



# Easy Now, Desirable Later: The Moderating Role of Temporal Distance in Opportunity Evaluation and Exploitation

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**How does the temporal distance between the phases of evaluation and exploitation alter entrepreneurs' opportunity evaluation? Building on construal level theory, we argue that the impact of an opportunity's desirability and feasibility on evaluation and exploitation intentions varies systematically with temporal distance. We experimentally demonstrate stronger influences of desirability on evaluation when the exploitation phase is temporally distant rather than near, whereas feasibility more strongly affects evaluation when exploitation is near rather than distant. Using construal level theory, we explain empirical inconsistencies in previous research and demonstrate the usefulness of integrating the concept of temporal distance in entrepreneurship research and education.**

## Introduction

Opportunity evaluation and exploitation are central parts of the entrepreneurial process (Ardichvili, Cardozo, & Ray, 2003; Eckhardt & Shane, 2003; Shane & Venkataraman, 2000). In the past years, several studies have investigated how entrepreneurial opportunity evaluation and exploitation are shaped by the interplay of opportunity characteristics and entrepreneurs' cognitive processes, including risk perceptions, biases, heuristics, learning, or the influence of prior knowledge (e.g., Choi & Shepherd, 2004; Dimov, 2007; Keh, Foo, & Lim, 2002; Palich & Bagby, 1995; Shane, 2000; West, 2007; for review, see Gregoire, Corbett, & McMullen, 2011; Mitchell et al., 2007). However, as yet, only little entrepreneurial cognition research has investigated how temporal contingencies shape entrepreneurs' cognitions regarding opportunity evaluation and exploitation.

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This lack of research is especially surprising, since opportunity evaluation and exploitation necessarily involve the connection of different time perspectives. In particular, opportunity evaluation decisions have recently been described as being “constructed as future-oriented, cognitive representations of ‘what will be’ assuming one were to exploit the opportunity under evaluation” (Haynie, Shepherd, & McMullen, 2009, p. 338). An important question that directly results from this insight is whether and how entrepreneurs’ opportunity evaluation and exploitation intentions are shaped by the temporal distance separating the *present* (i.e., the moment of evaluation) and the envisioned *future* (i.e., the actual exploitation phase). The present article addresses this open research question by integrating entrepreneurial opportunity research with the recent theoretical framework of construal level theory (CLT) (Trope & Liberman, 2010). In particular, we extend entrepreneurial cognition research by experimentally investigating how temporal distance (i.e., the distance between the *present* and a certain point in time in the near or distant *future*; Liberman & Förster, 2009) moderates the influence of central opportunity characteristics (i.e., desirability and feasibility) on entrepreneurs’ opportunity evaluation and exploitation intentions. Whereas previous research would seem to suggest that desirability and feasibility are about equally important for opportunity evaluation and exploitation (e.g., Haynie et al., 2009; Mitchell & Shepherd, 2010), we demonstrate that this is not always the case. Using a CLT approach, we explain how the length of the temporal distance that separates the moment of evaluation and the phase of exploitation makes a difference for the influence of desirability and feasibility on entrepreneurs’ evaluation and exploitation intentions. By applying CLT and its concept of temporal distance to extant research on risky entrepreneurial opportunities, we offer a novel theoretical approach which is able to account for previously unexplained inconsistencies in this stream of research (e.g., Forlani & Mullins, 2000).

We contribute to the present status of research in three main ways. First, we extend the entrepreneurial opportunity literature by integrating the concept of temporal distance into research on desirability and feasibility in models of opportunity evaluation and exploitation. In contrast to previous work, we show that desirability and feasibility are not always equally important in opportunity evaluation, but that their relative importance depends on the temporal distance between the phases of evaluation and exploitation. By doing so, we demonstrate how in light of CLT, inconsistent result patterns from previous entrepreneurial opportunity research (e.g., Forlani & Mullins, 2000) can be plausibly reinterpreted and explained. Second, we add to the entrepreneurship literature by introducing CLT to the research stream of time issues in entrepreneurship. Third, we also contribute to research on CLT by demonstrating that different levels of desirability and feasibility also lead individuals to consider different temporal distances as appropriate for acting on an opportunity.

We conducted three experiments to test our hypotheses. Study 1 was conducted as a pilot study providing first evidence for temporal distance’s effects on the impact of desirability and feasibility on evaluation and exploitation intentions in a sample of students. Study 2 supports our hypotheses in a sample of entrepreneurs, while additionally controlling for individuals’ future orientation. Study 3 demonstrates the reverse link between desirability and feasibility on the one hand and temporal distance on the other hand by showing that opportunities whose benefits are associated with different levels of desirability and feasibility lead individuals to consider either the near or the distant future as appropriate for opportunity exploitation.

## Theory Development

### Desirability and Feasibility as Central Attributes of the Entrepreneurial Opportunity

An entrepreneurial opportunity is often defined as a “future situation deemed both desirable and feasible” (Stevenson & Jarillo, 1990, p. 23). Desirability refers to an opportunity’s perceived *valence* or attractiveness (e.g., an opportunity with a high potential for profit is regarded as highly desirable). Feasibility refers to an opportunity’s perceived *practicability* or difficulty (e.g., an opportunity situated in a highly competitive market is less feasible than an opportunity located in a market with only a few weak competitors).

There are two streams of research examining desirability and feasibility in the context of entrepreneurship. The first one, the entrepreneurial intentions literature, conceptualizes desirability and feasibility as general individual beliefs about a person’s consideration of entrepreneurship as a desirable and feasible career option (e.g., Fitzsimmons & Douglas, 2011; Krueger, 1993; Krueger & Brazeal, 1994; Krueger, Reilly, & Carsrud, 2000). Thus, since this literature is concerned with individuals’ beliefs about the desirability and feasibility of an entrepreneurial career in general (rather than investigating different levels of desirability and feasibility as characteristics of particular entrepreneurial opportunities), we do not further consider this research stream in our theory development.

The second, more recent stream of research investigates desirability and feasibility as characteristics of specific entrepreneurial opportunities (e.g., Baron & Ensley, 2006; Haynie et al., 2009; Mitchell & Shepherd, 2010; Mitchell, Shepherd, & Sharfman, 2011). Two of these studies report direct effects of desirability and feasibility on opportunity evaluation (Haynie et al.; Mitchell & Shepherd). In particular, Haynie et al. used a conjoint experiment to examine the influence of different opportunity attributes including desirability (in their study: opportunity value) and feasibility (in their study: relatedness to the entrepreneur’s knowledge, skills, and abilities) on opportunity evaluation. Their results show that both high desirability and feasibility had a significant positive effect on opportunity evaluation (with desirability exhibiting a slightly stronger influence than feasibility). In a related experimental design, Mitchell and Shepherd investigated the influence of an opportunity’s desirability (in their study: potential value) and feasibility (in their study: knowledge relatedness) on opportunity exploitation intentions in a hypothetical scenario experiment. Their results seem to suggest that desirability and feasibility are about equally important and, thus, exert about the same influence on entrepreneurial decision makers to act on an opportunity: “This suggests that in general, neither desirability nor feasibility play a more important role in the decision to act on an opportunity. Instead, both seem to be equally important in decisions to act on opportunities” (Mitchell & Shepherd, p. 149).

In line with CLT (Trope & Liberman, 2010), we argue that this may not always be the case. Rather, we state that the impact of desirability and feasibility may depend on the temporal distance between the moment of opportunity evaluation and the time of actual exploitation in the future. In particular, previous basic social psychology research demonstrates that the influence of an entity’s desirability on this entity’s evaluation increases with increasing temporal distance, whereas the influence of its feasibility decreases with increasing temporal distance (Liberman & Trope, 1998).

The design of previous entrepreneurship research investigating the influence of desirability and feasibility on opportunity evaluation made it hard to address this issue because it implicitly suggested that the opportunity could be exploited immediately (i.e.,

starting in the moment of evaluation; e.g., Haynie et al., 2009). However, in reality, this is only rarely the case. Rather, the two phases of evaluation and exploitation usually do not take place at the same time, but are separated by a longer or shorter temporal distance. Moreover, previous experimental studies of opportunity evaluation also did not systematically consider or assess the temporal distance between the moment of evaluation (i.e., the present) and the actual phase of exploitation (i.e., sometime in the near or distant future). For instance, in the study by Haynie et al., participants were instructed to evaluate the opportunity in the context of their current business environment and to assume any point of time for exploitation, starting from right now up to 2 years in the future (without assessing participants' choice of time). Thus, the study neither assessed nor varied participants' actually held time horizons and therefore could not control for the potential effect of different temporal distances on opportunity evaluation. Similarly, Mitchell and Shepherd's (2010) design also led participants to implicitly assume that exploitation could start immediately. However, not taking into account the necessarily occurring temporal distance between evaluation and exploitation may limit the results regarding evaluation, because the influence of an opportunity's desirability and feasibility may change depending on the amount of temporal distance between the moment of evaluation and the phase of exploitation. In the following, we apply a CLT perspective to demonstrate how the influence of desirability and feasibility of entrepreneurial opportunities on evaluation and exploitation intentions may not be equal, but be moderated by temporal distance.

