Thus, because perceivers have less concrete knowledge about distal targets than proximal targets, they form more abstract, higher level construals of the former targets than the latter. Consequently, an association is formed between psychological distal targets and high-level construal and between psychological proximal targets and low-level construal. CLT further maintains that this association is overgeneralized, predisposing people to use high-level construals when thinking of distant targets and low-level construals when thinking of proximal targets, regardless of the amount of available knowledge about the target. In other words, the level of construal may be adjusted to the psychological distance of the target, even when the available information about the target does not favor one construal level over another. CLT further predicts that as a consequence of the overgeneralized association between psychological distance and construal, the level of construal may affect the perceived psychological distance of a target such that concretely construed entities, more than abstractly construed ones, would seem more proximal in time, space, social distance, and hypotheticality.

Several lines of research are consistent with this analysis. Research on temporal construal has related construal of events to their temporal distance. For example, Liberman, Sagristano, and Trope (2002, Study 1) found that temporal distance influenced the way in which participants classified objects that were part of future activities (e.g., a camping trip). The same set of items (e.g., potato chips, boots, hot dogs, blanket) was classified into fewer, broader categories when the items were part of distant-future activities than when they were part of near-future activities. Related to this finding, multidimensional scaling of participants' preferences for people to meet, events to experience, and activities to engage in showed that a smaller number of dimensions underlay participants' distant-future than near-future preferences (Liberman et al., 2002, Study 4). Moreover, Liberman and Trope (1998, Study 1) found that participants tended to describe distant-future activities in terms of abstract, superordinate goals and near-future activities in terms of more concrete, subordinate goals (see also Vallacher & Wegner, 1985).

Level of construal has also been related to social distance dimensions, such as self versus other, first-person perspective versus third-person perspective, and ingroup versus outgroup. Thus, a considerable amount of research has shown that perceivers make more global, dispositional attributions of others' behavior than their own behavior (Fiedler, Semin, Finkenauer, & Berkel, 1995; Jones, 1979; Jones & Nisbett, 1972; Robins, Spranca, & Mendelsohn, 1996). Research on perspective-dependent recall has shown that perceivers tend to use more global, dispositional qualities in recalling events from a third-person perspective than from a first-person perspective (Frank & Gilovich, 1989; Nigro & Neisser, 1983). Similarly, Libby and Eibach (2002, Study 4) found that imagining performing an activity from a third-person perspective produced more abstract, less detailed reports than imagining the same activity from a first-person perspective. Finally, research on group perception suggests that compared with ingroups, outgroups are described in terms of abstract qualities (Fiedler, Semin, & Finkenauer, 1993; Werkman, Wigboldus, & Semin, 1999) and are perceived as more homogeneous (Jones, Wood, & Quattrone, 1981; Park & Judd, 1990; Park & Rothbart, 1982), less differentiated into subgroups (Brewer & Lui, 1984; Linville, 1982; Park, Ryan, & Judd, 1992), and as possessing more structured, predictable properties (Linville, Fischer, & Yoon, 1996).

The effect of spatial distance on level of construal was recently examined by Fujita, Henderson, Eng, Trope, and Liberman (2005) and by Henderson, Fujita, Trope, and Liberman (in press). For example, in one of their studies, New York University (NYU) student-participants viewed a video clip of an interaction between two NYU students. Participants were told that the video clip was filmed either on the NYU campus in New York City or on the NYU campus in Florence, Italy. The results showed that participants used more abstract language to describe the same interaction when it was believed to occur at a spatially distant location (Florence) than a spatially near location (New York City).

The amount of research on the reverse causal direction, from construal level to psychological distance, is relatively small but consistent with the idea that forming higher level construals of an event fosters greater psychological distance from the event.

Liberman, Trope, Macrae, and Sherman (in press) examined the effect of level of construal of an event on its perceived temporal distance. For example, one of their studies manipulated participants' level of construal of an activity by asking the participants either to explain the reasons behind the activity (i.e., use high-level construal) or to describe how the activity is performed (i.e., use low-level construal). When the participants were requested to estimate how much time from now the activity would be enacted, those who used high-level construal estimated the enactment time as more distant from the present than participants who used low-level construal to describe the same activity.

Stephan (2006) investigated the effect of level of construal on perceived social distance. She found that participants who explained a target's behavior in terms of global dispositional qualities tended to perceive the target as more socially distant than did participants who explained the same behavior in terms of concrete situational factors.

Finally, several studies have found that forming lower level construals of events makes them seem more probable. For example, Sherman, Zehner, Johnson, and Hirt (1983) found that reading a detailed description of a future event, as opposed to a more general description, increased the estimated probability that this event will actually occur. In another study, Sherman, Cialdini, Schwartzman, and Reynolds (1985) presented participants with information about a disease and asked them to imagine contracting it. For some participants, the symptoms were described concretely (e.g., low energy level, muscle aches, severe headaches), whereas for others, the symptoms were described more abstractly (e.g., disorientation, malfunctioning nervous system). The results indicated that participants who imagined concrete symptoms estimated the likelihood of actually contracting the disease as greater than the likelihood estimated by participants who imagined abstract symptoms.

The Present Research

The aforementioned research demonstrates that the psychological distance of a target event or object affects the level at which the target is construed and that the level of construal of a target influences its perceived psychological distance. These past studies demonstrated that people use higher construal level when address-

ing more distant targets and that they assess targets as more distant when they are construed in a higher level. Past CLT research always tested the association between attributes of targets (e.g., their distance or the level of their construal) and the way that people *process* these targets. The present research goes beyond this earlier research by directly examining the association between psychological distance and level of construal at the purely conceptual level. For example, are words that imply greater social distance (e.g., strangers vs. friends) automatically associated with words that imply higher level of construal (e.g., abstract vs. concrete)?

Our earlier research provided participants with a rich context and required elaborate judgment, evaluation, or planning. In such complex settings, the relation between distance and construal may reflect not only a direct association but also numerous other factors. For example, the finding that objects that pertained to a distant future hiking trip were categorized into fewer, broader categories (Liberman et al., 2002) could reflect participants' belief that they know less about the context surrounding a distal trip than a near trip. In other studies that involved implicit judgment, participants could have constructed analogies and used metaphors to arrive at judgments. For example, consider the finding that participants predicted that actions construed at a low level would be enacted sooner than the same actions when construed at a high level (Liberman, Trope, Macrae, & Sherman, in press). Possibly, participants constructed an analogy between spatial distance and temporal distance (see Boroditsky, 2000; Matlock, Ramscar, & Boroditsky, 2005) and, using a visual metaphor, arrived at a judgment that more detailed, low-level actions are closer in time than less detailed actions.

