

3 Consumer Prediction

Forecasted Utility, Psychological Distance, and Their Intersection

Carey K. Morewedge and Hal E. Hershfield

Consumer prediction encompasses the cognitive, affective, and motivational psychological processes by which consumers anticipate (and subsequently produce) the future. Prediction is a pervasive factor in consumer decision making, from everyday decisions such as which lunch one should purchase to major decisions about how much one will need to save for retirement. More generally, predictions are the method by which consumers determine which choice options will bring them the greatest satisfaction in the present and by which they anticipate their needs and wants in the near and distant future. In this chapter, we examine the processes by which consumers infer whether and what will happen in the future, the accuracy of their predictions, their antecedents, and consequents. We (i) review the two dimensions of prediction that have been most studied, utility and psychological distance, and how they combine to determine the perceived value of prospects (choice options). We (ii) discuss innovative research on these topics over the last decade, and (iii) end with important open questions and promising future directions.

I. Dimensions of Prediction

Guided by the evaluation of prospective (future) events in terms of their expected value (Kahneman & Tversky, 1979; Von Neumann & Morgenstern, 1947), the two dimensions of prediction typically studied by consumer psychologists are (a) the utility of future events and (b) their probability of occurrence. In this chapter, we discuss these two dimensions of prediction in terms of their recently refined and expanded definitions. Specifically, we review the concept of utility in terms of a refined definition that distinguishes between indirect and direct measures of utility. We review the concept of probability as an instance of a broader dimension of psychological distance, which also includes time, physical space, and more abstract forms of distance such as social connection.

Utility

Utility is a measure of the value of a stimulus that typically connotes the total pleasure or pain associated with its anticipation, experience, and recollection.

Consumer prediction research typically examines two kinds of utility associated with a future event: its *decision utility* and its *predicted utility* (Kahneman, Wakker, & Sarin, 1997; Morewedge, in press; Shiv & Huber, 2000). *Decision utility* refers to relative preference that people exhibit for different stimuli, measured through indirect methods such as observing which stimulus they choose when given a choice of stimuli and their willingness to pay for a stimulus. A bagel presumably has higher decision utility for a person than a banana, for example, if she chooses the bagel when given a choice of the two, or she is willing to pay more for the bagel than the banana. If one observes enough choices [e.g., (bagel > banana) + (banana > granola bar)], one can determine the decision utility of stimuli for that person by building an ordinal map of her rank-ordered preferences (bagel > banana > granola bar). Theoretically, there can be no error in decision utility. A person is assumed to always make choices in a way that will maximize her utility – what she chooses is presumably the choice option that will bring her the most utility (e.g., Bruni & Sugden, 2007; Pareto, 1906; Samuelson, 1937). Consequently, one cannot determine whether any of her choices are made in error. In other words, one cannot determine if the option with the highest decision utility is not the choice option that provides the highest *experienced utility* – the pleasure and pain actually derived from the option she chose (Kahneman, Wakker, & Sarin, 1997).

Predicted utility refers to the pleasure and pain that a person anticipates will be evoked by a future event or stimulus (a prediction of the experienced utility that the stimulus will provide). It is typically measured by asking a person to make an affective forecast – to predict how good or bad she will feel at a specific moment if the event occurs. A safari in Africa has greater predicted utility than wine tasting in France if a person believes that she will experience more pleasure if she vacations in Africa. Most forecasts are made for specific moments (How happy will you be while watching a lion taking down a wildebeest?) rather than of the *total utility* that an experience provides – the sum pleasure and pain of anticipating, having, and remembering the whole vacation. Predicted utility thus usually entails a forecast of one component of experienced utility, *instant utility*, which is the pleasure and pain experienced a single moment of an experience. The temporal inverse is *remembered utility*, which is a retrospective judgment of the pleasure and pain that one had during an experience (Kahneman, 1999; Kahneman, Wakker, & Sarin, 1997; Morewedge, in press). Predicted utility is a means by which to make choices between options, such as which to consume (Alba & Williams, 2013). It can also motivate behavior (Morewedge & Buechel, 2013) as people expend effort to produce the outcomes that they anticipate they will enjoy and to avoid the outcomes they believe will be unpleasant.

