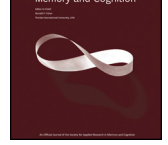




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Original Article

How far does it feel? Construal level and decisions under risk



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ABSTRACT

Research has shown that framing decisions as gains or losses distorts human judgment. Human judgment is also assumed to be influenced by the actual level of construal. Whether decisions are construed in a more detailed manner (low level construal) or in a more abstract manner (high level construal) can depend on perceived psychological distance. In the present studies, we examined the influence of framing and psychological distance on risk taking. In three studies with students ($n=65$), physicians ($n=60$), and hotel managers ($n=39$), we found evidence that construal level influences risk seeking in gain situations, but not in loss situations. Furthermore, the framing effect could be replicated in psychologically close situations, and was eliminated (Studies 1 and 2) or reversed (Study 3) in psychologically distant situations. Our findings illuminate the interplay of framing and construal level, and points out their applicability in organizational decision making.

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What influences professional decision making? According to theories of bounded rationality (e.g., [Selten, 2001](#); [Simon, 1955, 1991](#)), people do not always carefully analyze decision problems, but often rely on intuitions and heuristics when making decisions. Based on this differentiation, several researchers have proposed two cognitive systems: While system 1 is intuitive, fast and automatic, system 2 is deliberative, slower and controllable (see [Evans, 2009](#) for an overview; [Kahneman, 2003](#); [Stanovich & West, 2000](#)). Research suggests that relying on intuitions and applying rules of thumb (heuristics) can improve decision making ([Gigerenzer, Todd, & The ABC Research Group, 1999](#)), but can also lead to certain biases that distort judgments (e.g., [Tversky & Kahneman, 1974](#)).

In this article we focus on the heuristics-and-biases program as [Tversky and Kahneman \(1974\)](#) have introduced it. Conclusions from their research have made it outside of science into practical decision making and have led to awareness for at least some of these biases. For example, due to an increasing amount of popular press on the topic, decision makers might be aware of the fact that unrelated pieces of information (anchors) can influence subsequent decisions, or that intensive press coverage makes events seem more likely than they really are ([Kahneman, Lovallo, & Sibony, 2011](#); [Tversky & Kahneman, 1974](#)). Most decision makers might

also know that the framing of decisions in terms of gains and losses can lead to contradicting decisions in objectively identical problems. This phenomenon has become known as the framing effect ([Tversky & Kahneman, 1981](#)).

But does it also make a difference whether a decision is made for oneself, a close friend, or an employee? Will a manager take more risks when he makes a decision for a branch in another country than when making the same decision for a branch in his home country? The interplay of psychological distance and risk taking in professional settings is not often explored. Therefore, we investigated these questions in three studies that illuminate how practitioners' decisions under risk might be distorted.

Decisions under risk have received special attention by [Slovic \(2010\)](#) who assumes that risk perception is usually accompanied by some form of emotion or affect. The perception of risks as feelings thus leads to a reliance on intuition and a neglect of objective probabilities when judging risks (e.g., [Slovic, 2010](#); [Slovic & Peters, 2006](#); [Slovic & Västfjäll, 2010](#)). This has, for example, been demonstrated for simple investment choices: While healthy people lost money, patients who lacked affect due to neurological impairment did not ([Shiv, Loewenstein, Bechara, Damasio, & Damasio, 2007](#)). [De Martino \(2006\)](#) points out that affect also influences the framing effect, and experiments using magnetic resonance imaging suggest that the framing effect is stronger among people who strongly rely on their intuitions ([Kahneman & Frederick, 2007](#)). Based on these findings, we argue that risk taking behavior is a form of intuitive decision making and investigated how it is affected by the level of construal.

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1. Construal level and decision making

Construal level theory of psychological distance is based on the assumption that only the here and now can be directly experienced; the future, other places and other people are believed to be represented in a more abstract way such as imaginations, memories, plans or hopes. Therefore, the theory states that objects, events or individuals are represented as either close or distant. The reference point is thereby the self in the here and now, from which an object can move away in terms of time, space, social distance or hypotheticality. While psychological distance has been linked to abstract, high level construals like broad concepts of the object, psychological closeness has been linked to concrete, low level construals such as discrete features of the object (Trope & Liberman, 2010). This also works vice versa in the way people judge abstract objects to be more distant (Bar-Anan, Liberman, & Trope, 2006).

Empirical studies support the notion that psychological distance is associated with decision making by activating a certain level of construal (Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007). For example, participants who were asked to give advice to another person concerning a job offer that was perceived as distant, gave more weight to abstract attributes (e.g., personal satisfaction) than concrete attributes (e.g., salary; Kray, 2000). Another study demonstrated that participants were less prone to the sunk cost bias (continuing to invest in an already failing project; Arkes & Blumer, 1985) when the investing company was located in a distant as opposed to a near location (Wakslak & Liberman, 2006). Research in consumer behavior has demonstrated that people prefer to wait for a product delivery and save the fee when the product is described in a more abstract manner, as opposed to a concrete manner (Malkoc, Zauberan, & Bettman, 2010).

Especially important decisions (e.g., high stake decisions) usually involve thinking about consequences, and are thus suggested to be influenced by the activated level of construal (Kim, Schnall, & White, 2013). Trope and Liberman (2010) highlight that inducing a concrete mindset (low level construal) shifts the focus onto the feasibility of an action (e.g., probability of a positive outcome), while an abstract mindset (high level construal) shifts the focus on its desirability (e.g., attractiveness of the outcome). For example, in time-dependent gambling tasks participants preferred gambles with high probability in the near future, but gambles with a high outcome in the distant future. As a conclusion, the authors propose that temporal distance should lead to more risk seeking due to a focus on the desirability of an outcome (Sagrignano, Trope, & Liberman, 2002). Getting back to the framing effect, Trautmann and Van de Kuilen (2012) point out that people intuitively interpret prospects in risky decisions as either desirable or feasible. The interplay of construal level and risk seeking has recently been further investigated in a series of studies that experimentally manipulated the level of construal by different ways of priming. Participants who were primed with a high (versus low) construal level engaged in more risk taking and judged risks as less probable (Lermer, Streicher, Sachs, Raue, & Frey, 2014a; Streicher, Lermer, Sachs, & Frey, 2012). This is also in line with findings by Wakslak and Trope (2009), who demonstrated that participants in a high level construal mindset made lower probability judgments in neutral tasks than participants in a low level construal mindset.

