



Case Report

How much information to sample before making a decision? It's a matter of psychological distance

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ABSTRACT

When facing a decision, people look for relevant information to guide their choice. But how much information do they seek to obtain? Based on Construal Level Theory, we predicted that psychological distance from a decision would make participants seek more information prior to making a decision. Five experiments supported this prediction. When facing a decision between two decks of cards or two urns with marbles, participants preferred to sample more units of information for the purpose of making this decision in the distant future or for a friend (vs. in the near future or for themselves). These results suggest that expanding the scope of sampled experience is yet another way by which psychological distance affects decision making.

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1. Introduction

People learn from experience. When facing a decision, they look for relevant information to guide their choice. But how much information would they choose to consider before making a decision? How do people determine whether they should consult a small or a large number of experiences? For example, when choosing between two dishes, would a decision maker consider only a few reviews or require many reviews before deciding? Given the important impact of extent of sampling on the quality of decisions, surprisingly little is known about the factors that determine it.

We would like to propose, based on Construal Level Theory (Liberman & Trope, 2008, 2014; Trope & Liberman, 2010), that psychological distance from a decision situation makes people construct larger data bases from which to draw conclusions. In the current research, we address the question of how psychological distance affects the size of the sample that decision makers seek to obtain before making a decision.

1.1. Sample size and decision making

Reliance on large samples is desirable, as large samples are more representative and thus afford more accurate estimates. It is not

surprising, then, that the breadth of sampling has been found to have important consequences for the quality of decisions. In the area of investing, frequent checking of outcomes, which is akin to using smaller samples of experience, leads to under-investment in relatively risky but high-paying alternatives (e.g., stocks) and sub-optimal preference for safer options (e.g., bonds; Benartzi & Thaler, 2007; Thaler, 1999). As another example, in studies that examined learning from experience, relying on small samples of one's own experience was found to lead to sub-optimal decision due to underweighting of rare events (Hertwig, Barron, Weber, & Erev, 2004; Plonsky, Teodorescu, & Erev, 2015).

Although large samples are desirable, collecting them comes at a cost, because it takes time and effort. Therefore, whenever feasibility considerations prevail over desirability considerations, decision makers would tend to prefer smaller samples. Because CLT suggests that psychological distance affects the balance between desirability and feasibility considerations, it should also be relevant to preferred sample-size.

1.2. Psychological distance and extent of pre-decisional sampling

People make decisions that might be either psychologically proximate or psychologically distant. For example, one might decide between restaurants for one's own birthday dinner that is certain to take place in one's own neighborhood tomorrow (an event that is close on all four dimensions of psychological distance – time, space, social distance and probability). Alternatively, one might advise a friend on which restaurant to choose for her birthday dinner that might or

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might not take place a few months later in a distant city (an event that is distal in time, space, social distance and probability). We would like to suggest that the psychological distance from a decision, that is, its distance in time, space, probability and social perspective, would affect the breadth of the sample considered prior to making it. In the example above, we predict that fewer restaurant reviews would be sampled in the former case compared to the latter case.

This prediction derives from Construal Level Theory (CLT, Trope & Liberman, 2010), according to which proximate objects and events tend to be represented using low-level construals, which are concrete, contextualized and include subordinate and incidental features. Low-level construals of actions pertain to aspects of *how* an action is implemented. Distant objects and events, on the other hand, tend to be represented using high-level construals, which are abstract, schematic, and decontextualized. High-level construals of actions pertain to aspects of *why* an action is implemented.

Because desirability reflects the superordinate, why aspect of an action whereas feasibility reflects the subordinate, how aspect of an action (Carver & Scheier, 1981, 1990; Vallacher & Wegner, 1987), when desirability is weighted against feasibility, increasing psychological distance should tilt the balance towards giving more weight to desirability and less weight to feasibility. Much research within CLT supported this prediction with temporal distance (Freitas, Salovey, & Liberman, 2001; Liberman & Trope, 1998; Sagristano, Trope, & Liberman, 2002), social distance (Danziger, Montal, & Barkan, 2012; Liviatan, Trope, & Liberman, 2008), spatial distance (Henderson, Fujita, Trope, & Liberman, 2006) and probability (Wakslak, Trope, Liberman, & Alony, 2006). For example, in a decision to attend a guest lecture a year later, participants gave more weight to desirability considerations (how interesting is the lecture) and less weight to feasibility considerations (convenience of the lecture's timing; Liberman & Trope, 1998) compared to a decision to attend the lecture a day later. Similarly, participants thought that a person's actions were determined more by desirability concerns and less by feasibility concerns when that person was less similar (i.e., less socially proximal) to them (Liviatan et al., 2008, Experiment 3).