The accuracy of predicted utility can be determined by comparing affective forecasts of an experience to the instant utility reported by people currently having the forecasted experience (“experiencers”). For example, one can have one group of consumers predict how much they will enjoy eating a chocolate ice cream cone, have another group report their enjoyment of it while they are eating it, and compare the forecasts made by the former group to the reports

made by the latter. These comparisons between predicted and instant utility allow one to test whether, when, and why forecasters err. Forecasters usually get the valence of the experience correct, but do make mistakes when inferring predicted utility. Forecasters usually recognize which experiences will be pleasurable and which will be unpleasant (Mathieu & Gosling, 2012), but they typically overestimate the intensity and duration of the pleasure and pain that experiences will induce. People overestimate how much they will enjoy an unexpected cash bonus or a greater salary (Buechel, Zhang, Morewedge, & Vosgerau, 2014; Aknin, Norton, & Dunn, 2009), for example, and for how long they will enjoy a newly acquired good (Wang, Novemsky & Dhar, 2009).

Decision utility and predicted utility are usually but not necessarily related. Both are assumed to adhere to the prospect theory value function (Kahneman & Tversky, 1979), which is asymmetric with respect to losses and gains and nonlinear with respect to the utility of increasing units of a stimulus. In both cases, a loss is assumed to have a greater psychological impact than an equivalent gain, and both losses and gains to have diminishing marginal utility. Moreover, people typically choose what that they believe will bring them the most pleasure. Most people would choose to eat a bagel rather than a banana if they thought it would bring them more pleasure to eat the bagel, and would choose to eat the banana if they thought it would bring them more pleasure than eating the bagel. Occasionally, however, decision utility inferred from choices does not reflect predicted utility, which we review in section two of this chapter.

Psychological Distance

A second dimension of consumer prediction is the concept of psychological distance. Recent work by Liberman, Trope, and colleagues (e.g., Liberman & Trope, 2014) proposes that the ability to traverse distances mentally – whether those distances are social, temporal, geographic, or hypothetical – is a general human ability that should potentially replace expectancy in models of expected utility. Although we question whether it should fully replace expectancy, we believe there are many ways that considering distance can help in refining models of consumer prediction.

People spend much of their lives outside of the here and now, recalling the past, imagining and planning for the future, and considering others' points of view. These various forms of traversing the present moment require the ability to assess and account for psychological distance. A considerable amount of new research suggests that the different domains of distance are both processed automatically and correlated with one another.

As evidence for automatic processing of this distance dimension, Bar-Anan, Liberman, Trope, and Algom (2007) used a picture-word version of the Stroop paradigm and showed participants landscape images with an arrow that either pointed at a nearby or faraway point on the image. Next to each arrow was a word that varied in terms of its meaning related to distance (e.g., *tomorrow*, *we*, or *sure* versus *year*, *others*, or *maybe*). Participants were faster to identify the

spatial distance of words when there was distance congruence, that is, when the implicit distance conveyed by the word matched the distance between the arrow and point indicated in the image.

Regarding correlations between distances, Stephan, Liberman, and Trope (2011) found that experimentally inducing distance on one level (e.g., hypotheticality) primed thoughts about distance on another level (e.g., social distance). Moreover, Fiedler, Jung, Wanke, and Alexopoulos (2012) systematically examined correlations between all four distances and demonstrated that when people imagined themselves performing an activity that was either distal or proximal on one dimension (e.g., on time: winning a lottery tomorrow rather than in a year) they were more likely to assume a similar distance on another dimension (e.g., on probability: their chance of winning was estimated to be better in a lottery played tomorrow than in a lottery played next year).

Liberman and Trope (2014) suggest that the ability to project oneself beyond one's present perspective begins early in life. Infants exhibit a capacity for object permanence (Baillargeon, Spelke, & Wasserman, 1985), the understanding that when an object disappears behind a screen it will still be present once the screen is removed. Object permanence represents a form of abstraction, thinking in high-level terms about the state of the world. And it is through abstract thought that people can effectively traverse psychological distance. Any given event can be represented at different levels of abstraction. Moving from New York to Los Angeles could be construed in high-level, abstract terms: "moving," "changing cities," "changing one's lifestyle." This same move can also be represented in low-level, concrete terms: "packing boxes," "hiring movers," "replacing pizza and Biggie with tacos and Tupac."