Our aim here was therefore to determine whether there is an association between concepts of distance and construal level when there is no target to be construed and no context in which to situate the target. The question, more specifically, is whether words that indicate psychological proximity (e.g., *now*, *here*, *me*, and *real*) might associate with words that indicate concreteness (e.g., *items* and *details*), and words that indicate psychological distance (e.g., *year 2525*, *there*, *they*, and *fiction*) might associate with words that indicate abstractness (e.g., *categories* and *values*).

Explicit Associations and Semantic Relations

We first conducted a study that assessed participants' explicit ratings of concepts implying proximity and distance on a scale that ranged from concrete to abstract and their ratings of concepts implying abstractness and concretenesss on a scale that ranged from proximal to distal. Appendix A provides a detailed description of this study. We found that participants rated socially proximal targets (e.g., "friend") as more concrete than socially distal targets (e.g., "enemy"). Likewise, participants rated words that denoted spatial proximity (e.g., *here*) as more concrete than words that denoted spatial distance (e.g., *there*), words that denoted temporal proximity (e.g., *now*) as more concrete than words that denoted temporal distance (e.g., *later*). Finally, participants rated words that denoted high likelihood (proximity on the hypotheticality dimension, e.g., *reality*) as more concrete than words that denoted low likelihood (e.g., *fiction*).

Ratings of distance, however, failed to show a consistent pattern. There were no differences in the mean ratings of distance between words that denote higher level of construal (e.g., *abstract*) or pertain to higher level of construal (broad categories such as "animals") and words that describe lower level of construal (e.g., *concrete*) or pertain to lower level of construal (e.g., specific exemplars such as "dog").

The explicit results lend some support to the notion that people associate more psychological distance with higher level of construal. The results suggest that when people process distance cues they also tend to judge them as cues of level of construal, with cues of more distance judged as being more abstract. However, explicit reports do not always reflect an automatic association, and, therefore, the explicit measures should be interpreted with caution. Questions about the abstractness level of different concepts (e.g., How abstract is the sun?) or the distance of different concepts (How distal is *concrete*?) may seem artificial and are probably rare in real-life situations. When confronted with such questions, participants could have constructed judgments rather than retrieved existing associations.

Therefore, although the difference found with the abstract–concrete explicit measures may suggest that people tend to construct judgments that are consistent with CLT, it does not necessarily mean that such association exists independent of the response elicitation process. Correspondingly, although the lack of difference found with the explicit measure of distance between abstract and concrete concepts may mean that people do not tend to construct judgments that are consistent with CLT, it does not necessarily imply the absence of an association between abstractness and distance.[1]

Implicit Measurement of Association

To overcome the aforementioned limitations of explicit measures of association, we used the Implicit Association Test (IAT; Greenwald et al., 2002; Greenwald et al., 1998) to assess the association between concepts of distance and construal level. We used the IAT because it is designed to gauge target and concept-free associations between concepts without being affected by elaborative and constructive processes.

The IAT measures the strengths of associations by having participants sort stimuli representing four concepts into two response categories, each of which includes two of the four concepts. The assumption that underlies this method is that more strongly associated concepts, when mapped together on the same response

[1] We also examined the possibility of a semantic association between level of construal and distance. To that end, we summoned the definitions of all the terms used in our research from a major Hebrew dictionary (Eben Shoshan, 2004). For each experiment, we looked for each of the words that comprised the definition of the distance-related terms in the definitions of the construal-related terms, and vice versa (i.e., we looked for each of the words that comprised the definition of the construal-related terms in the definition of the distance-related terms). For instance, we searched for all the nouns and adjectives that appeared in the definition of the word *abstract* in the definition of each distance-related word. We found no overlap; therefore, it seems that semantic overlap between level of construal and distance cannot account for our results.

category, would yield faster response. Originally, the IAT was designed as a measure of stereotype strength, by pairing different target categories with different evaluative categories. For example, when instructed to respond to African American names and unpleasant words by pressing the same response key, participants responded faster than when instructed to press the same key for African American names or pleasant words (Greenwald et al., 1998). These results have been assumed to reflect stronger association of African Americans (than of European American) with a negative evaluation.

Because the IAT does not require elaborate thought or conscious preferences of one pairing over the other, it reflects the type of association between distance and level of construal that the present research aims to tap. We therefore used pairings of distance and level of construal that are either congruent with CLT or incongruent with CLT as follows:

1. CLT's congruent pairing: low construal level with psychological proximity and high construal level with psychological distance.

2. CLT's incongruent pairing: low construal level with psychological distance and high construal level with psychological proximity.

We predicted that participants would respond faster with CLT congruent pairings than with incongruent pairings.

Overview of Experiments

Each pair of experiments related one dimension of psychological distance to level of construal. In Experiments 1A and 1B, we examined temporal distance; in Experiments 2A and 2B, we examined spatial distance; in Experiments 3A and 3B, we examined social distance; and in Experiments 4A and 4B, we examined hypotheticality. For the first experiment in each pair, we examined the association between concepts representing proximal versus distal objects (e.g., "near located objects" vs. "far located objects" for the spatial dimension) and indicators of either high- or low-level construal ("abstract" vs. "concrete"). For the second experiment in each pair, we examined the association between concepts that explicitly describe either the psychological proximal pole or the psychological distal pole (e.g., "reality" vs. "fiction" for the hypotheticality dimension) and concepts representing objects of low- versus high-level construal (e.g., dog vs. animal). The stimuli used in each of the experiments are presented in Table 1.

Experiments 1A and 1B: Temporal Distance and Construal Level

In the first two experiments, we tested the relation between concepts positioned along the temporal axis and concepts representing high- versus low-level construal. In Experiment 1A, the temporal concepts were object terms labeled *things that will happen in a short time* ("near events") versus *things that will happen in a long time* ("distant events"),[2] and the two construal level concepts were descriptive terms for construal level labeled *abstract* versus *concrete*. In Experiment 1B, the two temporal concepts were descriptive terms for temporal distance or proximity using the labels *near time* and *distant time*, and the two construal level concepts were object terms labeled *exemplars* (representing concrete, low-level construal) versus *categories* (representing abstract, high-level construal).

We expected participants to respond faster in the CLT-congruent condition, when the instructions were compatible with CLT pairings, mapping one response key for either low construal or proximal concepts and the other response key for either high construal or distal concepts (near events + concrete condition in Experiment 1A and exemplars + near-time condition in Experiment 1B), than in the CLT-incongruent condition, when the instructions were not compatible with CLT pairings, mapping one response key to either low construal or distal concepts and the other key to either high construal or proximal concepts (near events + abstract condition in Experiment 1A and categories + near time in Experiment 1B).

Method

Participants. Sixteen introductory psychology undergraduates participated in Experiment 1A (12 women, 4 men), and 12 (11 women, 1 man) participated in Experiment 1B in exchange for course credit. All were native Hebrew speakers. There were no gender effects in these and subsequent experiments.