The current studies add to these findings by investigating the influence of psychological distance in risky decision tasks, which is believed to better reflect practical decision making than a priming of construal level. Furthermore, the current studies not only take a look at gain situations, but also at loss situations and especially focus on decision making of practitioners. It has repeatedly been demonstrated that people engage in more risk seeking behavior when confronted with potential losses as opposed to potential gains. This behavior is known as loss aversion and assumed to be

grounded on people's hope to avoid the unpleasant experience of loss (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). While we have introduced research that investigated the influence of construal level on risk seeking in gain situations, there is a lack of research looking at the influence of construal level in loss situations. Shelley (1991), for example, explored whether a time delay in losses affects risk seeking and could not draw a clear picture. A series of field experiments on risk communication demonstrated that persuasive loss framed messages were stronger when paired with concrete features, while gain framed messages were stronger when paired with abstract features (White, MacDonnell, & Dahl, 2011). Furthermore, loss framed messages activated a more concrete mindset, while gain framed messages activated a more abstract mindset. In a similar line of research, the impact of persuasive gain framed messages was stronger when they concerned socially distant as opposed to socially proximal entities (Nan, 2007). Interestingly, in this experiment, the impact of loss-framed messages was not influenced by psychological distance. These findings could be explained by the noted assumption that people focus on the desirability of an outcome when in an abstract mindset (e.g., attractive gain), and on its feasibility when in a concrete mindset (e.g., chance of avoiding loss). Therefore, we expect an opposite effect of psychological distance in loss situations compared to gain situations. This is further supported by experiments connecting regulatory focus theory (Crowe & Higgins, 1997) and construal level theory: Participants in a concrete mindset preferred a prevention focus (avoiding loss) over a promotion focus (attaining gains; Förster & Higgins, 2005; see Bryant & Dunford, 2008 for an overview).

Decision makers are constantly confronted with different dimensions of psychological distance. Their decisions can have immediate (time: proximal) or long-term consequences (time: distal); can concern the people around them (space: proximal) or people in another country (space: distal); or can affect themselves, their company (social distance: proximal), or other companies (social distance: distal). Numerous laboratory and field experiments have already shown that there are discrepancies in decision making based on whether the decision is made for oneself versus someone else (Garcia-Retamero & Galesic, 2012; Hsee & Weber, 1997; Polman, 2012; Stone, Yates, & Caruthers, 2002), for now versus later (Malkoc, Zauberan, & Ulu, 2005; Pronin, Olivola, & Kennedy, 2007; Sagristano et al., 2002), or for here versus a distant location (Goodman & Malkoc, 2012). Additionally, empirical research has suggested that the perceived distance can also be influenced indirectly. An example highly relevant for the professional context is politeness. Politeness creates social distance and distance, in turn, causes people to act more politely (Stephan, Liberman, & Trope, 2010). The manner in which clear facts are presented can also lead to a variation in perceived distance. Targets or events presented in larger numbers and smaller units, such as 7 days, were shown to be perceived more concrete and as more dangerous than smaller numbers and larger units, such as 1 week (White & Kwan, 2013). Therefore, manipulating construal level via psychological distance is highly reflecting real life situations. Psychological distance is thus assumed to directly influence the level of construal and, in turn, guide judgment and decision making (Bar-Anan et al., 2006; Fujita, Henderson, Eng, Trope, & Liberman, 2006; Trope et al., 2007).

In the present research, we investigated the influence of construal level on intuitive decision making in risky choice problems by manipulating psychological distance, because distance dimensions are more or less inherent in every decision. In different decision problems, we varied several dimensions of psychological distance such as social, spatial and temporal distance. In each problem, two or three of these dimensions were combined in a way that was still realistic for the participants. We aimed at exploring how

simple changes of perceived distance in the description of decision problems influence intended risk taking behavior. Furthermore, we investigated how effects of psychological distance interact with the well-known framing effect (Tversky & Kahneman, 1981). To date, this interaction remains largely unexplored (cf. Trautmann & Van de Kuilen, 2012), but is of great importance for practitioners, who can be confronted with both effects at the same time.

2. Hypotheses

The present investigation consisted of three studies: Study 1 was conducted in a university setting and the other two studies with practitioners, specifically physicians (Study 2) and hotel managers (Study 3). We measured differences in participants' preferences for risk and security in risky choices, framed as either gains or losses, and manipulated the level of construal by varying psychological distance. Prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981) states that people are risk averse when confronted with gains and risk seeking when confronted with losses, which can be induced by the framing of decisions as gains or losses. According to recent research on construal level theory (Trope & Liberman, 2010), which shows that people are risk averse when in low construal level mindset and risk seeking when in an high construal level mindset, construal level is expected to moderate the influence of framing effects on decision making. We expect that an increase of construal level shifts the focus on the desirability of the outcome. While in a gain frame, this should lead to more risk seeking, in a loss frame we expect more risk avoidance due to the unattractiveness of the potential loss. This may be stated in the following formal hypotheses:

Hypothesis 1a. In a gain frame, people are more risk averse in a low construal level than in a high construal level mindset.

Hypothesis 1b. In a loss frame, people are more risk seeking in a low construal level than in a high construal level mindset.

