3.92$, $p < .001$, $p_{rep} > .99$, $r = .43$. None of these variables, however, were significantly correlated with preference for high-level action identifications. Moreover, adjusting for each of these variables as a covariate did not change the pattern of results reported in the previous paragraph, suggesting that they do not mediate the effect of spatial distance on construal.

STUDY 2: LINGUISTIC CATEGORIES

In Study 2, participants watched a video ostensibly filmed at a spatially distant or near location and then described what

TABLE 1

Preference for High-Level Action Identification as a Function of Spatial Distance (Study 1)

Behavioral Identification Form item	Spatial distance	
	Near (*n* = 34)	Distant (*n* = 34)
Reading		
Following lines of print vs. gaining knowledge	88.2	94.1
Washing clothes		
Putting clothes into the machine vs. removing odors from clothes	61.8	64.7
Picking an apple		
Pulling an apple off a branch vs. getting something to eat	61.8	73.5
Measuring a room for carpeting		
Using a yardstick vs. getting ready to remodel	73.5	85.3
Painting a room		
Applying the brush strokes vs. making the room look fresh	52.9	67.6
Paying the rent		
Writing a check vs. maintaining a place to live	70.6	73.5
Locking a door		
Putting a key in the lock vs. securing the house	82.4	91.2
Climbing a tree		
Holding on to branches vs. getting a good view	35.3	55.9
Brushing teeth		
Moving a brush around in one's mouth vs. preventing tooth decay	79.4	82.4
Resisting temptation		
Saying "no" vs. showing moral courage	35.3	55.9
Eating		
Chewing and swallowing vs. getting nutrition	67.8	85.3
Traveling		
Following a map vs. seeing the countryside	91.2	97.1
Having a cavity filled		
Going to the dentist vs. protecting your teeth	47.1	61.8

Note. Numbers indicate the percentage of participants in each condition who preferred the high-level action identification over the low-level action identification.

they saw in writing. We analyzed these written descriptions for abstractness of language, using coding schemes developed for the Linguistic Categorization Model (Semin & Fielder, 1998). Compared with low-level construals, high-level construals should be revealed through the use of more abstract language (Semin & Smith, 1999). We predicted that participants who believed the video was filmed at a spatially distant location would use more abstract language than participants who believed the video was filmed at a spatially near location.

Method

Participants
Seventy-one students (55 females) at New York University participated in the study in exchange for course credit. Participants were randomly assigned to condition.

Materials and Procedure
Participants were asked to watch a 6-min video depicting a male student and a female student conversing while entertaining themselves in an empty classroom.[1] We manipulated spatial distance by telling participants that the video was filmed either at New York University's Study Abroad campus in Florence, Italy (spatially distant condition), or at the university's Manhattan campus in New York (spatially near condition). We centered the manipulation on the two campuses to create conditions that differed minimally in terms of culture, colleges, or perceived similarity with the actors. It was plausible to believe that the video was filmed at either location given the generic setting of the classroom.

After watching the video, participants were instructed to describe what they saw in writing. They also answered several questions designed to address potential confounds. To measure familiarity, we asked participants how familiar they were with the location, how knowledgeable they were about it, and how often they heard or talked about the location (α = .82). Additionally, participants rated how similar they thought they were to

TABLE 2

Language Use as a Function of Spatial Distance (Study 2)

Dependent variable	Spatial distance	
	Near ($n = 37$)	Distant ($n = 34$)
Abstractness index	1.55 (0.35)	1.78 (0.50)
Descriptive action verbs	11.90 (9.20)	11.18 (8.77)
Interpretive action verbs	1.35 (1.57)	1.53 (1.71)
State verbs	2.35 (2.02)	3.32 (2.90)
Adjectives	0.54 (0.84)	1.91 (2.23)
Number of predicates	16.16 (11.27)	17.94 (11.67)
Number of words	163.16 (86.82)	169.15 (82.22)

Note. Numbers indicate the number of words coded for each category. Standard deviations are in parentheses.

each of the two actors in the video. Responses to these questions were recorded using a 7-point Likert-type scale, ranging from 1 (*not at all*) to 7 (*extremely*).