Materials. Using the Hebrew word-frequency norms,[3] we calculated the average frequency of all the words that were used in this and the other studies reported in this article and did not find any differences between any of the groups. Likewise, an examination of word length and word valence yielded no systematic differences between words in each group.

We used 16 Hebrew stimulus words in Experiment 1A: 4 "near events" items (*eat*, *tomorrow*, *drink*, *conversation*), 4 "distant events" items (*old age*, *retirement*, *2009*, *PhD*), 4 words that denote abstractness (*general*, *2 synonyms for abstract*, *universal*), and 4 words that denote concreteness (*2 synonyms for specific*, *detailed*, *defined*). We used 20 Hebrew stimulus words in Experiment 1B: 5 "near time" items (*a second*, *a minute*, *now*, *immediately*, *soon*), 5 "distant time" items (*a year*, *a decade*, *later*, *last year*, *long ago*), 5 "exemplars" items (*hammer*, *beet*, *poodle*, *belt*, *Sprite*), and 5 "categories" items (*vegetables*, *clothes*, *animals*, *food*, *furniture*). All stimuli words in these and subsequent experiments were one-word long (see Appendix B for the Hebrew stimulus words).

Apparatus. Displays were generated by a computer attached to a 17-in. (43-cm) LCD monitor, using 1024 × 768 resolution graphics mode. Responses were collected via the computer keyboard. Participants viewed this display from a distance of about 60 cm and gave left responses with the left forefinger (using the *E* key) and right responses with the right forefinger (using the *I* key).

Design. The IAT followed the standard blocks of categorization trials outlined by Greenwald et al. (1998). In Experiment 1A, Block 1 consisted of 16 near events/distant events trials; Block 2 consisted of 16 concrete/abstract trials; Block 3 was a combined practice block of 16 trials (the same label position as Blocks 1 and 2); Block 4 was a combined data collection Block of 32 trials (the same label position as practice Block 3); Block 5 consisted of 16 near events/distant events trials (with labels in the reverse position of Block 2); Block 6 was a combined practice block of 16 trials (representing the new positions of concrete/abstract—the same label posi-

[2] The category names are an exact translation of the terms used in Hebrew, and thus they may sound a little awry. Rest assured that they sounded better in Hebrew.

[3] Hebrew word-frequency norms can be found at http://word-freq.mscc.huji.ac.il/index.html

Table 1
Stimuli of All Studies

	Psychological distance				Construal level			
	Proximal		Distal		Low construal level		High construal level	
Experiment	Group	Words	Group	Words	Group	Words	Group	Words
1A	Things that will happen soon	*eat, tomorrow, drink, conversation*	Things that will happen in a long time	*old age, retirement, 2009, PhD*	Concrete	2 synonyms for *specific, detailed, defined*	Abstract	*general,* 2 synonyms for *abstract, universal*
1B	Near time	*a second, a minute, now, immediately, soon*	Distant time	*a year, a decade, later, last year, long ago*	Exemplars	*hammer, beet, poodle, belt, Sprite* (brand of beverage)	Categories	*vegetables, clothes, animals, food, furniture*
2A	Things that are located near	*hair, door, chair, shoes*	Things that are located far	*airplane, the sun, clouds, North pole*	Concrete	2 synonyms for *specific, detailed, defined*	Abstract	*general,* 2 synonyms for *abstract, universal*
2B	Near location	2 synonyms of *here,* and 2 synonyms of *beside*	Distant location	2 synonyms of *there, far away, far off*	Exemplars	*hammer, beet, poodle, belt, Sprite*	Categories	*vegetables, clothes, animals, food, furniture*
3A	My intimates	*friend, parents, buddies, siblings.*	Not my intimates	*enemies, strangers, opponents, anonymous person*	Concrete	2 synonyms for *specific, detailed, defined*	Abstract	*general,* 2 synonyms for *abstract, universal*
3B	Us	*ours, ourselves, at our place, for us, we*	Others	2 synonyms of *they, theirs, for them, at their place*	Exemplars	*hammer, beet, poodle, belt, Sprite*	Categories	*vegetables, clothes, animals, food, furniture*
4A	Real creatures	*beetle, dog, dolphin, horse*	Imaginary creatures	*dragon, troll, nymph, Cyclops*	Concrete	2 synonyms for *specific, detailed, defined*	Abstract	*general,* 2 synonyms for *abstract, universal*
4B	Reality	*real, actuality, realism, historical, authentic*	Fiction	*legend, imaginary, illusion, dream, hallucination*	Exemplars	*hammer, beet, poodle, belt, Sprite*	Categories	*vegetables, clothes, animals, food, furniture*

Note. Hebrew stimuli are listed in Appendix B.

tion as Blocks 1 and 5); and Block 7 was a combined data collection block of 32 trials (the same label position as practice Block 6). This design was followed in all subsequent experiments, varying only the number of trials in each block. That is, in experiments in which five words were used for each category, the number of trials was 20 in Blocks 1, 2, 3, 5, and 6 and 40 in Blocks 4 and 7.

Order of pairings was counterbalanced in these and all subsequent experiments. For instance, in Experiment 1A, half the participants completed an IAT with concrete and distant events sharing a key in the first combined block, and half the participants completed an IAT with concrete and near events sharing a key in the first combined block.

Procedure. Participants performed the IAT in individual cubicles. Each trial block started with instructions written in gray that described the category discrimination(s) for the block and the assignments of response keys (left or right) to categories. Stimuli were presented in blue letters against a black screen background and remained on screen until the participant responded. The intertrial interval between participants' press and the display of the next stimulus was 250-ms. Error trials were followed by a 500-ms feedback beep, followed by reappearance of the instructions written in red until participants pressed the space bar to continue. Stimulus words were selected randomly and without replacement (independently for each participant) until the available stimuli for a task were exhausted, at which point the stimulus pool was refilled by the same stimuli if more trials were needed. The number of trials in each block assured equal number of appearances for all stimuli. After completing the IAT, participants were fully debriefed and thanked.

Results and Discussion

We used the same data manipulation rules for all experiments. For each participant, an IAT score in the form of a measure, termed *D*, a variant of Cohen's *d* (see Greenwald, Nosek, & Banaji, 2003), was computed by calculating the difference between the mean response latencies for the two double-categorization blocks (Blocks 4 and 7) within each participant's IAT and dividing that difference by its associated pooled standard deviation. We calculated the IAT *D* score such that an outcome that matches the CLT congruent hypothesis (better performance on CLT congruent block in comparison to a CLT incongruent block) will result in a positive score, and an outcome that favors the CLT incongruent block will result in a negative score.