Based on this line of theorizing and past findings, we predicted that when people decide how much information to sample for the purpose of making a decision for the distant (vs. the proximal) future or for a friend (vs. for themselves), desirability considerations (larger samples are more reliable) would prevail over feasibility considerations (larger samples are costly to obtain) and lead them to obtain larger samples prior to deciding.

1.3. The current research

We conducted two preliminary experiments to establish the premise of our research, namely, that participants view larger samples of experience as desirable yet more costly. These experiments are reported in the Supplementary material. Five experiments then examined the prediction that, when sampling information for the purpose of making a decision, the number of sampled units of information would increase as the psychological distance from the decision increases. In Experiments 1–4 participants imagined a game in which the player has to decide between two decks of cards (Experiments 1 and 2) or between two urns with colored marbles (Experiment 3 and 4) and then draw one card/marble from the chosen deck/urn to determine one's payoff. Before making the decision, the player could sample the cards in the decks or the marbles in the urns as much as he or she wished, and we recorded the size of the chosen sample. In Experiments 1 and 3 we manipulated temporal distance and in Experiments 2 and 4 we manipulated social distance. Experiment 5 was based on the procedure of Experiment 2 but introduced a real decision with actual monetary outcomes. We report all measures, manipulations, and exclusions in these experiments.

2. Experiments 1 and 2

In Experiment 1, participants imagined playing the decks-of-cards game either tomorrow (temporally near condition) or a year later (temporally distant condition). In Experiment 2, they imagined playing this game themselves (socially proximal condition) or advising a friend that is about to play the game (socially distal condition).

2.1. Method

2.1.1. Participants

In these and all subsequent experiments, we expected a medium to small effect (Cohen's *d* of 0.40). A power of 80% for a one-directional test suggested that we should recruit about 80 participants per condition. For each of experiments 1–4 that were conducted on-line, data was analyzed half-way through data collection to make sure there were no problems with the administration or the collection of data, but data collection was continued regardless of the results.

The final sample included 155 participants for each of Experiments 1 and 2. Participants were from the United States, completed the experiments over the internet for a compensation of \$0.1, and were recruited via Amazon's Mechanical Turk. Two additional participants completed Experiment 1 but were excluded because of extreme responses (samples of 15,678,000 or 999,999 cards, from the near and distant conditions, respectively). Dropout rates were rather low, probably because the study was short. Specifically, only one participant (from the distant condition) started Experiment 1 but failed to complete it. In each experiment, participants were randomly assigned to conditions.

2.1.2. Procedure

In Experiment 1, Participants were asked to imagine that they are playing a game either "tomorrow" (the near future condition) or "in a year from now" (the distant future condition). Participants read the following description of the game:

The game includes two consecutive stages: The sampling stage and the choice stage.

At the choice stage (the second stage) you will be asked to select once between two decks of cards. Your choice will lead to a random draw of one card from this deck. Each card has a positive or negative number on it, and the number written on the drawn card will be your monetary bonus or penalty for the game (in dollars).

During the sampling stage (the first stage) you will be able to sample the two decks. On each sampling trial, you will select one deck, a random card will be drawn from this deck, and you will see the number that is written on it. Each sampling trial takes 2 seconds.

Then, participants in the near (distant) future condition were asked:

If you played this game tomorrow (on a day a year from now), how many cards would you like to sample in the sampling stage before you move on to the choice stage?"

In Experiment 2, the procedure was similar but the game was described with no specific time reference. Participants in the near condition were asked to imagine that they were playing the game and to indicate how many cards they would sample, whereas participants in the distant condition were asked to imagine that a friend is playing the game and to indicate how many cards they would advise him/her to sample.

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