### **Desirability and Feasibility from a CLT Perspective**

CLT (Liberman & Trope, 2008; Trope & Liberman, 2003, 2010) argues that events can be cognitively represented ("construed") at different levels, ranging from the concrete to the abstract. For example, the action of "reading an article" can be more abstractly represented ("construed") as "learning" or "entertainment," or more concretely as "decoding words" or "turning pages" (see also Tumasjan, Strobel, & Welp, 2011a). Cognitive representations that capture abstract, global, and central aspects of an object or event are referred to as "high-level construals," whereas representations that pertain to concrete, specific, and peripheral features are termed "low-level construals" (Trope & Liberman, 2010). To illustrate, in the domain of entrepreneurship, the action of "starting a venture" can be abstractly described as "beginning a new career" or "a dream coming true" (i.e., in terms of high-level construals) or more concretely described as "filing an entry into the commercial register" or "moving into the new office" (i.e., in terms of low-level construals).

Applying this reasoning to the distinction between desirability and feasibility, CLT argues that desirability constitutes a high-level construal, whereas feasibility constitutes a low-level construal (Liberman & Trope, 1998). This is because desirability reflects the relatively abstract *value* of an action's end state, whereas feasibility reflects the relatively concrete *ease* or *difficulty* with which that end state can be reached. For example, an entrepreneurial opportunity's potential for profit may represent the desirability of this opportunity, because profit may be considered as the superordinate *end* of entrepreneurial behavior. In contrast to the profit aspect of an opportunity, the amount of effort one has to invest in order to successfully exploit that opportunity may reflect the feasibility of this opportunity, because the effort may be seen as the secondary and subordinate *means* to reach the desired end state. Hence, from the theoretical perspective of CLT, desirability constitutes the high-level construal of an action, whereas feasibility constitutes the low-level construal of that action (cf. Liberman & Trope, 1998).

The central tenet of CLT is to systematically link construal levels to distinct dimensions of psychological distance and examine how distance moderates the influence of different construals on evaluation, judgment, and prediction. CLT posits that there are four basic forms of psychological distance, namely temporal, spatial, social, and hypothetical distance (for review see Trope & Liberman, 2010). Linking construal level and psychological distance, CLT posits that higher-level construals will have a stronger influence on evaluation and judgment in high rather than in low distance, whereas lower-level construals will exert a stronger influence on evaluation and judgment in low rather than high distance on all four dimensions of distance (Trope & Liberman). Since the theoretical focus of this article is on temporal distance, in the following, we will constrain our theoretical development to temporal distance and refer to Trope and Liberman for an extensive review of research on the other three dimensions of distance.

A large body of social psychology research has demonstrated that evaluations, judgments, and predictions of temporally distant events are more likely influenced by high-level construals, whereas proximal events are more likely evaluated, judged, and predicted on the basis of low-level construals (Trope & Liberman, 2010). As explained earlier, according to CLT, desirability constitutes a high-level construal, whereas feasibility constitutes a low-level construal. Hence, when linking desirability and feasibility to temporal distance, CLT predicts that desirability issues should be more likely to guide evaluations and judgment for the more distant future, whereas feasibility issues should be more likely to guide evaluations and judgment for the near future. Accordingly, basic social psychology research has found empirical support for this prediction in laboratory and academic settings (e.g., Liberman & Trope, 1998). In the following, we will demonstrate how taking the theoretical perspective of CLT enhances our understanding of preferences for entrepreneurial opportunities characterized by different levels of desirability and feasibility. In particular, we apply a CLT perspective to previous research on risky venture decisions (Forlani & Mullins, 2000).

In their seminal work on risky venture decisions, Forlani and Mullins (2000) conceptualized risk as consisting of two aspects, namely variability (i.e., the likelihood of potential gains or losses) and magnitude (i.e., the size of potential gains or losses). Their experimental design crosses two levels of variability (high vs. low) with two levels of magnitude (high vs. low) resulting in four distinct ventures. Their participants were presented with all four ventures and asked to indicate which one they would choose for exploitation. The results indicated that both variability and magnitude influenced risk perception and new venture choice. As hypothesized, lower variability in potential gains or losses of a venture lead to a greater chance of choosing that venture for exploitation. However, contrary to their hypothesis, entrepreneurs were more likely to choose ventures having a higher magnitude (vs. a lower magnitude) of potential gains or losses (Forlani & Mullins). Four subsequent studies applying the same research paradigm yielded similar results: whereas the majority of participants preferred ventures with low variability, they simultaneously preferred ventures with higher potential gains or losses over ventures with lower potential gains or losses (Forlani, Mullins, & Walker, 2002; Grichnik, 2008; Mullins & Forlani, 2005; Mullins, Forlani, & Cardozo, 2002). Thus, whereas their choices regarding the variability (of gains or losses) reflected relatively high-risk aversion, their choices regarding the magnitude (of gains or losses) indicated relatively high risk-seeking. The authors offer a relatively inconclusive explanation for these unpredicted results stating that entrepreneurs may prefer ventures with higher potential loss because the potential gains are equally high (Forlani & Mullins).

A CLT approach may offer a different theoretical explanation for this puzzle. In a CLT-based study on risky gambling decisions, Sagristano, Trope, and Liberman (2002)

reasoned, and their empirical findings indeed demonstrated, that a risky gamble's value constitutes a high-level construal, whereas a gamble's probability constitutes a low-level construal. This is because the value reflects the desirability of a gamble, whereas the probability of winning reflects the feasibility of the gamble (Sagrignano et al.). Applying this reasoning to Forlani and Mullins' (2000) concept of risk consisting of two components—variability and magnitude of gains or losses—we argue that variability (reflecting the probability of gains or losses) corresponds to the feasibility of attaining gains (or losses), whereas the magnitude (reflecting the size of gains or losses) corresponds to the desirability of attaining gains (or losses). Consequently, translating their 2 × 2 venture choice design into CLT terms yields a coherent pattern for all of the four ventures (see Figure 1).

Indeed, revisiting the results of all five studies (Forlani & Mullins, 2000; Forlani et al., 2002; Grichnik, 2008; Mullins & Forlani, 2005; Mullins et al., 2002), which used the Forlani and Mullins paradigm with a CLT approach reveals a consistent results pattern while concurrently offering a unified theoretical explanation of those findings. Table 1 shows the distribution of new venture choices (in percent) across all five studies.

As can be seen from Table 1, the frequency of venture choices is consistent across all five studies. The underlying logic of this frequency pattern becomes plausible when the corresponding CLT combinations of high/low desirability and feasibility are considered (see Figure 1). Venture "Purple" offers high magnitude and low variability and thereby reflects high desirability and high feasibility, which in turn plausibly makes it the most frequently chosen option. In contrast, venture "Yellow" offers low magnitude and high variability and thereby reflects low desirability and low feasibility, which plausibly makes it the least frequently chosen venture. Ventures "White" and "Green" are both characterized by a high parameter on one dimension and a low parameter on the other dimension. Therefore, it comes as no surprise that their choice frequency lies in between the ventures with parameters being high and low on both dimensions, respectively. However, venture "White" was still chosen significantly more frequently than venture "Green."

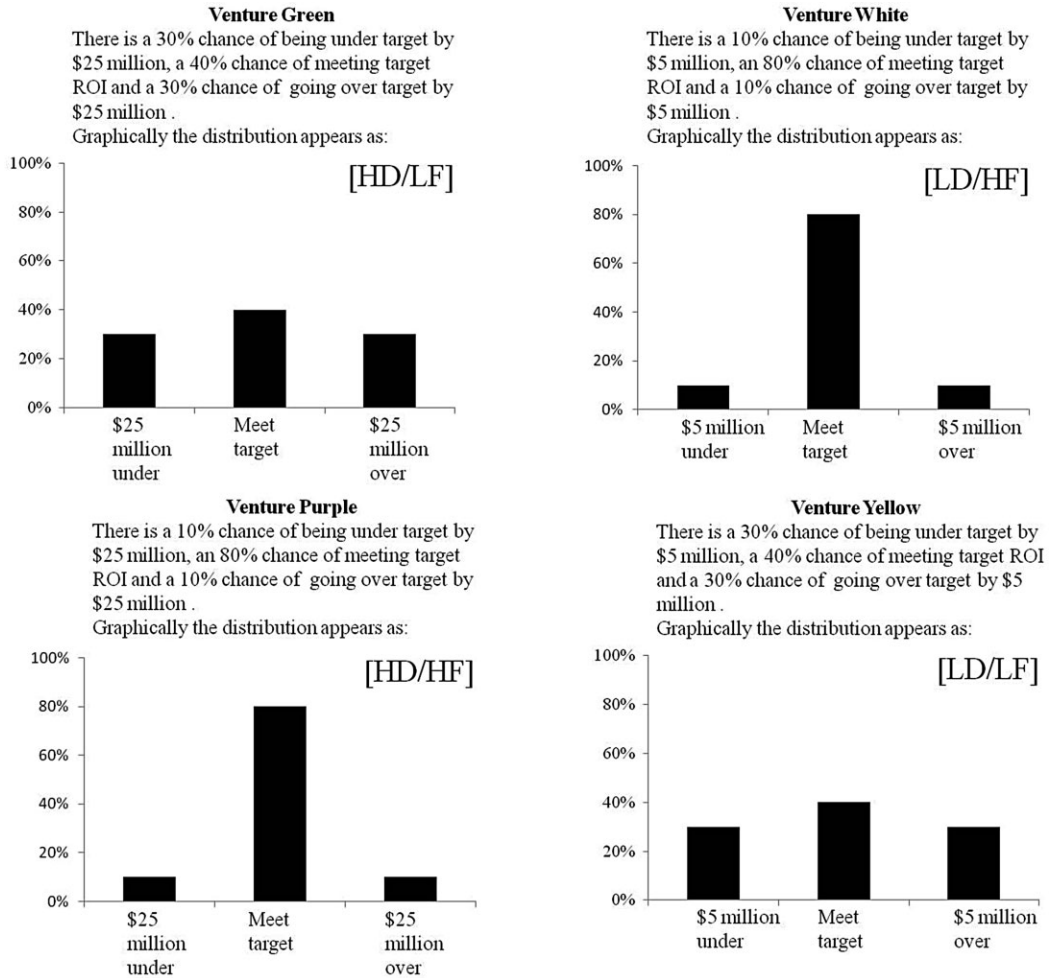
In line with CLT, we argue that this is because participants of all five studies construed these four ventures on a comparatively low level as a result of the low temporal distance implied in these studies. The instructions of all five studies asked participants to imagine they were in a decision-making situation that required them to choose one of four ventures they could undertake. Since there was no explicit information regarding the temporal distance of possible opportunity, exploitation from the moment of evaluation, participants most probably assumed a near future timing for the action on this opportunity. This assumption is in line with previous research that demonstrates that entrepreneurs are notably now-oriented people (see Bird, 1988).