Experiment 1A. As shown in Figure 1, performance was faster in the CLT-congruent, near events + concrete condition than in the CLT-incongruent, near events + abstract condition (mean difference = 180 ms; $D = 0.54$, $SD = 0.47$), $t(15) = 4.63$, $p < .001$, $\eta^2 = 1.2$. The IAT *D* score was larger when the congruent condition appeared before the incongruent condition ($D = 0.86$) than when the order was the reverse ($D = 0.22$), $t(14) = 3.6$, $p < .01$, $\eta^2 = 1.86$.

Experiment 1B. As shown is Figure 1, performance was faster in the CLT-congruent, exemplars + near-time condition than in the CLT-incongruent, categories + near-time condition (mean difference = 116 ms; $D = 0.37$, $SD = 0.31$), $t(11) = 4.03$, $p < .01$, $\eta^2 = 1.22$. There was no order effect ($t < 1$).

In Experiments 1A and 1B, we tested the hypothesis that high-level construal concepts are associated with distant-future concepts more than with near-future concepts and that low-level construal concepts are associated with near-future concepts more than with distant-future concepts. The results of both studies supported this hypothesis. Apparently, when asked to pair two different concepts under the same response, it is easier to associate near future with low-level construal and distant future with high-level construal than to associate near future with high-level construal and distant future with low-level construal. These results are consistent with past CLT research findings that abstract, high-level construal is linked to distant-future cues, whereas concrete, low-level construal is linked to near-future cues. Would similar results emerge with other dimensions of distance? The following experiments address this question.

Experiments 2A and 2B: Spatial Distance and Construal Level

Most objects are situated beyond the reach of our senses. As a result, as the spatial distance from targets increases, sensorial means (i.e., our direct experience) are replaced by increasingly higher mental construals. We therefore predict that participants would respond faster to the pairings of spatial proximity with low-level construal and spatial distance with high-level construal than to the alternative pairings of spatial proximity with high-level construal and spatial distance with low-level construal.

In Experiment 2A, the two spatial concepts were object terms labeled *things that are located near* (near objects) versus *things that are located far* (distant objects), and the two construal level concepts were descriptive terms for construal level, labeled *abstract* versus *concrete*. In Experiment 2B, the two spatial concepts were descriptive terms for spatial distance, labeled *near location* versus *distant location*, and the two construal level concepts were object terms labeled *categories* versus *exemplars*. We expected participants to respond faster when they used the same response key for either low construal or proximal concepts (near objects + concrete condition in Experiment 2A and exemplars + near-location condition in Experiment 2B) than when they used the same response for either low construal or distal concepts (distant objects + concrete condition in Experiment 2A and categories + near-location condition in Experiment 2B).

Method

Participants. Twenty-five introductory psychology undergraduates participated in Experiment 2A (19 women, 6 men), and 14 (10 women, 4 men) participated in Experiment 2B in exchange for course credit. All were native Hebrew speakers.

Materials, design, apparatus, and procedure. In Experiment 2A, we used 16 Hebrew stimulus words: 4 near objects items (*hair*, *door*, *chair*, *shoes*), 4 distant objects items (*airplane*, *the sun*, *clouds*, *North pole*), and 8 words that denoted abstract (4 words) or concrete (4 words), which were the same as in Experiment 1A. In Experiment 2B, we used 16 Hebrew stimulus words: 4 near location items (2 synonyms of *here* and 2 synonyms of *beside*), 4 distant location items (*far away*, *far off*, 2 synonyms of *there*), and 8 words that denoted categories (4 words) or exemplars (4 words), which were the same as in Experiment 1B. The apparatus, procedure, and design were the same as in Experiment 1A.

Discussion

Experiment 2A. As shown in Figure 1, performance was faster in the CLT-congruent, near objects + concrete condition than in the CLT-incongruent, distant objects + concrete condition (mean

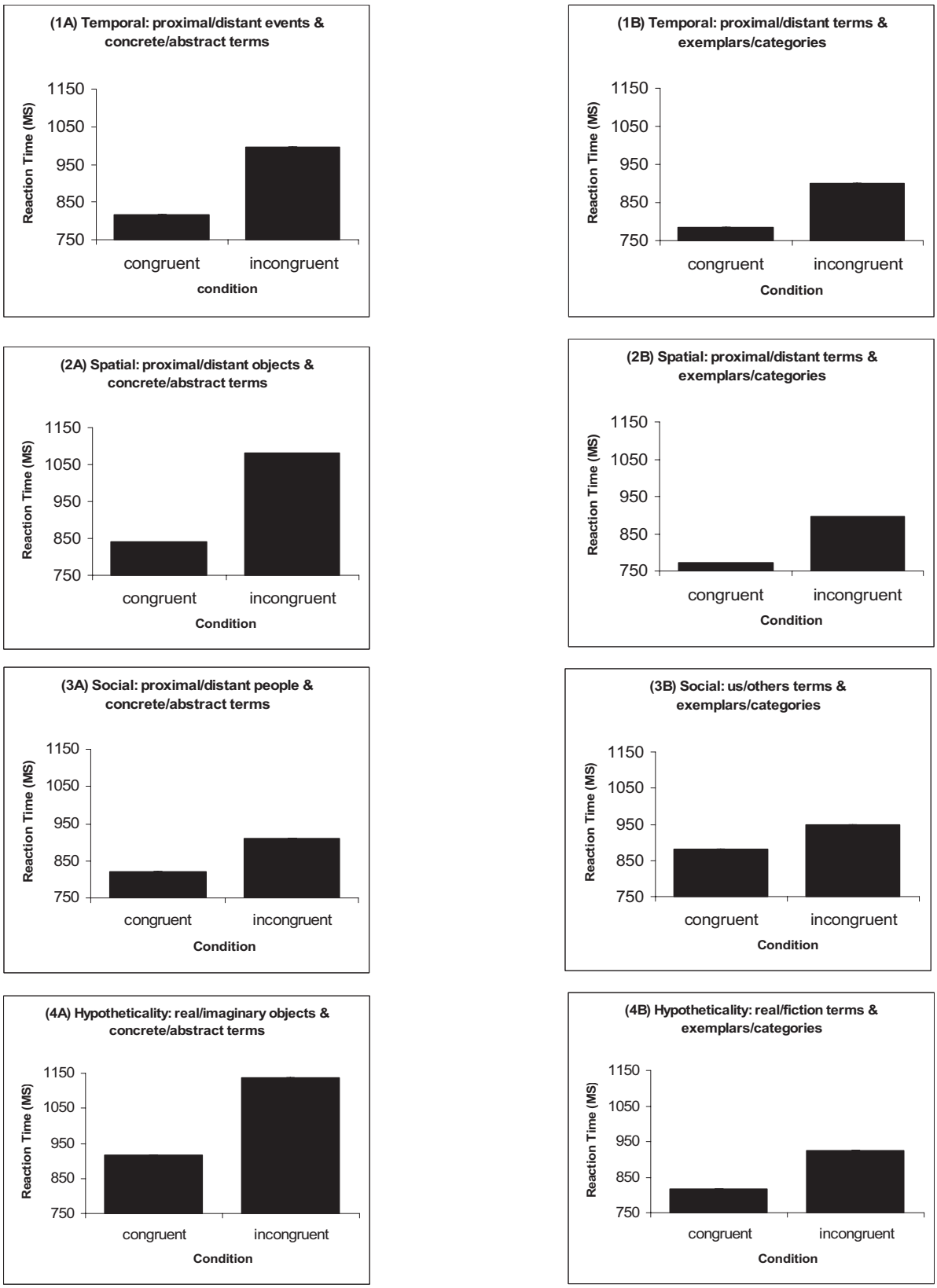

Figure 1. Response time for congruent and incongruent distance construal level pairings for all experiments. The difference between conditions was significant in all experiments.

difference = 241 ms; $D = 0.63$, $SD = 0.11$), $t(24) = 7.67$, $p < .0001$, $\eta^2 = 1.57$. There was no order effect, $t(23) = 1.6$, $p = .13$.