While Hypotheses 1a and 1b were developed prior to collecting the data, the analysis indicated a second hypothesis that we approached in an exploratory manner:

Hypothesis 2. A low construal level leads to stronger framing effects than a high construal level.

3. Study 1

3.1. Method

3.1.1. Participants and design

Our sample included 65 students (72% female) aged 18 to 47 ($M = 23.03$, $SD = 5.27$) from a German university who agreed to participate in this study. The participants were recruited during lecture and were given a brief paper-and-pencil survey that included an unrelated study. For participating in both studies they received course credit, and had the chance of winning one out of three textbooks on social psychology. Participants were randomly assigned to one of two conditions of the 2 (between) \times 2 (within) mixed design. The between-subjects variable was *psychological distance* (proximal vs. distal) and the within-subjects variable was *framing* (loss vs. gain).

3.1.2. Materials and procedure

We used the Asian disease problem as gain frame (Tversky & Kahneman, 1981) and a similar problem as loss frame to measure the influence of construal level on decision making in an applied and established setting. Construal level was manipulated by framing the problem as psychologically proximal (low construal level) or distal (high construal level). In the gain frame problem, participants

in the proximal condition were given the following instruction (parentheses excluded):

Imagine you are part of a student board (*social dimension*) at your University that is included in important decisions. Currently (*temporal dimension*), your city (*spatial dimension*) is being threatened by a new flu virus that is expected to kill 600 inhabitants. Two alternative programs to combat the disease have been proposed.

In the distal condition participants were asked to imagine being a consultant in health care, and that an unusual disease will be threatening some countries in the coming months. The loss frame problem concerned employees that have to be dismissed. Participants in the proximal condition were asked to imagine they worked for a company in the same city as their university. The participants immediately had to lay off 300 employees along with their supervisor. In the distal condition, participants were asked to imagine being a consultant for a company abroad that will have to dismiss 300 employees the following year. However, participants were offered two options that included the possibility of having to dismiss fewer employees. Instead of making a choice between options, we asked for participants' preference for the safe (e.g., 200 employees will be dismissed) or the risky alternative (e.g., 1/3 probability that nobody will be dismissed or 2/3 probability that 300 employees will be dismissed) on a six-point Likert scale from 1 (*strong preference for the safe option*) to 6 (*strong preference for the risky option*). The manipulation check consisted of three items concerning perceived distance, concreteness and hypotheticality of both decision problems on a 5-point scale from 1 (*proximal*) to 5 (*distal*), $\alpha = .73$.

3.2. Results and discussion

A 2 (psychological distance) \times 2 (framing) repeated measure ANOVA did not show main effects, but indicated an interaction of framing and psychological distance, $F(1, 62) = 6.72$, $p = .01$, $\eta_p^2 = .10$. In the gain frame, low psychological distance led to more risk avoidance and high psychological distance to more risk seeking, $t(63) = 2.65$, $p = .01$, $d = .67$ (see Fig. 1). In the loss frame, there was no influence of psychological distance on risk seeking. Furthermore, in the proximal condition, participants preferred the safe option in the gain frame and the risky option in the loss frame, $t(31) = 2.33$, $p = .027$, $d = .61$, which replicates the framing effect. However, in the distal condition there was no difference between participants' preferences.

Concerning the manipulation check, a *t*-test revealed that participants in the proximal condition ($M = 3.15$, $SD = 1.21$) showed lower ratings than participants in the distal condition ($M = 3.91$, $SD = 1.04$), $t(63) = 2.78$, $p = .007$, $d = .69$, thus suggesting a successful

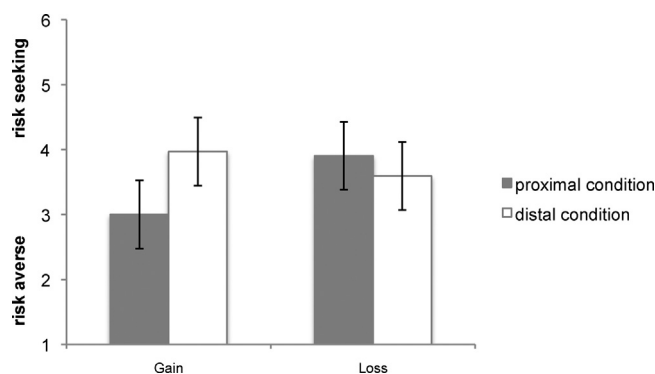


Fig. 1. Preference for the risky option in the proximal versus distal condition, in the gain and the loss frame. Error bars indicate 95% confidence intervals.

manipulation of psychological distance. By manipulating psychological distance, we aimed at activating low or high level construals when thinking about risky choices. In line with Hypothesis 1a, people were more risk averse in the proximal/gain frame condition than in the distal/gain frame condition. There was no effect of psychological distance on the loss frame condition and Hypothesis 1b could not be supported. However, since the tendency is in line with Hypothesis 1b, the manipulation of construal level might have been stronger in the gain condition than in the loss condition. Saving or losing lives might be more polarizing than dismissing or keeping employees. Furthermore, the framing effect could only be replicated in the proximal condition, but was eliminated in the distal condition, which supports Hypothesis 2. Still, the different setting of the gain and loss frame might have confounded our results. Based on the assumption that intuitive decision making develops through experience (e.g., Betsch, 2008; Klein, 1993; Reyna, 2004), one might criticize that the student sample used in Study 1 did not rely on their intuitions when considering the options due to a lack of experience with the topic. Therefore, in Studies 2 and 3, which were conducted parallel, we investigated practitioners' decision making in their fields of expertise.