Why then was venture "White" more frequently chosen than venture "Green?" As stated before, CLT posits that imagining an object or event being temporally near rather than far away leads to a lower-level construal of this object or event. Consequently, low-level construals have a higher impact on evaluations regarding the near rather than the distant future. Therefore, venture "White" (low desirability/high feasibility) should be preferred over venture "Green" (high desirability/low feasibility) in a near temporal distance perspective, which is what the results of these five studies indicate.

Summarizing, we conclude that taking a CLT approach to research on entrepreneurial opportunities offers a valuable theoretical perspective on existing empirical findings. In the following, we relate the CLT concept of temporal distance to previous temporal research in entrepreneurship.

Figure 1

Venture Opportunities Presented to Participants in the Study by Forlani and Mullins (2000) with the Corresponding Desirability/Feasibility Characteristics Based on CLT



HD, high desirability; HF, high feasibility; LD, low desirability; LF, low feasibility; ROI, return on investment; reprinted from Forlani and Mullins (2000), copyright (2000), with permission from Elsevier.

**Relating the Concept of Temporal Distance to Previous Temporal Concepts in Entrepreneurship Research**

Although to our knowledge, there is as yet no research investigating the role of temporal distance in entrepreneurial cognition, several other temporal concepts have been the subject of entrepreneurial cognition research. In the following, we will be briefly review those and relate them to the concept of temporal distance.

**Table 1**  
**Overview of the Results of Five Studies Using the Forlani and Mullins (2000) Paradigm**

Choices of the respective venture in %											
Venture name	Magnitude of gain/loss	Variability of gain/loss	Categorization in terms of CLT	Study A	Study B	Study C	Study D	Study E	Mean % of choice	Rank of choice frequency	
Green	High	High	HD/LF	13	12	18	13	11	14.08	3	
Yellow	Low	High	LD/LF	4	7	0	4	6	3.75	4	
Purple	High	Low	HD/HF	50	43	42	49	46	46.08	1	
White	Low	Low	LD/HF	33	38	40	33	37	36.08	2	

*Note:* Study A: Forlani and Mullins (2000); Study B: Forlani et al. (2002); Study C: Mullins et al. (2002); Study D: Mullins and Forlani (2005); Study E: Grichnik (2008). CLT, construal level theory; HD, high desirability; HF, high feasibility; LD, low desirability; LF, low feasibility.



The influence of entrepreneurs' temporal orientations on entrepreneurial outcomes, such as risk behavior or growth facilitation (e.g., Das & Teng, 1997; Fischer, Reuber, Hababou, Johnson, & Lee, 1997; West & Meyer, 1997), has been the subject of a number of studies in a special issue of *Entrepreneurship Theory and Practice* (Vol. 22, no. 2, 1997). This research has mainly investigated how entrepreneurs' future orientation affects entrepreneurial behavior. Future orientation in this conceptualization refers to an orientation that bridges a high temporal distance between the present and the future. Moreover, future orientation, and temporal orientation more generally, is a trait-like construct (Shipp, Edwards, & Lambert, 2009; Zimbardo & Boyd, 1999), i.e., individuals differ in the extent of their dispositional attention or focus on the future, present, or past. While the concept of temporal orientation describes which points in time individuals focus on, temporal distance refers to the gap between the experienced present and a particular point in time.

The temporal concept that is most closely related to temporal distance is the concept of temporal depth. Temporal depths are defined as "the temporal distances that individuals and collectives typically consider when contemplating events that have happened, may have happened, or may happen" (Bluedorn & Martin, 2008, p. 3). Thus, the temporal depth of an individual refers to the amount of temporal distance an individual considers when thinking about the near or distant future or past. While the concept of temporal depth describes a relatively stable individual view of what constitutes the near or distant past or future, temporal distance, in contrast, refers to the lag or length *per se*, independent from what individuals regard as the near or distant past or future. The concepts are similar in that they pertain to a certain time lag from the immediately experienced present. However, while the focus of the temporal depth concept is more on the individuals' calibration of temporal distances for different near or distant points in time, the focus of the temporal distance concept is on the general time lag, independent from individual considerations.

The concept of temporal tension describes the link between the present and future events that are not yet manifest (Bird, 1988). The farther away an event lies in the future, the higher is the uncertainty and temporal tension when trying to imagine this future point in time in the present (Bird). Increasing temporal distance between the present and the future thus may increase perceived temporal tension.

Windows of opportunity are defined as time periods within which opportunities are "hot" and can be exploited (Busenitz & Barney, 1997). Windows of opportunity can be narrow, requiring entrepreneurs to make quick decisions, or wider open, leaving more time for deliberate decision making (e.g., Hambrick & Crozier, 1985; Mitchell & Shepherd, 2010; Stevenson & Gumpert, 1985). In the context of windows of opportunity, high temporal distance between the present and the closing of the window is usually given if the window is wide, whereas low temporal distance between the present and the window closing is usually on hand if the window of opportunity is narrow.

Finally, research on the timing of entrepreneurial behavior aims at identifying points in time when particular entrepreneurial activities (e.g., end of exploration) should be performed (e.g., Choi, Lévesque, & Shepherd, 2008; Douglas & Shepherd, 2002; Lévesque, Minniti, & Shepherd, 2009; Lichtenstein, Carter, Dooley, & Gartner, 2007). Temporal distance is related to this concept as it describes the perceived distance between a present action (e.g., exploration) and the planned beginning of a next stage (e.g., exploitation) in the entrepreneurial process. In other words, the concept of temporal distance is relevant for the future timing of events, since individuals have to mentally bridge different temporal distances when thinking about the timing of future events.

In summary, while there has been research on multiple time-related concepts in the field of entrepreneurship, there is as yet no empirical study directly investigating how temporal distances shape cognitions in the context of opportunity evaluation and

exploitation. In the following section, we use CLT as a theoretical framework to test the idea that the influence of an entrepreneurial opportunity's desirability and feasibility on entrepreneurs' evaluation and exploitation intentions may be moderated by the temporal distance between the phases of evaluation and exploitation.

## Hypotheses Development

In line with previous conceptualizations of the entrepreneurial opportunity (e.g., Haynie et al., 2009; Mitchell & Shepherd, 2010), we investigate desirability and feasibility as an opportunity's central characteristics. Integrating CLT research (e.g., Liberman & Trope, 1998) with entrepreneurial opportunity research, we further argue that entrepreneurs will form relatively abstract, high-level construals of the desirability aspects of an opportunity (e.g., potential value or profit), whereas they will form relatively concrete, low-level construals of the feasibility aspects of an opportunity (e.g., competitiveness of target market).

When entrepreneurs evaluate an opportunity, they make evaluations for the future (Haynie et al., 2009). Thus, opportunity evaluation has to be made a longer or shorter time period before the actual exploitation can be started. As described earlier, CLT posits that temporal distance (i.e., near vs. distant future) moderates the influence of desirability and feasibility on preference judgments (Liberman & Trope, 1998; Trope & Liberman, 2010). Hence, building on CLT, we argue that in the entrepreneurial evaluation process, desirability and feasibility concerns will systematically yield changes in opportunity evaluation as a function of temporal distance. Specifically, we propose that the effect of desirability, compared with the effect of feasibility, should increase with increasing temporal distance between the present moment of evaluation and the future point in time in which the opportunity can be exploited. Similarly, the effect of feasibility, compared with the effect of desirability, should decrease with increasing temporal distance from the point in time of opportunity exploitation. Therefore, by applying CLT to established conceptualizations of the entrepreneurial opportunity, we propose the following temporal distance  $\times$  opportunity desirability/feasibility interaction hypothesis for opportunity evaluation:

**Hypothesis 1:** An opportunity's desirability will have a stronger influence on (potential) entrepreneurs' opportunity evaluation in the distant future rather than in the near future, whereas feasibility will have a stronger influence on (potential) entrepreneurs' opportunity evaluation in the near future rather than in the distant future.