Experiment 2B. As shown in Figure 1, performance was faster in the CLT-congruent, exemplars + near location condition than in the CLT-incongruent, categories + near location condition (mean difference = 123 ms; $D = 0.44$, $SD = 0.39$), $t(13) = 4.14$, $p < .01$, $\eta^2 = 1.15$. There was no order effect ($t < 1$).

In Experiments 2A and 2B, we investigated whether high-level construal is more strongly associated with distant locations than with near locations, whereas low-level construal is more strongly associated with near rather than distant locations. The results supported this prediction. Apparently, when making the same response to two different concepts, it is easier to associate near locations with low-level construals and distant locations with high-level construals than to associate near locations with high-level construals and distant locations with low-level construals. These results are analogous to those obtained with temporal distance and consistent with the hypothesis that abstract, high-level construal is associated with cues of psychological distance, whereas concrete, low-level construal is associated with cues of psychological proximity. The next two experiments extend the test of this hypothesis to yet another dimension of psychological distance, namely, social distance.

Experiments 3A and 3B: Social Distance and Construal Level

Because people cannot directly experience what others feel, see, and hear, the experiences of others always remain psychologically distal. We tend to think of some people as being closer to ourselves than other people. The self is probably the most socially proximal entity, similar others are more socially proximal than dissimilar others, and ingroup members are usually perceived as more socially proximal than outgroup members. As with other dimensions of psychological distance, we predict that people would be faster at pairing social proximity with low-level construal and social distance with high-level construal (congruent pairing) than at the alternative, incongruent pairing (social proximity with high-level construal and social distance with low-level construal).

In Experiment 3A, the social distance concepts were object terms labeled *my intimates* versus *not my intimates*, and the two construal level concepts were descriptive terms for construal level labeled *abstract* versus *concrete*. In Experiment 3B, the social distance concepts were descriptive terms for social distance labeled *us* versus *others*, and the construal level concepts were object terms labeled *categories* versus *exemplars*. We expected participants to respond faster when they used the same response key for either low construal or socially proximal concepts (my intimates + concrete in Experiment 3A and exemplars + us in Experiment 3B) than when they used the same response for either low construal or distal concepts (not my intimates + concrete in Experiment 3A and categories + us in Experiment 3B).

Method

Participants. Seventeen introductory psychology undergraduates participated in Experiment 3A (11 women, 6 men), and 23 (21 women, 2 men) participated in Experiment 3B in exchange for course credit. All were native Hebrew speakers.

Materials, design, apparatus, and procedure. In Experiment 3A, 16 Hebrew stimulus words were used: 4 "my intimates" items (*friend*, *parents*, *buddies*, *siblings*), 4 "not my intimates" items (*enemies*, *strangers*, *opponents*, *anonymous person*), and 8 words that denoted "abstract" (4 words) or "concrete" (4 words), which were the same as in Experiment 1A. In Experiment 3B, 20 Hebrew stimulus words were used: 5 "us" items (*ours*, *ourselves*, *at our place*, *for us*, *we*), 5 "others" items (2 synonyms of *they*, *theirs*, *for them*, *at their place*), and 10 words that denoted "categories" (5 words) or "exemplars" (5 words), which were the same as in Experiment 1B. The apparatus, procedure, and design were the same as in Experiment 1A.

Results and Discussion

Experiment 3A. As shown in Figure 1, performance was faster in the CLT-congruent, my intimates + concrete condition than in the CLT-incongruent, not my intimates + concrete (mean difference = 89 ms; $D = 0.32$, $SD = 0.48$), $t(16) = 4.63$, $p < .05$, $\eta^2 = 0.69$. The IAT D score was larger when the congruent condition appeared before the incongruent condition ($D = 0.48$) than when the order was reversed ($D = 0.15$), $t(15) = 2.47$, $p < .05$, $\eta^2 = 1.28$.

Experiment 3B. As shown in Figure 1, performance was faster in the CLT-congruent, exemplars + us condition than in the CLT-incongruent, categories + us condition (mean difference = 66 ms; $D = 0.16$, $SD = 0.33$), $t(22) = 2.34$, $p < .05$, $\eta^2 = 0.50$. The IAT D score was marginally larger when the congruent condition appeared before the incongruent condition ($D = 0.35$) than when the order was reversed ($D = 0.1$), $t(21) = 1.87$, $p = .07$.

Experiments 3A and 3B demonstrate that when pairing two different concepts under the same response, it is easier to associate social proximity with low-level construal and social distance with high-level construal than to associate social proximity with high-level construal and social distance with low-level construal. This finding suggests that construal level is related to social distance in the same way as it is related to temporal and spatial distance.

The main effect sizes in Experiments 3A and 3B were lower than in the other studies we report in this article. At this point, however, we feel that it would be premature to draw a conclusion from this difference. Obviously, differences between the dimensions of psychological distance are possible and deserve future investigations.

Experiment 4A and 4B: Hypotheticality and Construal Level

The last dimension of psychological distance we examine is *hypotheticality*, the perception of a target as unreal and improbable. There are real entities and counterfactual alternatives to reality, which may be either close to reality (e.g., "Had I conducted the other study . . . ") or more remote from it (e.g., "Had I had wings . . . "). These entities and counterfactual alternatives define hypotheticality as a dimension of psychological distance, anchored on real, direct experience and extending to increasingly less likely alternatives to this experience.

In Experiment 4A, the hypotheticality concepts were object terms labeled *real creatures* versus *imaginary creatures*, and the two other concepts were descriptive terms of construal level labeled *abstract* versus *concrete*. In Experiment 4B, the two con-

strual level concepts were object terms labeled *categories* versus *exemplars*, and the other two concepts were descriptive terms for hypotheticality level labeled *reality* versus *fiction*. We expected participants to respond faster when they used the same response key for either low construal or real concepts (real creatures + concrete in Experiment 4A and exemplars + reality in Experiment 4B) than when they used the same response for either low construal or unreal concepts (imaginary creatures + concrete in Experiment 4A and categories + reality in Experiment 4B).