4. Study 2

The findings from Study 1 suggest an interaction of gain versus loss framing and the level of construal that influences risky choice behavior. In Studies 2 and 3, we further investigated this interplay and its applicability in organizational decision making. We chose to study physicians and hotel managers, since we had easy access to both of these samples. In professional settings, decision makers are continuously confronted with problems that are framed either as rather proximal or rather distal. Following Trope et al. (2007), this framing activates different mindsets. Physicians are one group of professionals that have to make high-stake and often quick decisions on a daily basis. For example, in 2012, physicians in Germany were on strike because the regulations of health insurance companies shortened their fees for consultations. This development leads to less time spent with each patient, which is accompanied by more anonymity in medical offices, and therefore an increase in perceived social distance. An even stronger perceived social and also spatial distance is assumed to be found in online consultations. Influenced only by the activated level of construal, the final medical decision or advice might be completely different and potential consequences can be severe. Therefore, it is highly relevant to investigate whether our findings also affect professionals in a clinical setting.

4.1. Method

4.1.1. Participants and design

Overall, 150 physicians started the online questionnaire. Of these participants, 72 cancelled the survey at one point, 17 had to be excluded due to technical problems of the survey tool, and one due to not being a physician. Overall, 60 physicians (54% female) aged 27 to 61 ($M = 37.31$, $SD = 8.43$) from Germany completed the survey. The study was conducted online and 124 physicians of different specializations were contacted directly through e-mail (based on personal contacts and online search). However, since e-mails were forwarded from physicians to their colleagues and we also promoted the study on Facebook, a clear dropout rate could not be calculated.

The specializations of the physicians included primary care, anesthesia, cardiology, orthopedics, gynecology, surgery, pediatrics, dermatology, urology, internal medicine, and psychiatrics. Most of the participants (34%) had 5 to 10 years experience, 30%

had 1 to 4 years experience, 16% had 10 to 20 years experience, 13% had more than 20 years experience, and 5% had less than 1 year experience. For participating in the study, physicians had the chance of winning one out of two books on medical decision making. Participants were randomly assigned to one of two conditions of the 2 (between) \times 4 (within) mixed design. The between-subjects variable was *psychological distance* (proximal vs. distal) and the within-subjects variable was *framing* (2 \times loss vs. 2 \times gain).

4.1.2. Materials and procedure

Participants were presented with four medical decision problems, either described as psychologically proximal ($n = 28$) or psychologically distal ($n = 32$), in random order: two in a gain frame (decision 1 and 2) and two in a loss frame (decision 3 and 4). Decision 1 concerned an individual treatment, decision 2 a general treatment (adopted from Garcia-Retamero & Galesic, 2012), decision 3 was the Asian disease problem (Tversky & Kahneman, 1981), which is also a general treatment decision, and decision 4 concerned an individual treatment decision. Each problem offered a risky option with a high outcome and a safe option with a low outcome, analogue to the classic Asian disease problem, which was also included. Choice options did not differ in expected value.

Construal level was manipulated by psychological distance in the way that the problems varied in terms of temporal, social, and spatial distance. As an example, decision 2 was described as follows (the distance manipulation is highlighted through bold letters):

Proximal condition: **You** would like to implement an innovative treatment concept for 100 of **your patients** whose health situation has not improved with the standard treatment. **Today** you need to decide how to proceed.

Distal condition: **Next month** a new **colleague** will start in your practice and would like to implement an innovative treatment concept for 100 **patients** whose health situation has not improved with the standard treatment. Which approach would you prefer?

Concept A: There is an 80% probability that the health situation of 40 patients will improve.

Concept B: The health situation of 30 patients will surely improve.

In order to get a clearer picture of participants' preferences, we changed the rating scheme from Study 1 to Study 2. Besides making a choice between the options, participants indicated their preference for the risky alternative (concept A in the example) and their preference for the safe alternative (concept B in the example) separately and for each situation on a 7-point scale from 1 (*little preference*) to 7 (*strong preference*).

5. Results and discussion

Participants' choices show clear differences between gain and loss frames, but not between psychological distance conditions (see Figs. 2 and 3). The analysis of our data supports this notion, especially for one gain-loss pair in the proximal condition: Participants preferred the sure option in decision 1 (gain) and the risky option in decision 4 (loss), $\chi^2(1, 28) = 4.77$, $p = .029$, which are the individual treatment decisions. This is in line with prospect theory, stating that people are risk averse in gain frames and risk seeking in loss frames. In sum, in the analysis of choices, we did not find support for Hypotheses 1a and 1b. Nevertheless, there was a framing effect in the proximal, but not in the distal condition, which is in line with Hypothesis 2. Descriptively, the distal condition also showed the framing effect, but obviously weaker and therefore still supports Hypothesis 2.

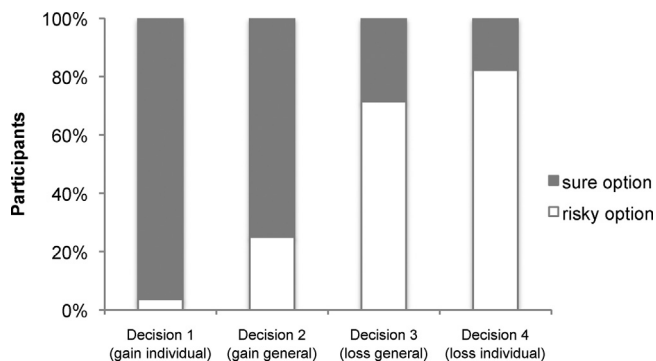


Fig. 2. Choice of physicians between the sure and the risky option for each decision in the proximal condition.

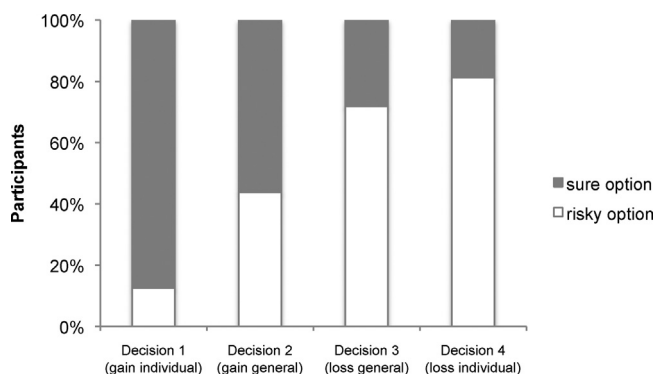


Fig. 3. Choice of physicians between the sure and the risky option for each decision in the distal condition.