Opportunity evaluation and exploitation intentions are closely linked: if individuals evaluate an entrepreneurial opportunity positively, they should also hold higher exploitation intentions, whereas negative opportunity evaluation should entail lower levels of exploitation intentions. However, both concepts are commonly regarded as distinct phases of the entrepreneurial process (Ardichvili et al., 2003; Shane, 2003; Shane & Venkataraman, 2000). In order to follow the distinction between evaluation and exploitation, which is commonly made in the theoretical framework of the individual–opportunity nexus (Shane), our empirical investigation assesses both opportunity evaluation and exploitation intentions separately. Since evaluation and exploitation intentions are closely associated, we expect that the impact of an opportunity's desirability and feasibility on exploitation intentions will similarly be moderated by temporal distance. Therefore, we propose:

**Hypothesis 2:** An opportunity's desirability will have a stronger influence on (potential) entrepreneurs' opportunity exploitation intentions in the distant future rather than

in the near future, whereas feasibility will have a stronger influence on (potential) entrepreneurs' opportunity exploitation intentions in the near future rather than in the distant future.

As stated earlier, evaluation and exploitation are commonly conceptualized as being closely associated. In line with previous research (e.g., Sarason, Dean, & Dillard, 2006; Shane & Venkataraman, 2000; Welpé, Spörrle, Grichnik, Michl, & Audretsch, 2012), we argue that opportunity evaluation precedes opportunity exploitation intentions, since, from a logical point of view, a decision maker cognitively first ascribes a certain value to an opportunity before making behavior-oriented exploitation decisions. It is rather implausible to assume that in a highly reasoning-based process, such as entrepreneurial decision making, entrepreneurs will decide to exploit an opportunity before appraising it. Thus, in line with this proposed sequence (e.g., Welpé et al.), we derive a mediation hypothesis. In particular, we propose that the interaction of the opportunity's characteristics (i.e., opportunity desirability/feasibility  $\times$  temporal distance interaction) does not directly affect exploitation decisions, but instead influences the evaluation of an entrepreneurial opportunity, which in turn leads to the formation of exploitation intentions. Therefore:

**Hypothesis 3:** The influence of the opportunity desirability/feasibility  $\times$  temporal distance interaction on exploitation intentions will be mediated by opportunity evaluation.

## Methodology and Results

In order to test hypotheses 1, 2, and 3, we conducted two experiments. First, we ran a pilot experiment with student participants (Study 1) to establish the hypothesized interaction effect between temporal distance and opportunity desirability/feasibility. Second, to provide the actual test of our hypotheses, we conducted our experiment in a sample of entrepreneurs (Study 2). The experimental design was similar in both the pilot and the final study. In the following, we will first describe the experimental design and procedure of both experimental studies, after which we will report the results of the two studies separately.

### Experimental Design and Procedure

Both the pilot experiment as well as the actual experiment with entrepreneurs were questionnaire experiments and applied the same experimental design. The experiment was based on a  $2 \times 2$  (high desirability/low feasibility vs. low desirability/high feasibility  $\times$  near future vs. distant future) between-subjects design. Participants were randomly assigned to one of the four resulting experimental conditions. Similar to Mitchell and Shepherd (2010), we used vignettes to present the experimentally manipulated scenarios. Participants were asked to attentively read the vignette describing the respective entrepreneurial scenario and to vividly imagine themselves in the given situation before providing their answers.

Following Todorov, Goren, and Trope (2007; see also Liviatan, Trope, & Liberman, 2008), we did not implement the fully crossed experimental design (i.e., we omitted the high-high and low-low desirability/feasibility conditions) as the aim of this research was to directly examine the prediction of whether the effect of desirability (feasibility),

compared with the effect of feasibility (desirability), would increase with increasing (decreasing) temporal distance. This prediction is tested by examining a mixed opportunity characteristics (i.e., high desirability/low feasibility and low desirability high feasibility)  $\times$  temporal distance interaction (see also Liberman & Trope, 1998).

In line with Trope and Liberman (2003), the entrepreneurial opportunity's desirability and feasibility were each represented by two different aspects of the opportunity. Since desirability is conceptualized as the value of an action's end, we manipulated desirability with two ends-related attributes of the entrepreneurial opportunity: potential for profit (high vs. low) and product attractiveness (high vs. low). In the high desirability condition, both attributes (i.e., profit margin and product attractiveness) were high, whereas in the low desirability condition, both were low. Similarly, because feasibility represents the amount of effort one needs to invest for that opportunity to materialize, we manipulated feasibility by two means-related attributes of the entrepreneurial opportunity: target market situation (less competitive vs. highly competitive) and the founder's seed capital required (high vs. low). In the high feasibility condition, the target market situation was less competitive and the required own seed capital investment was low, whereas in the low feasibility condition, the target market situation was highly competitive and the required own seed capital investment was high.

Temporal distance (near vs. distant future) was manipulated by the anticipated date of venture foundation. In the near future condition, participants were informed that the venture would start in a month's time. In the distant future condition, the venture was alleged to start in a year's time. These two temporal distances (i.e., one month's time as the near future condition vs. one year's time as the distant future condition) were chosen on the basis of two sources. First, we base our temporal distance manipulations on a recent study on temporal depths (Bluedorn & Martin, 2008) that calibrated entrepreneurs' temporal distances for the short-term, midterm, and long-term future. The results demonstrated that entrepreneurs regard the short-term future as about 1 month ahead, the midterm future as 3–6 months ahead, and the long-term future as about 3 years ahead. Accordingly, we chose 1 month as our near future condition and 1 year as our distant future condition because the latter falls between what entrepreneurs regard as the midterm and the long-term future and therefore can be considered as the relatively distant future. Second, we chose these operationalizations in order for our study to be comparable to previous research within the CLT framework that has employed similar temporal distance operationalizations (e.g., Borovoi, Liberman, & Trope, 2010; Freitas, Langsam, Clark, & Moeller, 2008).

## Study 1

**Participants.** Our sample ( $n = 195$ ) consisted of students with a management and/or engineering background recruited from a large German university of technology (mean age = 24.16 years, ranging from 20 to 45 years, standard deviation [SD] = 3.32 years; 50% were female).

**Dependent Variables.** Venture evaluation was assessed using three items (Cronbach's  $\alpha = .90$ ) to be rated on 11-point Likert-type scales ranging from 0 "not at all" to 10 "extremely" (sample item: "In your opinion, how attractive is the given entrepreneurial opportunity?"). The items were adapted from Spörrle, Breugst, and Welp (2009). Similarly, venture exploitation intentions were measured by means of three analogous items ( $\alpha = .89$ ; sample item: "How likely is it that you would join this startup as a co-founder?").

To validate our dependent variable measurement scales and examine whether the items actually load on the intended constructs, we subjected the three evaluation and three exploitation intention items to an exploratory factor analysis (principal axis factoring with promax oblique rotation) extracting two factors. We then examined the factor loadings of the resulting pattern matrix. Since the loadings indicated that one evaluation item exhibited a high loading (.68) on the exploitation intention factor, we decided to remove this item, which left us with two evaluation and three exploitation intention items. The remaining evaluation and exploitation items loaded highly on their respective construct ( $\geq .73$ ), but not on the other construct ( $\leq .16$ ; also, using the original three evaluation items in our analyses did not change the results reported here). To cross-validate these results in a more stringent test, we subjected the remaining items to a confirmatory factor analysis (CFA). In particular, we compared a model with all items loading on one latent factor (one-factor model) with a model where the two evaluation items load on one latent variable and the three exploitation items load on a second latent factor (two-factor model). Confirming the validity of our empirical separation of evaluation and exploitation, the two-factor model ( $\chi^2[4] = 4.42, p = .35$ ; goodness of fit index [GFI] = .99; comparative fit index [CFI] = 1.00; root mean square error of approximation [RMSEA] = .02; standardized root mean square residual [SRMR] = .01) indicates superior fit over the one-factor model ( $\chi^2[5] = 93.33, p < .001$ ; GFI = .81; CFI = .89; RMSEA = .30; SRMR = .05) as indicated by the fit indices (Hu & Bentler, 1999).