Method

Participants. Seventeen introductory psychology undergraduates participated in Experiment 4A (12 women, 5 men), and 13 (all women) participated in Experiment 4B in exchange for course credit. All were native Hebrew speakers.

Materials, design, apparatus, and procedure. In Experiment 4A, 20 Hebrew stimulus words were used: 4 "real creatures" items (*beetle*, *dog*, *dolphin*, *horse*), 4 "imaginary creatures" items (*dragon*, *troll*, *nymph*, *Cyclops*), and 8 words that denoted "abstract" (4 words) or "concrete" (4 words), which were the same as in Experiment 1A. In Experiment 4B, 20 Hebrew stimulus words were used: 5 "reality" items (*real*, *actuality*, *realism*, *historical*, *authentic*), 5 "fiction" items (*legend*, *imaginary*, *illusion*, *dream*, *hallucination*), and 10 words that denoted "categories" (5 words) or "exemplars" (5 words), which were the same as in Experiment 1B. The apparatus, procedure, and design were the same as in Experiment 1A.

Results and Discussion

Experiment 4A. As shown in Figure 1, performance was faster in the CLT-congruent, real creatures + concrete condition than in the CLT-incongruent, imaginary creatures + concrete condition (mean difference = 221 ms; $D = 0.51$, $SD = 0.4$), $t(16) = 5.2$, $p < .0001$, $\eta^2 = 1.3$. There was no order effect ($t < 1$).

Experiment 4B. As shown in Figure 1, performance was faster in the CLT-congruent, exemplars + reality condition than in the CLT-incongruent, imaginary categories + fiction condition (mean difference = 108 ms; $D = 0.31$, $SD = 0.32$), $t(12) = 3.52$, $p < .01$, $\eta^2 = 1.02$. There was no order effect ($t < 1$).

Experiments 4A and 4B demonstrate that high-level construal concepts are associated with concepts that relate to hypotheticality more than with concepts that relate to reality; in addition, low-level construal concepts are associated with concepts that relate to reality more than with concepts that relate to hypotheticality. Cues representing hypothetical, unlikely events seem associated with abstract, high-level construal, whereas cues representing reality or high likelihood seem associated with concrete, low-level construal. This pattern of results is analogous to that obtained in the earlier experiments and thus suggests that level of construal is similarly related to hypotheticality, temporal distance, spatial distance, and social distance.

General Discussion

The results of eight experiments provide convergent evidence for the idea that people tend to associate psychological proximity with low-level construal and psychological distance with high-level construal (CLT congruent pairing) more than psychological proximity with high-level construal and psychological distance with low-level construal (CLT incongruent pairing). This pattern of associations was found across four dimensions of psychological distance: temporal (Experiments 1A and 1B), spatial (Experiments 2A and 2B), social (Experiments 3A and 3B), and hypotheticality (Experiments 4A and 4B). Experiments 1A, 2A, 3A, and 4A demonstrated that proximal objects (i.e., near events, near objects, my intimates, and real creatures) are associated with terms that denote lower level construal more than distal objects (i.e., distant events, distant objects, not my intimates, and imaginary creatures). Experiments 1B, 2B, 3B, and 4B demonstrated that concrete objects (i.e., exemplars) are associated with indicators of proximity more than abstract objects (i.e., categories). Together, these findings suggest that people intuitively associate proximal objects with indicators of low-level construal and concrete objects with indicators of proximity. More generally, these studies demonstrate an implicit conceptual association of psychological distance and level of construal.

Earlier studies in the CLT framework have demonstrated a relation between greater psychological distance and higher construal level in the context of planning, judging, evaluating, and estimating distance in tasks that require relatively complex reasoning and information integration (Eyal, Liberman, Trope, & Walther, 2004; Förster, Friedman, & Liberman, 2004; Freitas, Salovey, & Liberman, 2001; Fujita et al., 2005; Henderson et al., in press; Liberman & Trope, 1998; Sagristano, Trope, & Liberman, 2002; Todorov, Goren, & Trope, in press; Trope & Liberman, 2000). The present research extends these earlier studies in several important respects. First, the research demonstrates an association between concepts of distance and level of construal that is independent of any specific context or target of construal. This suggests that the tendency to associate more distal entities with higher level construals cannot be explained by various specific characteristics on which distal and proximal objects may differ (e.g., knowledge, assumptions, or goals regarding proximal vs. distal targets). Second, the present research is the first to examine all four dimensions of psychological distance (temporal, spatial, social, and hypotheticality) with the same method and demonstrate similar results across the four dimensions. Third, the present research suggests that the association between psychological distance and construal level may be activated automatically without conscious deliberation. Below, we discuss these aspects of our research in more detail.

Associations Between Concepts

The present study demonstrated that the association between level of construal and psychological distance exists in a purely conceptual level, and not only as an effect of distance or construal level on the way that people process targets. This kind of association helps to establish CLT's assumption that psychological distance is related to construal level as a generalized association, independent of specific targets or contextual variables. CLT posits that whereas differential knowledge about proximal and distal objects may be the origin of the association between psychological proximity and low construal level and between psychological remoteness and high construal level, the associations are generalized to situations in which the knowledge about proximal and distant targets is equated. The advantage of the present research,

relative to past studies, is that the indicators of psychological distance or construal level did not pertain to any particular target, nor did the task require making judgments about particular targets. Therefore, specific motivations, knowledge, or assumptions about targets and their context could not play a role in producing the present IAT effects.

Corroborating the Concept of Psychological Distance

We examined four dimensions of psychological distance—space, time, social distance, and hypotheticality. The finding that all four dimensions showed the expected association with level of construal is consistent with the CLT assumption that they are all instances of psychological distance. Of course, the present findings do not rule out the possibility that each of these dimensions has its own unique reasons to be associated with construal level. Moreover, the different dimensions are not identical in every aspect. For instance, the distant future is usually evaluated as more positive than the near future (e.g., T. R. Mitchell, Thompson, Peterson, & Cronk, 1997; Ross, 1989), whereas distant people are usually evaluated as more negative than close people (e.g., Alicke, Vredenburg, Hiatt, & Govorun, 2001). Nevertheless, we believe that the present findings provide initial support for the idea that all four dimensions share one basic psychological meaning, namely, distance from the same starting point of one's own direct experience.

It would be interesting to examine in future research the possibility that each psychological distance dimension is related to the other dimensions so that distancing along one dimension affects the perceived distance on other dimensions. For example, in a Stroop-like task, in which participants are required to focus on one psychological distance dimension and ignore another, we would expect the irrelevant dimension to interfere and facilitate participants' response as a function of the congruence between the relevant stimulus and the irrelevant stimulus. This would be the case if the shared meaning of the different dimensions—psychological distance—is automatically activated.