In the next step, we took a look at the preferences for each option. A 2 (psychological distance) × 4 (framing) repeated measures ANOVA revealed that participants had higher preferences for the sure option in the gain than in the loss decisions, $F(3, 174) = 49.66, p < .001, \eta_p^2 = .46$, and higher preferences for the risky option in the loss than in the gain decisions, $F(3, 174) = 50.56, p < .001, \eta_p^2 = .47$. This replicates the classic framing effect. Preferences for the sure option were not affected by psychological distance (see Fig. 4), $F(3, 174) = 1.17, p = .32, \eta_p^2 = .02$, but preferences for the risky option were affected by an interaction of framing and psychological distance (see Fig. 5), $F(3, 174) = 4.40, p = .01, \eta_p^2 = .07$.

A further investigation of that interaction revealed that psychological distance seems to affect the general, but not the individual, treatment decisions. The individual treatment decisions 1 and 4

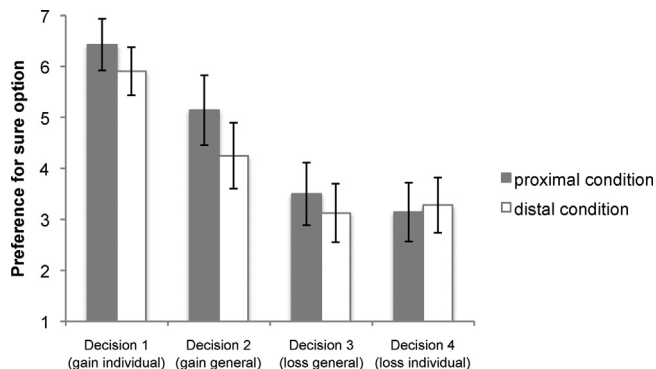


Fig. 4. Preference for the sure option in the proximal versus the distal condition, in the gain (decision 1 and decision 2) and the loss frame (decision 3 and decision 4). Error bars indicate 95% confidence intervals.

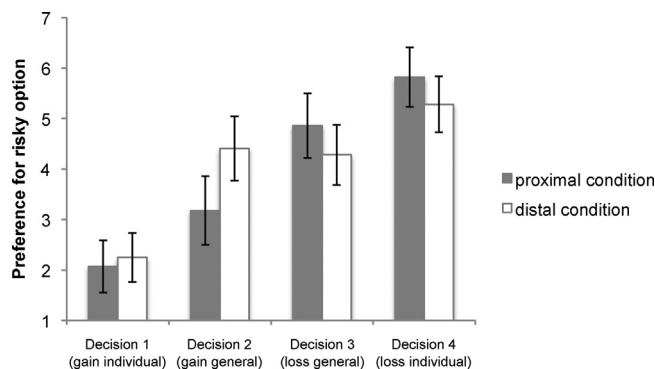


Fig. 5. Preference for the risky option in the proximal versus the distal condition, in the gain (decision 1 and decision 2) and the loss frame (decision 3 and decision 4). Error bars indicate 95% confidence intervals.

showed strong framing effects, both in the proximal, $t(27) = -9.52, p < .001, d = 2.97$, and the distal condition, $t(31) = -7.88, p < .001, d = 1.87$, and did not differ across psychological distance conditions. However, the general decisions 2 and 3 revealed an interesting pattern: Participants were more risk seeking in decision 2 (gain) in the distal than in the proximal condition, $t(58) = -2.65, p = .01, d = .69$, which supports Hypothesis 1a. As shown in Fig. 5, the tendency of decision 3 (and also decision 4, both loss) is in line with Hypothesis 1b, indicating more risk seeking for the proximal than the distal condition, but this is not supported statistically. Furthermore, while we found a framing effect for decisions 2 and 3 in the proximal condition, $t(58) = -3.56, p = .001, d = 1.00$, the framing effect disappeared in the distal condition, $t < 1$. This strongly supports Hypothesis 2, stating that the framing effect is weaker in the distal than in the proximal condition.

As in Study 1, Study 2 revealed an interaction of framing and psychological distance for general treatment decisions, indicating that construal level moderates framing effects. In line with Hypothesis 1a, physicians were more risk averse in the low construal level/gain frame condition than in the high construal level/gain frame condition. We also found some descriptive support for Hypothesis 1b, showing that risk seeking is lower in the high construal level/loss frame compared to the low construal level/loss frame condition. Furthermore, we found a framing effect in the proximal, but not in the distal condition, indicating support for Hypothesis 2.

The individual treatment decisions did show a framing effect, but were not affected by psychological distance manipulation. An explanation could be that the high construal level manipulation failed for decisions 1 and 4. The fact that these decisions concerned individual treatments might have reduced perceived psychological distance. This notion is supported by the fact that, across conditions and especially concerning preferences for the risky option, we found a difference within the gain frame (decisions 1 and 2), $t(59) = -7.02, p < .001, d = 1.02$, and the loss frame (decisions 3 and 4), $t(59) = -4.30, p < .001, d = .60$. While decision 1 shows high risk avoidance, decision 4 shows high risk seeking. Based on our hypotheses, this indicates that both decisions are perceived as psychologically proximal.

Study 2 further supports the findings of Study 1, indicating that construal level moderates the framing effect. Participants were more risk seeking in psychologically distal as opposed to psychologically proximal gain frames. High psychological distance and therefore an activation of high level construals not only led to a reduction of the framing effect, but rather eliminated it. The fact that we did not find this for individual treatment decisions might be due to a failed high construal level manipulation, as mentioned

above. Overall, results from Study 2 replicate the findings from Study 1 in a professional setting.