**Control Variables.** Due to its influence on venture evaluation and exploitation intentions (Keh et al., 2002; Stewart & Roth, 2001), we controlled for risk propensity by using a five-item risk-style scale (Mullins & Forlani, 2005). Self-efficacy was included as a second covariate as it plays an important role in forming evaluation and exploitation intentions (Krueger et al., 2000). Although equally appropriate, we did not use a specific measure of entrepreneurial self-efficacy (e.g., Chen, Greene, & Crick, 1998) because our participants all had about the same level of acquaintance with entrepreneurship through their education. We, therefore, expected entrepreneurial self-efficacy to have considerably less variance than general self-efficacy and, hence, decided to use the more general self-efficacy construct (cf. Strobel, Tumasjan, & Spörrle, 2011). Self-efficacy was assessed using the general self-efficacy scale by Schwarzer and Jerusalem (1995) consisting of 10 items to be rated on four-point scales ( $\alpha = .91$ ). Third, we controlled for general entrepreneurial attitude (i.e., the extent to which entrepreneurship is in accordance with an individual's life goals) because it has been demonstrated to be an important prerequisite of entrepreneurial intentions (Krueger, 1993; Spörrle et al., 2009). Entrepreneurial attitude was measured by four items ( $\alpha = .91$ ) to be rated on 11-point scales (sample item: "How important is it for you to become an entrepreneur?"). Finally, self-estimated general entrepreneurial knowledge was included as a control variable due to its crucial role in the consideration of entrepreneurial opportunities (Baron, 2006). Entrepreneurial knowledge was measured by four items to be rated on five-point scales ( $\alpha = .82$ ; sample item: "How much knowledge do you have about how to start a venture?").

**Experimental Results.** In order to test for our hypothesized interaction effect between temporal distance and opportunity desirability/feasibility on evaluation (hypothesis 1) and exploitation intentions (hypothesis 2), we ran multiple block-wise entry ordinary least squares regressions with all experimental variables and control variables as predictors of venture evaluation and exploitation intentions. Table 2 displays the regression results for evaluation (left) and exploitation intentions (right).

Table 2

## Regression Results for Evaluation and Exploitation Intentions (Study 1)

	Evaluation				Exploitation intentions			
	Step 1		Step 2		Step 1		Step 2	
	B <sup>†</sup>	SE	B <sup>†</sup>	SE	B <sup>†</sup>	SE	B <sup>†</sup>	SE
Age	-.03	.07	.01	.06	.01	.07	.04	.06
Gender	-.02	.07	-.06	.06	-.02	.07	-.05	.06
Risk propensity	.13	.08	.10	.06	.17*	.07	.15*	.06
Self-efficacy	.10	.08	.09	.07	.03	.08	.02	.07
Entrepreneurial attitude	.12	.09	.08	.07	.45	.08	.41***	.07
Entrepreneurial knowledge	.03	.09	.08	.07	-.15	.08	-.11	.07
Opportunity desirability/feasibility			.56***	.06			.42***	.06
Temporal distance			.04	.06			.05	.06
Opportunity desirability/feasibility × temporal distance			.13*	.06			.14**	.06
F-value	3.21**		14.84***		9.09***		14.93***	
R <sup>2</sup>	.09		.42		.23		.42	
R <sub>adj</sub> <sup>2</sup>	.06		.39		.20		.39	

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Note: <sup>†</sup> Due to prior standardization of all predictor variables all B coefficients can be interpreted as standardized regression coefficients.

Analyses of tolerance values ( $>.53$ ) and condition indices ( $<3.00$ ) do not indicate problematic multicollinearity of independent variables. Inspection of residuals does not indicate heteroscedasticity (Breusch–Pagan/Cook–Weisberg test and White test not significant, all  $ps > .20$ ).

SE, standard error.

In the first step, we entered all control variables. In the second step, we entered our experimental variables, i.e., opportunity desirability/feasibility, temporal distance, and the opportunity desirability/feasibility × temporal distance interaction term, to test whether the influence of desirability and feasibility on evaluation changes depending on temporal distance. In the regression equation predicting evaluation, there was a significant main effect of opportunity desirability/feasibility ( $\beta = .56, p < .001$ ), indicating that, overall, the high desirability/low feasibility opportunity was evaluated more positively than the low desirability/high feasibility opportunity. There was no main effect of temporal distance, indicating that, in line with CLT, temporal distance per se (i.e., independent of opportunity desirability/feasibility) had no impact on evaluation. Most importantly, and in line with hypothesis 1, there was a significant effect of the opportunity desirability/feasibility × temporal distance interaction ( $\beta = .13, p < .05$ ), indicating that the influence of opportunity desirability/feasibility on venture evaluation changed with temporal distance: the opportunity characterized by high desirability/low feasibility was evaluated higher in the distant future ( $M = 6.14, SD = 1.99$ ) than in the near future ( $M = 5.64, SD = 1.88$ ), whereas the opposite holds for the low desirability/high feasibility opportunity (distant:  $M = 3.23, SD = 1.87$ ; near:  $M = 3.72, SD = 1.87$ ; see Table 3). Correspondingly, temporal distance (near vs. distant) caused significantly opposing effects in evaluation for the high desirability/low feasibility vs. low desirability/high feasibility opportunities,  $z = 2.54, p < .01$ .

Table 3

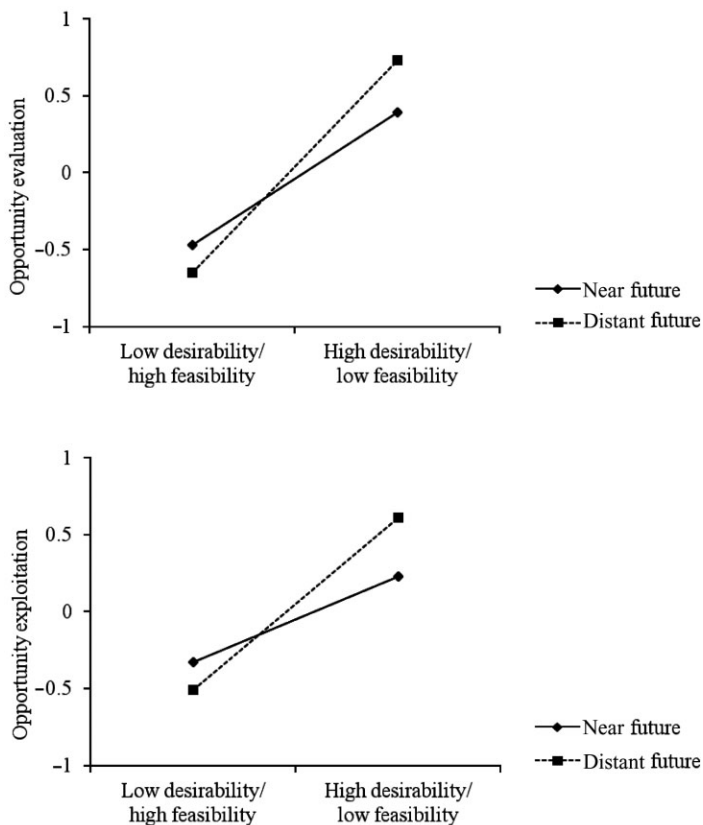
Means and Standard Deviations for Evaluation and Exploitation in the Two Temporal Distance Conditions (Study 1 and Study 2)

Venture option	Evaluation				Exploitation							
	Near future		Distant future		Near future		Distant future					
	M	SD	M	SD	M	SD	M	SD				
									<i>t</i> -test			
<b>Study 1</b>												
High desirability/low feasibility	5.64	1.88	6.14	1.99			5.29	2.21	5.85	2.13	$r(96) = 2.08, p = .02, d = .42$	$r(96) = 2.35, p = .01, d = .48$
Low desirability/high feasibility	3.72	1.87	3.23	1.64			3.74	1.91	3.27	1.74	$r(95) = 1.21, p = .11, d = .25$	$r(95) = 1.14, p = .13, d = .23$
<b>Study 2</b>												
High desirability/low feasibility	5.65	2.23	6.42	1.50			4.91	2.35	5.79	1.72	$r(41) = 1.63, p = .06, d = .51$	$r(41) = 1.75, p = .04, d = .55$
Low desirability/high feasibility	5.81	2.30	5.21	1.79			6.23	2.69	5.75	2.03	$r(45) = 1.46, p = .08, d = .44$	$r(45) = 1.19, p = .12, d = .35$

Note: Study 1: n = 195 management/engineering students; Study 2: n = 88 entrepreneurs. SD, standard deviation.

Figure 2

Opportunity Desirability/Feasibility  $\times$  Temporal Distance Interaction Effect for Venture Evaluation (Upper Panel) and Venture Exploitation (Lower Panel; Study 1)<sup>1</sup>



Note: <sup>1</sup>Variables are standardized.

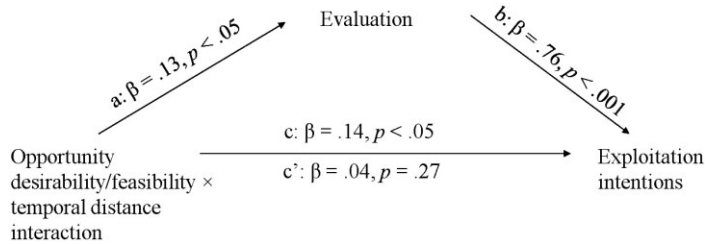
Figure 2 depicts the resulting interaction effect. As can be seen in the upper panel of Figure 2, the high desirability/low feasibility opportunity was evaluated more favorably in the distant future than in the near future, whereas the low desirability/high feasibility opportunity was rated more favorably in the near future than in the distant future. Thus, in line with our predictions, the present results demonstrate that temporal distance functions as a moderator of the impact of the opportunity's desirability and feasibility on venture evaluation.