Corroborating Intuitive CLT Associations

The precise nature of the cognitive processes that underlie performance on the IAT is not yet fully understood (Nosek, Greenwald, & Banaji, in press). It is therefore prudent to exercise caution in interpreting the present findings in terms of an implicit association between psychological distance and level of construal. In what sense is this association implicit? How does the association relate to everyday life construal and reasoning processes? And what is the nature of the stimuli that form the association? We discuss these questions in turn.

The IAT was designed to bypass the limitations of introspection and self-presentational biases that affect self-report measures. For this reason, it has been extensively used to assess attitudes toward people (e.g., Greenwald et al., 1998; Jelenec & Steffens, 2002; Neumann, Hulsenbeck, & Seibt, 2004), concepts (e.g., Sherman, Rose, Koch, Presson, & Chassin, 2003), and the self (Aidman & Carroll, 2003; Greenwald & Farnham, 2000). Of course, there is no reason to suspect that participants would try to conceal their associations between construal level and psychological distance. Rather, it is the fact that the IAT does not rely on introspection that makes it suitable for the present aim, which is to demonstrate an intuitive tendency to associate greater psychological distance with higher construal level.

It is important to note, however, that although the IAT reduces the role of conscious intention, it does not speak to the question of spontaneous activation of the associations. In other words, the IAT assesses only the relative strength of the rival associations rather than the absolute strength of any of the pitted associations (Fazio & Olson, 2003; Nosek et al., in press). Therefore, the hypothesis that more psychologically distant stimuli would spontaneously activate concepts that relate to higher construal level (and that higher construal level automatically activates concepts that relate to psychological distance) is currently only speculative. Our results speak only to a non-deliberate preference for the CLT congruent association over the CLT incongruent association when indirectly forced to choose between the two.

One similarity between our studies and real-life situations should be pointed out, however. In real-life situations, as in our studies, people often have to match psychological distance and construal level, inasmuch as most stimuli are at a certain distance and, also, must always be construed at a certain level. That is, whenever we try to construe a target (event or object), one of the two possible pairings (more or less proximal with more or less concrete) must always be chosen. It is possible, then, that the implicit associations found in the present research unconsciously affect explicit judgments and decisions that relate to construal level and psychological distance.

It is also worth considering the nature of the stimuli that form the association between construal level and psychological distance. Researchers have argued that the IAT measure pertains mainly to the association between categories rather than to the actual exemplars (De Houwer, 2001; Fazio & Olson, 2003). For example, Nosek et al. (in press) found IAT effects even with stimuli that had no meaning (*X* stands for mathematics, and *O* stands for art). Moreover, several studies that included both positive and negative exemplars under either positive or negative category labels have found that the results were affected mainly by the category labels and not by the exemplars (De Houwer, 2001; J. A. Mitchell, Nosek, & Banaji, 1999). For example, when British participants were asked to sort the target labels *foreign* and *British* and the attributes "positive" and "negative," they showed preference for the pairing of *British* and "positive," regardless of the fact that half the British exemplars were infamous figures and that half the foreign exemplars were beloved public figures (De Houwer, 2001). More important, De Houwer did not find any significant effect for the valence of the exemplars, but only for the valence of the categories.

Nevertheless, there is research showing that exemplars do contribute to IAT effects when they help define the meaning of the category label (Govan & Williams, 2004; J. A. Mitchell, Nosek, & Banaji, 2003; Nosek, Greenwald, & Banaji, 2005). For instance, Govan and Williams (2004) manipulated participants' pairing preference of the category labels *insects* and *flowers* with the attributes "pleasant" and "unpleasant" by changing the exemplars of the two target categories. One group of participants sorted insects exemplars, such as butterfly and cricket, and flowers exemplars, such as poison ivy and weed. These participants showed a preference for the pairing of *insects* with "pleasant" and *flowers*

with "unpleasant." The other group received the same category labels with insect exemplars, such as cockroach, and flowers exemplars, such as rose. These participants showed the reverse preference for the pairing of *flowers* with "pleasant" and *insects* with "unpleasant." It seems, then, that the IAT results reflect the association between two concepts that are defined jointly by the category label and the exemplars.

This line of research is consistent with our proposal that the association between psychological distance and construal level depends on the perceived psychological distance or the perceived construal level of the target, as determined by the context. For example, a person may perceive tomorrow as either near (right after today) or distant in time (after this long, long day is finally over). The level of the construal of the same event occurring tomorrow should therefore be affected by its current perceived temporal distance. Similarly, the same target (e.g., the concept "pets") can be perceived as either low-level construal (e.g., a type of animal) or high-level construal (e.g., the superordinate category of dogs). The perceived psychological distance (spatial, temporal, social, and hypothetical) of a target should therefore be affected by its current perceived construal level.

Conclusion

The present research used the IAT to demonstrate that people tend to associate psychological proximity with low construal level and psychological distance with high construal level more than they associate psychological proximity with high construal level and psychological distance with low construal level. Such association exists on the level of concepts, when people do not engage in construal of targets or in estimations of distance. The fact that the same pattern of associations emerged across four dimensions of psychological distance—temporal distance, spatial distance, social distance, and hypotheticality—supports the idea that these dimensions are different manifestations of one underlying concept of psychological distance. It would therefore be interesting for future research to explore the interrelations among the four dimensions of psychological distance and the possibility that psychological distance is a basic aspect of meaning that is assessed automatically upon encountering objects and events.

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Appendix A

Explicit Assessment of Associations Between Psychological Distance and Level of Construal

Method

Overview

Participants rated words on a scale of abstract versus concrete or close versus distant. Target words, related to one of the dimensions of psychological distance or construal level, were intermixed with unrelated words that served as distractors. We examined, within each dimension of psychological distance, whether words related to more distance would be rated as more abstract than words related to proximity and whether words related to higher construal level would be rated as more distant than words related to lower construal level.

Participants

Twenty-nine introductory psychology undergraduates participated in exchange for course credit. All were native Hebrew speakers.

Materials

We used 115 Hebrew words; 25 of the words were filler words. The test words (listed in Table 1) pertained to one of the following categories: proximal objects, distant objects; indicators of spatial proximity, indicators of spatial distance; temporally proximal events, temporally distant events; indicators of temporal proximity, indicators of temporal distance; socially proximal people, socially distant people; indicators of social proximity, indicators of social distance; real animals, imaginary creatures; indicators of reality, indicators of fiction; exemplars, categories; indication of abstractness, indication of concreteness.

The list of test words was compiled by 12 graduate students who were asked to provide examples of words that pertain to each of the above categories and who were not aware of the purpose of the study. We used only words that were suggested by at least three students, which were listed in only one category. We also ensured that words had no additional meanings that could be confusing in the context of the study.