6. Study 3

Study 3 was conducted parallel to Study 2 with the same design, but instead of physicians we asked hotel managers. Therefore, the content of the problems was adapted to a management setting. Managers are another group of professionals that have to make high-stake financial or personnel decisions on a daily basis. For example, perceived closeness or distance toward employees might influence personnel decisions. Investment decisions that imply some kind of distance might affect the invested amount. We developed four decision tasks in a hotel management setting and chose different topics (e.g., money, employees) in order to increase the chances of replicating the framing effect.

6.1. Method

6.1.1. Participants and design

Overall, 92 hotel managers started the online questionnaire. Of these, 53 cancelled the survey at one point, while 39 hotel managers (19% female) aged 23 to 69 ($M = 44.44$, $SD = 12.35$) from Germany participated in the whole study. The study was conducted online and 100 hotel managers were contacted directly through e-mail (based on personal contacts and online search). However, since e-mails were forwarded from managers to their colleagues and we also promoted the study on Facebook, a clear dropout rate could not be calculated. Over half (59%) of the participants managed a medium-sized hotel with 11 to 50 employees, about one fourth (24%) managed a larger-sized hotel with 51–100 employees, and the rest managed smaller (10%) or larger (7%) hotels. Most of the participants (34%) had 10 to 20 years experience running a hotel, about one fourth (22%) had more than 20 years experience, 12% had 5 to 10 years experience, 20% had 1 to 4 years experience, and 12% had less than one year experience. Furthermore, 70% of the hotels were four-stars hotels, 24% were three-stars hotels, and the rest were either one-star (2%) or five-stars (4%)¹. For participating in the study, the hotel managers had the chance of winning one out of two books on hotel and bar psychology. Participants were randomly assigned to one of two conditions of the 2 (between) \times 4 (within) mixed design. The between-subjects variable was *psychological distance* (proximal vs. distal) and the within-subjects variable was *framing* (2 \times loss vs. 2 \times gain).

6.1.2. Materials and procedure

Participants were presented with four managerial decision problems, either described as psychologically proximal ($n = 16$) or psychologically distal ($n = 23$), in random order: two in a gain frame (decision 1 and 2) and two in a loss frame (decision 3 and 4). In decision 1, a new promotion concept was introduced that could increase the number of guests. In decision 2, an investment in renovation needed to be made that could increase sales. In decision 3, saving measures needed to be implemented in order to prevent the dismissal of employees. In decision 4, saving measures needed to be implemented that implied a reduction of the manager's salary. Construal level was manipulated by psychological distance in the way that the problems varied in terms of temporal, social, and spatial distance. As an example, decision 1 was described as follows (the distance manipulation is highlighted through bold letters):

Proximal condition: **You urgently** need to invest in **your organization** and you have decided to **immediately** renovate some of **your rooms**. **This very day** you want to award the contract and have to choose between two different offers whose consequences you have already calculated.

Distal condition: **A colleague** asks you for advice concerning **upcoming** possibilities for investment. **He** would like to renovate **some rooms the following year** and he has received different offers whose consequences he already calculated.

Option A: With this renovation sales will surely increase by 5%.

Option B: With this renovation there is a 50% chance that sales will increase by 10% and a 50% chance that sales will not increase at all.

As in Study 2, besides making a choice, participants indicated their preference for the risky alternative (option B in the example) and their preference for the safe alternative (option A in the example) separately, and for each situation on a 7-point scale from 1 (*little preference*) to 7 (*strong preference*).

6.2. Results and discussion

When we look at choices (see Figs. 6 and 7), participants had a clear preference for the risky option in decision 3 (loss) compared to the remaining decisions. Descriptively, the preference for the risky option is stronger in the proximal condition as opposed to the distal condition, which is in line with Hypothesis 1b. However, the small sample size ($n = 16$) in the proximal condition might be the reason that our analyses do not reach an acceptable level of statistical significance.

We found the classic framing effect for decisions 2 (more security seeking in the gain frame) and 3 (more risk seeking in the

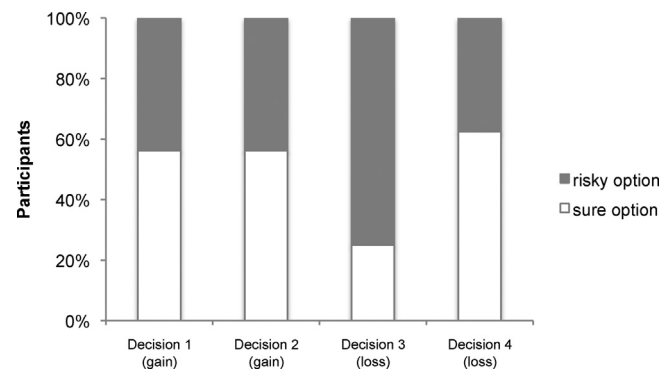


Fig. 6. Choice of hotel managers between the sure and the risky option for each decision in the proximal condition.

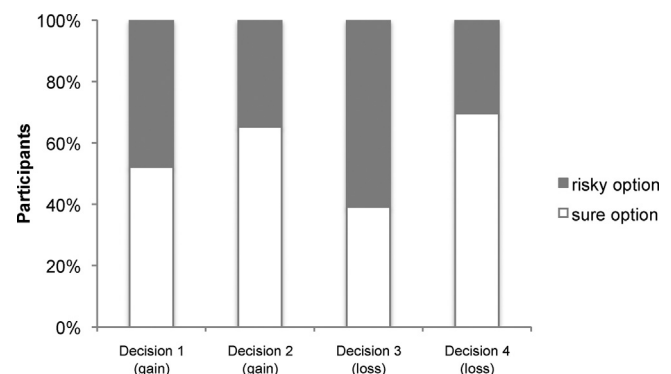


Fig. 7. Choice of hotel managers between the sure and the risky option for each decision in the distal condition.