Similarly, to test hypothesis 2, we examined the opportunity desirability/feasibility  $\times$  temporal distance interaction term as a predictor of exploitation intentions (Table 2). In line with hypothesis 2, the interaction term was positive and significant ( $\beta = .14, p < .05$ ), indicating that participants' likelihood of venture exploitation changed with temporal distance (see lower panel of Figure 2): whereas for the opportunity characterized by high desirability/low feasibility participants indicated a higher likelihood of exploitation in the distant future ( $M = 5.85, SD = 2.13$ ) than in the near future ( $M = 5.29,$



Figure 3

Mediation Model Showing the Mediated Influence of the Opportunity Desirability/Feasibility  $\times$  Temporal Distance Interaction (Study 1)<sup>1</sup>



Note: <sup>1</sup>c = Total effect of the venture option  $\times$  temporal distance interaction on venture exploitation when venture evaluation is not included as a mediator; c' = direct effect of the venture option  $\times$  temporal distance interaction on venture exploitation when venture evaluation is included as mediator. Point estimate of indirect effect (path  $a \times b$ ) = .09; bias corrected and accelerated 95% confidence interval (CI) (Bca CI [95%]): .01 to .18 (based on 5000 bootstrap samples).

SD = 2.21); the opposite was true for the low desirability/high feasibility opportunity (distant:  $M = 3.27, SD = 1.74$ ; near:  $M = 3.74, SD = 1.91$ ). In line with the results obtained for evaluation, temporal distance (near vs. distant) caused significantly opposing effects in exploitation intentions for high desirability/low feasibility vs. low desirability/high feasibility opportunities,  $z = 3.01, p < .01$  (see Table 3).

In summary, hypothesis 1 and hypothesis 2 are supported by the data. However, as can be seen in Figure 2, the differences between the near future and distant future conditions, although significant, are small. This result can in part be explained by the large main effect of desirability which indicates that, overall, the high desirability/low feasibility opportunity was preferred to the low desirability/high feasibility venture.

To test hypothesis 3, we performed a regression-based mediation analysis based on the procedures provided by Preacher and Hayes (2008) using 5000 bootstrap samples. We specified the interaction term (i.e., opportunity desirability/feasibility  $\times$  temporal distance) as the predictor, exploitation intentions as the dependent variable, and evaluation as the mediator variable, while all main effects as well as all control variables served as covariates (see Figure 3).

According to Shrout and Bolger (2002), mediation is present if the bootstrapped confidence interval of the point estimate of the indirect effect through the proposed mediator does not include zero. Supporting hypothesis 3, venture evaluation emerged as a significant mediator of the effect of the opportunity desirability/feasibility  $\times$  temporal distance interaction on exploitation likelihood (point estimate of indirect effect [path  $a \times b$ ]: .09, bias corrected and accelerated 95% confidence interval: .01 to .18). Overall, the significant prediction of exploitation by the opportunity desirability/feasibility  $\times$  temporal distance interaction (path c:  $\beta = .14, p < .05$ ) no longer reached significance when evaluation was included as a mediator variable (path c':  $\beta = .04$ , not significant [ns]), supporting the presence of full mediation.

Study 2

The aim of the second study was to test our hypotheses in a sample of entrepreneurs thereby addressing the limitations of Study 1 and providing the actual test of our

hypotheses. Moreover, since it can be argued that our results are also influenced by participants' future orientation, we additionally controlled for participants' consideration of future consequences (Toepoel, 2010). Consideration of future consequences has been found to be a reliable individual difference characteristic reflecting how individuals weigh immediate and distant outcomes of behavior. It captures the extent to which individuals consider the future outcomes of their present behavior (Strathman, Gleicher, Boninger, & Edwards, 1994).

**Participants.** We collected data from  $n = 88$  entrepreneurs in Germany (aged 24–42;  $M = 34.84$  years,  $SD = 5.17$ ; 51% female) with different industry backgrounds mostly from the service sector (information technology/telecommunications: 25%, consulting/finance/law: 23%, other services: 32%, media/entertainment: 10%, other: 10%). The entrepreneurs were recruited from a business-to-business online panel through a professional market research institute.

**Experimental Design and Procedure.** We employed the same  $2 \times 2$  (high desirability/low feasibility vs. low desirability/high feasibility  $\times$  near future vs. distant future) between-subjects design as in Study 1.

**Dependent Variables.** Venture evaluation was assessed by asking the participants to rate the attractiveness of the given entrepreneurial opportunity on an 11-point rating scale ranging from 0 “not at all” to 10 “extremely.” We measured venture exploitation by asking the participants to indicate how strong their tendency would be to exploit this opportunity by joining this startup as a co-founder on a similar rating scale.

**Control Variables.** We controlled for the industry background of the entrepreneurs by asking for the extent to which their venture was or was not technology-focused on a 7-point Likert scale. Second, we controlled for self-estimated general entrepreneurial knowledge using four items (Cronbach's  $\alpha = .80$ ) to be rated on 5-point rating scales (sample item: “How much knowledge do you have about how to manage a venture?”). Third, we controlled for future time orientation using the consideration of future consequences scale (Toepoel, 2010), which assesses how individuals weigh immediate and distant outcomes of their behavior by means of a 12-item measure ( $\alpha = .75$ ) to be rated on 5-point scales.

**Experimental Results.** In order to test hypotheses 1 and 2, we used the same regression approach as in Study 1. The results of the regression analyses are presented in Table 4 (left: evaluation; right: exploitation).

After entering our control variables in the first step, the experimental variables were inserted in the second step (Table 4). In line with hypothesis 1, the opportunity desirability/feasibility  $\times$  temporal distance interaction ( $\beta = .22$ ,  $p < .05$ ) was significant, demonstrating that evaluation changed with temporal distance: the high desirability/low feasibility opportunity was rated more favorably in the distant future ( $M = 6.42$ ,  $SD = 1.50$ ) than in the near future ( $M = 5.65$ ,  $SD = 2.23$ ), whereas the low desirability/high feasibility opportunity was evaluated more favorably in the near future ( $M = 5.81$ ,  $SD = 2.30$ ) than in the distant future ( $M = 5.21$ ,  $SD = 1.79$ ; see Table 3). We detected significantly opposing effects of temporal distance on evaluation for the two different desirability/feasibility conditions,  $z = 2.38$ ,  $p < .01$ . This interaction effect is displayed in Figure 4 (upper panel).

In line with hypothesis 2, we found a likewise significant opportunity desirability/feasibility  $\times$  temporal distance interaction effect when predicting exploitation intentions

Table 4

## Regression Results for Evaluation and Exploitation Intentions (Study 2)

	Evaluation				Exploitation Intentions			
	Step 1		Step 2		Step 1		Step 2	
	B <sup>†</sup>	SE	B <sup>†</sup>	SE	B <sup>†</sup>	SE	B <sup>†</sup>	SE
Age	-.09	.20	-.12	.20	-.10	.52	-.07	.52
Gender	-.21*	.09	-.23*	.08	-.30**	.23	-.32**	.23
Consideration of future consequences	.18	.09	.21*	.09	.12	.23	.12	.23
Technology industry	-.24*	.04	-.26*	.04	-.27**	.11	-.28**	.11
Entrepreneurial knowledge	-.05	.12	-.07	.12	-.11	.32	-.10	.32
Opportunity desirability/feasibility			.17	.09			-.12	.23
Temporal distance			.01	.09			.03	.23
Opportunity desirability/feasibility × temporal distance			.22*	.09			.20*	.23
<i>F</i> -value	2.63*		2.65*		3.56**		2.96**	
<i>R</i> <sup>2</sup>	.14		.21		.18		.23	
<i>R</i> <sub>adj</sub> <sup>2</sup>	.09		.13		.13		.15	

\*  $p < .05$ ; \*\*  $p < .01$ .

Note: <sup>†</sup> Due to prior standardization of all predictor variables all B coefficients can be interpreted as standardized regression coefficients.

Analyses of tolerance values (>.91) and condition indices (<15.00) do not indicate multicollinearity of independent variables. Inspection of residuals indicates no heteroscedasticity (Breusch–Pagan/Cook–Weisberg test and White test not significant, all  $ps > .15$ ).

SE, standard error.