We composed two questionnaires: One (answered by 13 participants) gauged ratings of abstractness on a scale from abstract (-7) to concrete (7). The other questionnaire (answered by 16 participants) gauged distance on a scale that ranged from far (-7) to close (7).

Results

Each dimension of psychological distance had two types of categories—objects that are psychologically distal versus proximal (e.g., dinner vs. the year 2025 for the temporal distance dimension) and words that indicate distance versus proximity (e.g., now vs. year for the temporal distance dimension). We compared the abstractness ratings of distal and proximal categories for each type of categories within each dimension of distance. We also compared the distance ratings of abstract and concrete categories.

Ratings of Abstractness

All the comparisons were consistent with the CLT prediction that distal categories would be rated as more abstract than proximal categories. Specifically, distal objects ($M = 4.54$, $SD = 1.91$) were rated as more abstract than proximal objects ($M = 5.6$, $SD = 1.05$), $t(12) = -2.03$, $p = .065$. Words that indicate physical distance ($M = -0.59$, $SD = 2.84$) were rated as more abstract than words that indicate physical proximity ($M = 1.31$, $SD = 2.33$), $t(12) = -2.6$, $p = .02$. Distant events ($M = -0.06$, $SD = 2.8$) were rated as more abstract than proximal events ($M = 2.94$, $SD = 1.8$), $t(12) = -3.84$, $p < .01$. Words that indicate temporal distance ($M = 0.09$, $SD = 2.42$) were rated as more abstract than words that indicate temporal proximity ($M = 1.78$, $SD = 1.92$), $t(12) = -3.13$, $p < .01$. Socially distant people ($M = -0.46$, $SD = 2.27$) were rated as more abstract than socially proximal people ($M = 1.88$, $SD = 2.96$), $t(12) = 3.15$, $p < .01$. Words indicating social distance ($M = -1.18$, $SD = 2.05$) were rated as more abstract than words indicating social proximity ($M = 0.63$, $SD = 2.41$), $t(12) = -3.99$, $p < .01$. Imaginary creatures ($M = 1.33$, $SD = 3.59$) were rated as more abstract than real animals ($M = 5.27$, $SD = 1.16$), $t(12) = 4.00$, $p < .01$. Finally, words indicating fiction ($M = -2.71$, $SD = 3.67$) tended to be more abstract than words indicating reality ($M = -1.38$, $SD = 1.91$), $t(12) = 1.09$, $p = .30$, although not significantly so.

Ratings of Distance

Distance ratings of abstract versus concrete words did not confirm CLT's prediction. Words that indicate abstractness were rated just as distant ($M = 2.81$, $SD = 1.97$) as words that indicate concreteness ($M = 2.69$, $SD = 2.03$; $t < 1$); contrary to CLT's assumption, categories (e.g., animal) were rated as more proximal ($M = 3.14$, $SD = 2.03$) than exemplars (e.g., dog; $M = -0.072$, $SD = 2.0$), $t(15) = 6.21$, $p < .0001$. We are not sure how to explain this opposite result. One possibility is that participants assumed that encountering an exemplar of a wider category might be sooner and more spatially proximal (e.g., it is more likely to encounter an animal than a dog), and therefore wider categories are closer (sooner, more proximal, more likely) than narrower categories.

(*Appendixes continue*)

Appendix B

The Stimuli in Hebrew

	Psychological distance				Construal level			
	Proximal		Distal		Low construal level		High construal level	
Experiment	Group	Words	Group	Words	Group	Words	Group	Words
1A	DVARIM SHEYIKRO BEOD MEAT ZMAN	*LEKHOL, MACHAR, SHTIA, SICHA*	DVARIM SHEYIKRO BEOD HARBE ZMAN	*ZIKNA, PRISHA, 2009, DOKTORAT*	KONKRETI	*SPETSIFI, MEFORAT, MUGDAR, MESUYAM*	MUFSHAT	*KLALI, ABSTRAKTI, ARTILAAI, UNIVERSALI*
1B	ZMAN KAROV	*SHNIA, DAKA, REGA, KVAR, MIYAD*	ZMAN RACHOK	*SHANA, ASOR, ACHAR KACH, ESHTAKAD, MIZMAN*	PRITIM	*PATISH, SELEK, PUDEL, CHAGURA, SPRITE*	KATEGORYOT	*YERAOT, BGADIM, CHAYOT, MAZON, RIHUT*
2A	DVARIM SHENIMTSAIM KAROV	*SEAR, DELET, KISE, NAALAIM*	DVARIM SHENIMTSAIM RACHOK	*MATOS, HASHEMESH, ANANIM, HAKOTEV*	KONKRETI	*SPETSIFI, MEFORAT, MUGDAR, MESUYAM*	MUFSHAT	*KLALI, ABSTRAKTI, ARTILAAI, UNIVERSALI*
2B	KAROV BMERCHAV	*PO, KAN, LEYAD, BESAMUCH*	RACHOK BMERCHAV	*SHAM, HARCHEK, BAMERCHAK, EY-SHAM*	PRITIM	*PATISH, SELEK, PUDEL, CHAGURA, SPRITE*	KATEGORYOT	*YERAOT, BGADIM, CHAYOT, MAZON, RIHUT*
3A	YEKARIM LELIBI	*HAVER, HORIM, YEDIDIM, ACHIM*	LO YEKARIM LELIBI	*OYVIM, ZARIM, YERIVIM, ALMONI*	KONKRETI	*SPETSIFI, MEFORAT, MUGDAR, MESUYAM*	MUFSHAT	*KLALI, ABSTRAKTI, ARTILAAI, UNIVERSALI*
3B	ANACHNO	*OTANU, SHELANU, ATSMENU, LANU, ETSLENU*	ACHERIM	*HEM, OTAM, SHELAHEM, LAHEM, ETSLAM*	PRITIM	*PATISH, SELEK, PUDEL, CHAGURA, SPRITE*	KATEGORYOT	*YERAOT, BGADIM, CHAYOT, MAZON, RIHUT*
4A	YETSURIM AMITIAIM	*CHIPUSHIT, KELEV, DOLFIN, SUS*	TETSURIM DIMYONIAIM	*DRAKON, TROL, NIMFA, KIKLOP*	KONKRETI	*SPETSIFI, MEFORAT, MUGDAR, MESUYAM*	MUFSHAT	*KLALI, ABSTRAKTI, ARTILAAI, UNIVERSALI*
4B	METSIAUT	*AMITI, MAMASHUT, REALIZEM, HISTORIA, OTENTI*	DIMYON	*AGADA, BIDYONI, ASHLAYA, CHALOM, HAZAYA*	PRITIM	*PATISH, SELEK, PUDEL, CHAGURA, SPRITE*	KATEGORYOT	*YERAOT, BGADIM, CHAYOT, MAZON, RIHUT*

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