Two judges blind to condition utilized a coding scheme based on the Linguistic Categorization Model (Semin & Fiedler, 1988) to analyze participants' written descriptions. They coded each predicate as belonging to one of four linguistic categories: descriptive action verb (DAV; e.g., *call*), interpretive action verb (IAV; e.g., *help*), state verb (SV; e.g., *admire*), or adjective (e.g., *compassionate*). Semin and Fiedler have demonstrated that these four linguistic categories are organized along a dimension of concreteness to abstractness, with DAVs being the most concrete and adjectives being the most abstract. After coding, we calculated a weighted abstractness index score from the number of DAVs, IAVs, SVs, and adjectives each participant used. To reflect the different levels of abstraction, we used a simple weighting schema based on 1, 2, 3, and 4 to weight DAVs, IAVs, SVs, and adjectives, respectively (Semin & Smith, 1999). To control for length of the descriptions, we divided each weighted score by the number of coded predicates in the description. The resulting abstractness index score is an ordinal scale that reflects degree of abstraction and ranges from 1 to 4. The index scores calculated from the two judges' ratings were highly correlated, $r = .87, p < .01, p_{rep} > .99$. Discrepancies in codes were resolved through discussion to form a single index.

Results

Participants who believed the video was filmed at a spatially distant location used more abstract language ($M = 1.78$) than those who believed it was filmed at a spatially near location ($M = 1.55$), $t(69) = 2.27, p = .03, p_{rep} = .94, r = .26$ (see Table 2). The two conditions did not differ significantly in the number of predicates used, nor in the total number of words used. Analysis of each linguistic category revealed that although the conditions did not differ in the use of DAVs, IAVs, or SVs, there was a significant difference in usage of adjectives, Mann-Whitney $U = 389.00, Z = 2.96, p = .003, p_{rep} = .98$. Participants in the

spatially distant condition used the most abstract type of predicate, adjectives ($M = 1.91$), more than participants in the spatially near condition ($M = 0.54$). These results are consistent with those of Study 1 in suggesting that spatially distant events are construed at higher levels than spatially near events.

Moreover, the results suggest that alternate explanations based on familiarity with the location and perceived similarity to the actors are not tenable. Compared with participants in the spatially distant condition, those in the spatially near condition were more familiar with the location of the video clip, $t(69) = 3.08, p = .003, p_{rep} = .98, r = .35$, and perceived themselves to be more similar to the actors, $t(69) = 3.12, p = .003, p_{rep} = .98, r = .35$. Neither of these variables, however, was significantly correlated with the abstractness of the language in the written descriptions. Adjusting for these variables as covariates did not change the results of the analyses reported in the previous paragraph, suggesting that the effect of spatial distance on construal is not mediated by these factors.

GENERAL DISCUSSION

In two experiments, we tested the hypothesis that increasing the reported spatial distance of social events would enhance the activation of high-level construals. In Study 1, participants preferred to identify actions as ends (rather than as means to an end) to a greater extent when they imagined these actions at a spatially distant location than when they imagined the actions at a spatially near location. Participants in Study 2 used more abstract language to describe an event that ostensibly occurred at a spatially distant location than to describe an event that occurred at a spatially near location. These findings were not attributable to differences in familiarity (Studies 1 and 2) or evaluation of the locations (Study 1), difficulty in imagining the event (Study 1), or similarity to the actors described in the event (Study 2). These results suggest that increasing the reported spatial distance of social events leads individuals to represent them more abstractly and globally (i.e., at high levels of construal).

The relationship between spatial distance and construal bears striking resemblance to the relationship between temporal distance and construal. As noted earlier, increasing temporal distance has been associated with greater activation of high-level construals (Liberman et al., 2003). The parallel between spatial and temporal distance and their association with mental construal supports the broader notion of psychological distance, according to which different distance dimensions are interrelated and affect mental representations similarly (Trope & Liberman, 2003). This has implications not only for the study of mental representation, but also for judgment and decision-making research. Temporal and social distance, as mediated through construals, have been shown to affect a wide range of psychological phenomena, from person perception to self-regulation to interpersonal interactions (e.g., Gilbert, 1998;

Gilovich & Medvec, 1993; Ross, 1989; Trope & Liberman, 2003). Through systematic changes in construal, information about the spatial distance of social events may similarly affect individuals' judgments and decisions.

The question that inspired this research was whether information about the spatial distance of social events influences how individuals understand the events. The studies reported here suggest that increasing spatial distance enhances the tendency to represent social events using high-level construals. We believe that conceptualizing spatial distance as a dimension of psychological distance provides a useful framework for future research on the largely unexplored effects of spatial distance on social judgment and decision making.

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