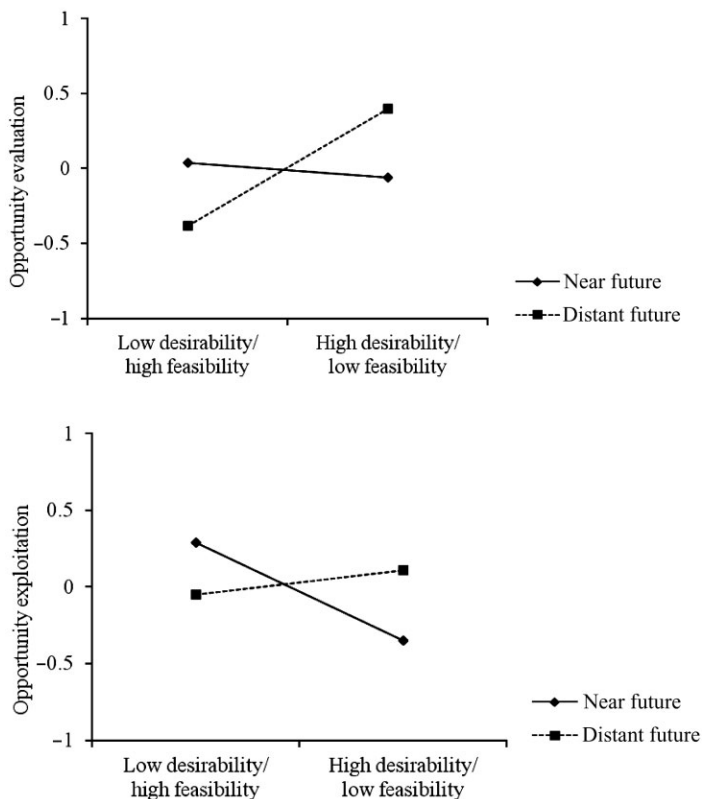
( $\beta = .20, p < .05$ ; Table 4) indicating that the influence of desirability/feasibility on exploitation intentions was similarly dependent on temporal distance (see lower panel of Figure 4). Thus, as predicted, entrepreneurs stated higher exploitation intentions for the high desirability/low feasibility opportunity in the distant future ( $M = 5.79, SD = 1.72$ ) than in the near future ( $M = 4.91, SD = 2.35$ ), whereas they were more prone to exploit the opportunity with low desirability/high feasibility in the near ( $M = 6.23, SD = 2.69$ ) rather than the distant future ( $M = 5.75, SD = 2.03$ ; see Table 3). We likewise detected significantly opposing effects of temporal distance on exploitation intentions for the two different desirability/feasibility conditions,  $z = 1.95, p < .05$ .

Finally, to test hypothesis 3, we performed the same regression-based mediation analysis as in Study 1 (cf. Preacher & Hayes, 2008).<sup>1</sup> Consistent with our prediction, the data revealed a significant indirect effect of the opportunity desirability/feasibility × temporal distance interaction (point estimate of indirect effect [path a × b]: .14, bias corrected and accelerated 95% confidence interval: .02 to .29); see Figure 5).

1. We used a regression approach with observed variables rather than structural equation modeling (SEM) to test our mediation hypothesis, since our data involve an interaction term of two dichotomous variables (i.e., the interaction of the experimental conditions), which would require us to conduct group comparisons in SEM. However, conducting group comparisons is unfeasible due to our small sample size, which in turn is problematic in maximum likelihood estimation within SEM.

Figure 4

Opportunity Desirability/Feasibility  $\times$  Temporal Distance Interaction Effect for Venture Evaluation (Upper Panel) and Venture Exploitation (Lower Panel; Study 2)<sup>1</sup>



Note: <sup>1</sup>Variables are standardized.

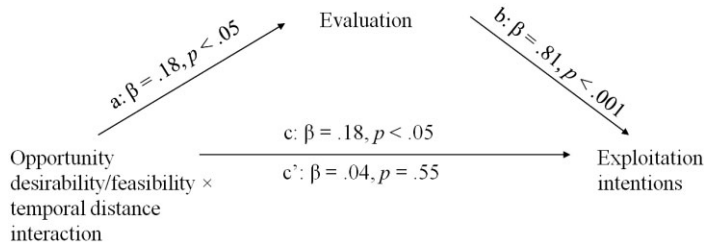
Moreover, the significant prediction of exploitation by the opportunity desirability/feasibility  $\times$  temporal distance interaction (path c:  $\beta = .18, p < .05$ ) was no longer significant when evaluation was included as a mediator (path c':  $\beta = .04, ns$ ), indicating full mediation. In conclusion, this study's results converge with the findings of the pilot study (Study 1), thus supporting our hypotheses.

### Study 3

The results of two independent studies demonstrated that, consistent with CLT, temporal distance moderated the effect of desirability and feasibility on opportunity evaluation and exploitation intentions. In order to further substantiate the robustness of these results, we conducted a third study, which aimed at demonstrating the reverse link between construal level and temporal distance, i.e., that the construal level of an opportunity also influences individuals' time estimates of when it would be appropriate to

Figure 5

Mediation Model Showing the Mediated Influence of the Opportunity Desirability/Feasibility × Temporal Distance Interaction (Study 2)<sup>1</sup>



Note: <sup>1</sup>c = total effect of the venture option × temporal distance interaction on venture exploitation when venture evaluation is not included as a mediator; c' = direct effect of the venture option × temporal distance interaction on venture exploitation when venture evaluation is included as mediator. Point estimate of indirect effect (path a × b) = .14; bias corrected and accelerated 95% confidence interval (CI) (Bca CI [95%]): .02 to .29 (based on 5000 bootstrap samples).

exploit this opportunity. In Studies 1 and 2 we provided participants with a certain future temporal distance (i.e., 1 month vs. 1 year) and asked them to evaluate the opportunity as well as to state their exploitation intentions. However, in real life, the timing of opportunity exploitation is often uncertain and not clearly provided. Instead, entrepreneurs have to evaluate opportunities and decide on their own when they will exploit a certain opportunity. Thus, in Study 3, we aimed at providing a more realistic setting in terms of time frames by assessing participants' freely expressed exploitation timing preferences in reaction to a given opportunity. We now explain in detail the theoretical rationale behind Study 3 and derive our hypothesis.

CLT posits that temporal distance and construal level have a bidirectional relationship such that high (low) temporal distance should lead to more abstract (concrete) construals, but that abstract (concrete) construals should also lead to the experiencing of high (low) temporal distance (Trope & Liberman, 2010). For instance, when an action is described in “why” terms (e.g., why someone performed an action; i.e., high-level construal) rather than in “how” terms (e.g., how someone performed an action; i.e., low-level construal), people consider the more distant future rather than the near future as more appropriate for this action's enactment (e.g., Liberman, Trope, McCrea, & Sherman, 2007). In a similar vein, we argue that individuals will consider the start of a high desirability/low feasibility opportunity (high-level construal) as more appropriate in the more distant rather than the near future. Thus, the nature of an opportunity (high desirability/low feasibility vs. low desirability/high feasibility) should lead individuals to consider different timing horizons as appropriate for the exploitation of this opportunity. Specifically, according to CLT, the value of high-level construals should weigh more in determining the distant rather than the near future, whereas the value of low-level construals should weigh more in influencing the near rather than the distant future. This is because individuals value desirability more in the distant rather than the near future, whereas individuals are more influenced by feasibility considerations in the near rather than the distant future. Therefore, we propose:

**Hypothesis 4:** Individuals will consider a more distant future as appropriate for the start of a high desirability/low feasibility opportunity than for a low desirability/high feasibility opportunity.

**Participants.** We obtained our data from  $n = 141$  (41.4% female, age:  $M = 23.2$ ,  $SD = 2.23$ , range: 19–30 years) graduate and undergraduate students of management at a large German university of technology.

**Experimental Design and Procedure.** We used two vignettes from Study 1 to manipulate the opportunities' desirability and feasibility. Participants were randomly assigned to either the high desirability/low feasibility or the low feasibility/high desirability condition.

**Dependent Variable.** We assessed participants' timing preference for exploitation by asking them in how many months from now would they exploit the given opportunity. In order to eliminate extreme values of time estimation (i.e., avoid outliers due to individual differences in time horizon preferences) and to establish comparability of the time estimates, we restricted the maximum time frame to 3 years. Hence, participants were asked to provide a time estimate for venture exploitation between 1 month and 3 years. This particular time frame was chosen in accordance with Bluedorn and Martin (2008) who found that entrepreneurs typically regard a temporal distance of 3 years ahead as the long-term future.

**Experimental Results.** As predicted, participants in the high desirability/low feasibility condition deemed a more distant future ( $M = 11.48$ ,  $SD = 7.12$ ) as appropriate for venture exploitation than participants in the low feasibility/high desirability condition ( $M = 7.93$ ,  $SD = 9.55$ ,  $t(139) = 2.49$ ,  $p < .05$ ,  $d = .42$ ). Hence, hypothesis 4 was supported by the data.

## Discussion

This research was designed to test whether and how the influence of desirability and feasibility on entrepreneurial evaluation and exploitation intentions is moderated by temporal distance. In particular, we predicted and found that when an opportunity can be exploited in the distant future rather than the near future, entrepreneurs are guided more by desirability concerns than by feasibility concerns. However, when an opportunity can be exploited in the near future rather than the distant future, entrepreneurs are influenced more strongly by an opportunity's feasibility characteristics than by its desirability characteristics. Moreover, we hypothesized and found that the level of desirability and feasibility characteristics of an opportunity leads individuals to consider different temporal distances (i.e., time lags) into the future as appropriate for acting on an opportunity. Whereas opportunities characterized by high desirability and low feasibility are preferred for the more distant future, opportunities with low desirability and high feasibility are preferred to be acted upon in the comparatively nearer future. This finding is in line with CLT because the value which is associated with desirability (a high-level construal) should be more pronounced in the distant future, whereas the value associated with feasibility (a low-level construal) should weigh more in the near rather than the distant future (Liberman & Trope, 1998). Hence, our results demonstrate that the mere nature of an entrepreneurial opportunity's characteristic leads individuals to regard different temporal distances as appropriate for acting on this opportunity.