¹ One-star = tourist, two-stars = standard, three-stars = comfort, four-stars = first class, five-stars = luxury (hotel rating according to the German Hotel and Catering Association).

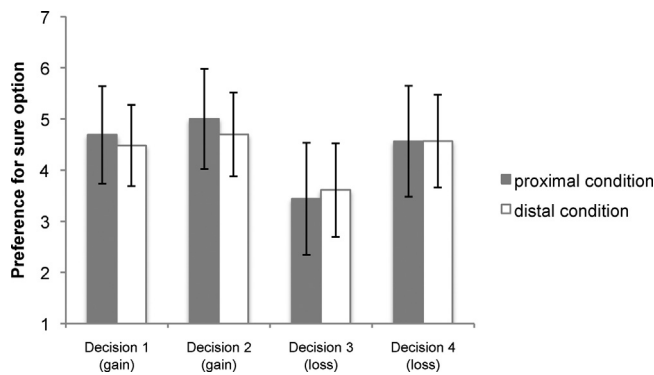


Fig. 8. Preference for the sure option in the proximal versus the distal condition, in the gain (decision 1 and decision 2) and the loss frame (decision 3 and decision 4). Error bars indicate 95% confidence intervals.

loss frame), $\chi^2(1, 39) = 4.39, p = .036$, across conditions. Our analyses further revealed a difference between decisions 1 (gain) and 4 (loss) in the distal, $\chi^2(1, 23) = 5.79, p = .016$, but not in the proximal condition. While participants were indifferent in decision 1 (gain), they chose the sure option more often in decision 4 (loss), which also supports Hypothesis 1b.

As in Study 2, we also looked at the preference for the sure and the risky option separately (see Figs. 8 and 9). A 2 (psychological distance) \times 4 (framing) repeated measure ANOVA revealed a main effect of framing for preferences for the sure option, $F(3, 111) = 4.25, p = .007, \eta_p^2 = .103$, and preferences for the risky option, $F(3, 111) = 4.19, p = .007, \eta_p^2 = .102$. However, psychological distance did not have an effect on either of the measures, $F_s < 1$, and we also do not find interactions, $F_s < 1$.

In order to get a clearer picture of the framing effect, we compared gain–loss pairs separately for each condition. Participants both in the proximal, $t(15) = 2.29, p = .037, d = .71$, and the distal condition, $t(22) = 2.11, p = .046, d = .56$, had higher preferences for security in decision 2 (gain) than in decision 3 (loss), indicating a classic framing effect. However, the effect is weaker in the distal condition, which indicates some support for Hypothesis 2.

In line with Hypotheses 1a and 1b, the framing effect is reversed for decision 1 and decision 4 in the distal condition: While participants were rather risk seeking in decision 1 (gain), they were rather risk avoiding in decision 4 (loss), $t(22) = 4.60, p < .001, d = .95$. At the same time, this effect contradicts Hypothesis 2, stating that a high construal level reduces framing effects. However, the reason for this effect might also lie in the contents of decisions 1 and 4. While decision 1 concerns a new advertising concept that might lead to more (15% increase with a chance of 80%) or less (10% increase) overnight

stays, decision 4 concerns saving measurements that might lead to larger (50% decrease with a chance of 50%) or smaller (25% decrease) losses in salary for the manager. The risky prospect of decision 4 is quite harmful and might lead to existential problems for the manager, which could be the reason why we find stronger risk aversion in this decision than in all other decisions. Furthermore, due to their experience, our participants might not have believed in an advertising concept that surely increases the overnight stays, plus they also might be used to having some risk when investing in marketing.

In conclusion, when comparing decisions 2 and 3, we found a framing effect in the preferences for the sure option, which was slightly stronger for the proximal than the distal condition and supports Hypothesis 2. Psychological distance had no effect and we did not find clear support for Hypothesis 1a and 1b. However, when comparing decisions 1 and 4, the framing effect was reversed for the distal condition and this finding partly supports Hypothesis 1a and 1b, but contradicts Hypothesis 2.

7. General discussion

Our results support the notion that both novices and professionals are influenced by perceived psychological distance when making decisions under risk. In line with Trope and Liberman (2010), we presumed that a variation in perceived psychological distance affects the cognitive mindset, leading to more concrete thinking (low construal level) in psychological close situations and more abstract thinking (high construal level) in more distant situations. Overall, two important results emerged from our studies.

First, in Studies 1 and 2 we found evidence for Hypothesis 1a, stating that a high construal level leads to less risk avoidance in gain frames than a low construal level. While the proximal condition (i.e., low construal level) led to risk avoidance, which is in line with prospect theory, the distal condition (i.e., high construal level) led to risk seeking, which contradicts prospect theory. In loss frames, construal level did not have an influence on risk seeking, and we did not find evidence for Hypothesis 1b, stating that a low construal level leads to more risk seeking in loss frames than a high construal level. However, a reversed framing effect (more risk avoidance in the loss than in the gain frame) that we found in Study 3 partly supports both Hypothesis 1a and 1b, but for the distal condition only. The contradicting results in the loss frames of Studies 1 and 2 may be due to one of two reasons: either the construal level manipulation was not strong enough, or the influence of loss aversion is stronger than the impact of construal level. The phenomenon of loss aversion, which states that losses loom larger than gains, is seen as one of the most common biases in decision making (Hastie, 2001; Kahneman & Tversky, 1979; Tversky & Kahneman, 1981, 1992). A recent series of experiments even suggests that it dominates construal level theory (Trautmann & Van de Kuilen, 2012). This might explain the resistance of loss aversion to our manipulation, but needs to be further investigated.