Our findings contribute to the existing literature in several ways. First, we directly contribute to recent findings on the importance of entrepreneurial opportunities' desirability and feasibility characteristics (e.g., Haynie et al., 2009; Mitchell & Shepherd, 2010). This research has found that both have an approximately similar-sized influence

on entrepreneurs' opportunity evaluation and exploitation intentions. In contrast, we demonstrate that this may not always be the case. Based on CLT, our findings imply that the equal importance of desirability and feasibility found in previous studies may be the result of entrepreneurs' different temporal perspectives leveling out and, hence, bringing about a similar-sized influence. Specifically, in those studies, part of the entrepreneurs may have held a distant temporal perspective, whereas the other part may have held a near temporal perspective leading to a mutual offset of the temporal distance effect. By systematically varying temporal distance, our CLT-based approach demonstrates how temporal distance moderates the influence of an entrepreneurial opportunity's desirability and feasibility and provides a theoretical explanation underlying the relative importance of both opportunity characteristics for opportunity evaluation and exploitation intentions. Since there is necessarily a shorter or longer temporal distance between opportunity evaluation and the actual exploitation phase, the temporal distance between both is crucial to understand how desirability and feasibility influence entrepreneurs' evaluation and exploitation intentions. Taking a CLT perspective also offers a novel theoretical account for the inconsistencies found in previous studies on the opportunity evaluation of risky new ventures (e.g., Forlani & Mullins, 2000; Mullins & Forlani, 2005). By integrating temporal distance into these studies and reinterpreting magnitude and variability as desirability and feasibility, respectively, according to CLT (Sagrignano et al., 2002), we explain how these results patterns can be plausibly understood using this theoretical account. Taken together, our results underline the usefulness of taking a CLT theoretical perspective on the research of entrepreneurial evaluation and exploitation.

Second, our research directly speaks to a recent call by Haynie et al. (2009) who point out that the processes underlying opportunity evaluation have remained largely ignored by scholars. In particular, the authors state that the process of how "entrepreneurs evaluate opportunities to produce future goods and services" and "what influences are brought to bear on those evaluations" have remained "largely unanswered in entrepreneurship, but are central to understanding venture creation as a process" (Haynie et al., p. 338). Addressing these gaps in the literature, we identify temporal distance as a crucial moderator variable influencing entrepreneurs' opportunity evaluation and exploitation intentions.

Third, we also contribute to the existing literature on time in entrepreneurship by introducing the concept of temporal distance to this field and by showing its usefulness in the research on entrepreneurial opportunities. We believe that temporal distance as conceptualized by CLT is a valuable concept for explaining differential preferences that entrepreneurs or potential entrepreneurs have in the present moment as opposed to the near or distant future.

Fourth, our research also has implications for research on entrepreneurial intentions (e.g., Douglas & Shepherd, 2002; Fitzsimmons & Douglas, 2011; Krueger et al., 2000). Typically, participants in entrepreneurial intention studies are asked to indicate how likely it would be that they started their own venture within a certain number of years in the future (e.g., within the next 3 years). According to our results, entrepreneurial intentions may vary depending on the length of this time frame that is given to participants and in particular, whether the beginning and the end of this time frame are perceived as the relatively near or distant future. Although these studies' instructions to the participants only specify the time frame rather than a specific temporal distance between evaluation and exploitation (i.e., the time frame's beginning is usually set as the present moment when participants are asked to state their intentions), the length of this time frame per se may also influence how the opportunity's desirability and feasibility affect entrepreneurial intentions. Hence, we encourage future entrepreneurial

intentions research to systematically investigate whether and how the length of different time frames influences desirability and feasibility perceptions and in turn entrepreneurial intentions.

Fifth, we also add to the literature on CLT by empirically investigating whether desirability and feasibility characteristics foster different temporal distances to be perceived as adequate for acting on an entrepreneurial opportunity. Although it has been shown in previous CLT research (e.g., Liberman & Förster, 2009) that individuals primed with sentences describing “why” an action is performed (i.e., high-level construal prime) draw up time estimates concerning the more distant future than those primed with sentences “how” an action is performed (i.e., low-level construal prime), our research provides the first empirical evidence demonstrating that desirability and feasibility characteristics of an entity (in our case: opportunity) lead individuals to have different timing preferences for acting on this entity. Overall, based on our results, we argue that entrepreneurship research should take into account temporal distance effects when investigating opportunity evaluation and exploitation as well as entrepreneurial intentions in general.

### **Implications for Practice**

This study also has implications for practice and teaching. First, entrepreneurs and investors (e.g., venture capitalists, business angels) can profit from the present results by taking into account the time in the future when an opportunity can be exploited at the earliest when evaluating that opportunity. For instance, highly innovative technologies usually take time to be ready for the market (i.e., the opportunity can be exploited only in the distant future), but have to be evaluated in the present. Hence, entrepreneurs and investors need to be aware of a temporal distance bias, which may amplify the influence of the opportunity’s desirability to the disadvantage of the feasibility when the opportunity can be exploited only in the distant future. On the other hand, feasibility considerations may be amplified to the disadvantage of desirability considerations when the opportunity needs to be exploited in the near future. Hence, the present results may aid exploitation and investment decisions in the form of an explicit debiasing technique. In particular, decision makers can be made aware of this bias, its underlying mechanisms, as well as its effect. Moreover, they may be provided with concrete advice as how to avoid decisions being influenced by this temporal bias (e.g., Hammond, Keeney, & Raiffa, 1998).

Second, since entrepreneurship is essential for innovation and economic growth (Audretsch, 2007; Shane, 2006), many government programs, as well as university courses, are aimed at stimulating the entrepreneurial potential of students. Our study indicates that it might be wise for entrepreneurship educators to supplement standard business planning and entrepreneurship courses with material that addresses potential entrepreneurs’ cognition management regarding the role of temporal distance in entrepreneurial decisions. Potential entrepreneurs should be aware that they may have a “subjective” view of objective characteristics when it comes to entrepreneurial opportunities. In particular, potential entrepreneurs may be well advised to view an entrepreneurial opportunity from different temporal distance perspectives in order to identify desirability and feasibility factors’ respective impact on their evaluation of that opportunity. As with entrepreneurs and investors, proactive debiasing techniques in entrepreneurship education can contribute to helping potential entrepreneurs making a more informed decision on whether or not to become an entrepreneur with a given entrepreneurial opportunity.



## Limitations and Future Research

A few limitations are worth noting. First, we did not assess actual entrepreneurial behavior (i.e., our participants did not actually act on the opportunities) but instructed participants to imagine this situation realistically by presenting them with a scenario. However, Krueger and colleagues (e.g., Krueger, 1993; Krueger & Brazeal, 1994) suggest that, based on the theory of planned behavior (Ajzen, 1991), entrepreneurial intentions should be the best predictor for actual venture creation. This is in line with previous work that analyzes the antecedents of entrepreneurial activities and also uses the likelihood or the intentions of starting a business as a proxy for entrepreneurial behavior (e.g., Krueger et al., 2000; Phan, Wong, & Wang, 2002). Moreover, scenario techniques have been used in previous entrepreneurship research (e.g., Burmeister & Schade, 2007; Lévesque & Schade, 2005; Norton & Moore, 2006; Palich & Bagby, 1995; Sarasvathy, Simon, & Lave, 1998; Sarasvathy, Dew, Velamuri, & Venkataraman, 2005; Tumasjan & Braun, 2011; Tumasjan, Strobel, & Welpe, 2011b) and offer the opportunity to analyze the entrepreneurial decision processes while, at the same time, controlling for entrepreneurial opportunities' situational specifics (Shane, Locke, & Collins, 2003).

Second, we used only two out of many possible operationalizations of temporal distance (i.e., 1 month vs. 1 year). Whereas these operationalizations are in line with previous findings in entrepreneurship (Bluedorn & Martin, 2008) and previous research within the CLT framework (e.g., Freitas et al., 2008), future studies should also aim at employing other operationalizations (i.e., other levels of temporal distance) when investigating the effects of temporal distance.

Third, this research was in part conducted with a convenience student sample, which may limit the generalizability of the findings. However, we used a student sample for pilot testing only and found support for our hypotheses in a sample of actual entrepreneurs.

Future research may build upon the results of this study in a number of ways. For example, since the concept of temporal distance has here been investigated within the context of entrepreneurship for the first time, future research is required to cross-validate and extend the findings of this study. The central role of temporal distance should also be further investigated regarding other entrepreneurial activities, such as, for instance, purchase or hiring decisions. A likewise interesting line of inquiry stemming from this study may relate to the various, and possibly interrelated, effects of other forms of psychological distance, such as social, spatial, and hypothetical distances (Trope & Liberman, 2010) on entrepreneurial cognition.

In conclusion, the findings of this research demonstrate the importance of taking into account the temporal distance between opportunity evaluation and the actual phase of exploitation. We believe that our findings hold promise for further investigations of the role of temporal distance in entrepreneurial cognition research.

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