Second, the classic framing effect was replicated for the proximal condition, but was eliminated (Studies 1 & 2) or reduced (Study 3) in the distal condition, which supports our exploratory Hypothesis 2, stating that a low construal level leads to stronger framing effects than a high construal level. Experiments have shown that the bias of framing can be reduced or even eliminated when people rely more on deliberative thinking than on intuitive thinking (e.g., Keysar, Hayakawa, & An, 2012). Reasons for a shift from intuitive to more deliberative thinking might be based on a reduction of emotional resonance caused by the increase in psychological distance (Keysar et al., 2012) or on perceived disfluency. Disfluency occurs when an experience is more difficult to process cognitively, for example when a text is written in a font that is hard to read

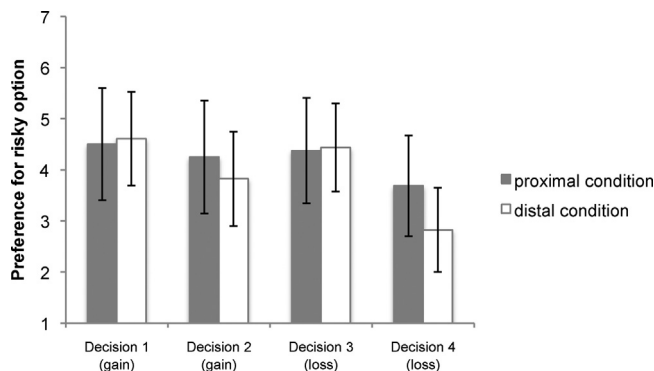


Fig. 9. Preference for the risky option in the proximal versus the distal condition, in the gain (decision 1 and decision 2) and the loss frame (decision 3 and decision 4). Error bars indicate 95% confidence intervals.

(Alter & Oppenheimer, 2008). In terms of the framing effect, loss frames are assumed to be processed more fluently when paired with concrete attributes and low psychological distance, respectively (White et al., 2011). Disfluency can temper confidence in one's judgment and lead to a shift to more analytical processing (Alter & Oppenheimer, 2008).

In sum, our results suggest that it not only makes a difference whether a decision is framed in terms of gains or losses (Tversky & Kahneman, 1981), but also if a decision is framed in terms of psychological closeness or distance. From physicians who do online diagnoses to managers who make high-stake financial decisions for international branches, all are confronted with aspects of psychological distance. While the heuristics-and-biases approach has a long tradition and received quite a lot of attention in the real world, construal level theory is rather new. Construal level theory explains cognitive mechanisms underlying known psychological effects such as time-dependent changes in preference (e.g., Loewenstein, 1987; Thaler, 1992) and phenomena concerning the psychology of prediction (e.g., the planning fallacy; Kahneman & Tversky, 1979). Furthermore, construal level theory suggests that temporal, social and spatial distance influence people's cognitive processing of events in the same way. Therefore the theory's application to practical decision making is especially interesting. Practitioners need to be made aware of the fact that psychological distance inherent in a decision problem can influence their mindset and therefore their decision making behavior. A decision maker might want to thoroughly consider who is affected by his decision and when or where it will come into effect. One or more of these psychological distance dimensions can be found in almost every decision.

In order to improve practical decision making, psychological distance could be intentionally varied toward a more distant or a closer perspective. That would provide a decision maker with the opportunity to illuminate a decision from different distant perspectives and consider its influence on his evaluation. For example, if a manager is considering making a big investment in another country, he might want to imagine himself being on-site versus far away, a close friend being affected versus an unknown person, or the consequences of an immediate implementation versus a future implementation. Whether hypotheticality, the fourth dimension of psychological distance, also influences practical decision making needs to be further investigated.

A great potential concerning the practical application of our research might lie in the field of risk communication. As Gigerenzer, Gaissmaier, Kurz-Milcke, Schwartz, and Woloshin (2007) propose, psychological research needs to investigate how to present risks visually as well as numerically in a way that fosters easy and correct processing. Based on several experiments, the authors propose that risks should be presented in terms of absolute risks instead of relative risks and as numbers instead of words, since the former leads to more accurate risk perceptions. Lermer, Streicher, Sachs, and Frey (2013) further investigated the presentation of risks and suggest that the abstractness of the target (e.g., person at risk) moderates the influence of presentation format on risk perception. This indicates that construal level might contribute to the discussion on how to effectively present risks. Studies have pointed out that larger numbers and smaller units (e.g., 7 days as opposed to 1 week) increase perceived harm (White & Kwan, 2013) or that the presentation of messages as pictures versus words affects perceived psychological distance. For example, while people preferred pictures when communicating with proximal others, they preferred words with distal others. In the same line of research, it was suggested that people are more likely to heed the advice of a message if the medium of presentation (as picture or word) is congruent with psychological distance (Amit, Wakslak, & Trope, 2012). Lermer, Streicher, Sachs, Raue, and Frey (2014b), on the other hand,

have found evidence that risks that are generally overestimated become more accurate when inducing a concrete mindset, while very unlikely risks that are generally underestimated become more accurate when inducing an abstract mindset. In sum, the current findings imply that construal level theory should be considered in risk communication and suggest further research concerning its practical application.

Our findings contribute to decision making theory and highlight the importance of subtle influences, such as perceived psychological distance, on practical decision making. However, further research is needed to draw a clearer picture concerning the interplay of framing and construal level, especially outside the laboratory. Beyond that, it could be interesting to investigate how construal level theory interacts with competing approaches in the area of intuitive decision making. These approaches might include fast-and-frugal heuristics (Gigerenzer, Todd, & The ABC Research Group, 1999), fuzzy-trace theory (Reyna & Brainerd, 1995), the adaptive decision maker (Payne, Bettman, & Johnson, 1993), or connectionist models such as parallel constraint satisfaction (Glöckner & Betsch, 2008). These ideas go beyond the scope of this article, but carry great potential for future research.

Conflict of Interest statement

The authors declare that there are no conflicts of interest.

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