One of the basic premises of the theoretical work (construal level theory; Trope & Liberman, 2010) that underlies these predictions about distance is that the more distant a specific event is, the more abstract the construal of that event will be. Indeed, temporally distant events are construed in high-level terms whereas temporally near events are thought of in concrete terms (e.g., Liberman, Sagristano, & Trope, 2002), and similar results have been found for the domains of spatial distance (e.g., Fujita et al., 2006), social distance (Liviatan, Trope, & Liberman, 2008), and hypothetical distance (i.e., probability; Wakslak & Trope, 2009). This positive correlation between distance and abstraction stems in part from the relationship between direct experience and the amount of information that people possess about an event (Trope, Liberman, & Wakslak, 2007). Events occurring in the here and now provide one with many specific, concrete details (e.g., the lobster roll I am eating is red, the bread is crunchy and slightly buttered, the restaurant smells faintly of beer). But if that same event occurs at some faraway point in the distant future or in a faraway city, then one has less available information about the event and instead must rely on a more schematic abstraction of it (e.g., the lobster roll one anticipates cues thoughts of the summer and beach vacations).

Given this shift in the mental representation of events that are near and far, happening to oneself or another person, or are certain and uncertain,

consumer prediction can be affected in important ways as a function of whether a predicted event occurs distally or proximally, and accordingly, whether that event is construed in abstract or concrete terms. In section two, we review recent findings illustrating these different effects.

Utility and Distance

Early research on the relationship between utility and distance focused on the discounting effect that uncertainty has on the decision utility of choice options. Lottery tickets, for example, cost a small fraction of their potential payout because they are partially discounted by the probability of winning the lottery (i.e., winning is not guaranteed). In this *expected-value* framework, the value of a stimulus is conditional not only on the utility that it would provide if it is obtained but also on the probability of obtaining it ($EV = \text{utility} * \text{probability}$; Von Neumann & Morgenstern, 1947). A gamble in which a person has a 10 percent chance to win \$100 has an expected value of \$10 ($.10 * \$100 = \10), for example, and has a lower expected value than a gamble in which that person has a 20 percent chance to win \$100 (for which $EV = \$20$).

More recent research has examined whether this relationship and the discounting effect extends to other instantiations of psychological distance. In other words, whether the value of a stimulus is contingent on both the utility of the stimulus and its psychological distance. This work has found that for temporal, spatial, and social distance, the value of a stimulus is discounted with its distance from the judge's origin: now, here, herself. Good and bad events have a greater hedonic impact if they are happening now, nearby, and to oneself than if they are happening in the distant future, far away, or to a stranger (Caruso, Gilbert, & Wilson, 2008; Jones & Rachlin, 2006; Williams & Bargh, 2008). An example of this work in psychology and economics is that of *temporal discounting*. Many people prefer to receive a smaller reward immediately (\$10 now) than a larger reward later (\$11 in one week). The discounting effects of different instantiations of distance appear to be (at least partially) interchangeable. Events occurring to a future self, for example, are in some cases treated like events happening right now to a different person (Bartels & Rips, 2010; Bryan & Hershfield, 2012; Parfit, 1971; Pronin, Olivola, & Kennedy, 2008; Schelling, 1984).

Discounting is not the only effect that varieties of distance can have on the value of future events. Uncertainty can have the opposite effect on the predicted utility of future events. Surprising, low-probability events tend to elicit a stronger hedonic response than events that are expected (Shepperd & McNulty, 2002). The actual probability of events is not the only way that an event may seem surprising. The *mutability* of an experience, the extent to which an event could have or seems like it could have occurred, similarly amplifies the pleasure or pain it evokes. Mutability can be assessed in advance. Highly uncertain outcomes such as winning the lottery or unlikely medical test results can be labeled as mutable events in advance. Events that were expected in advance, however, can also be perceived as highly mutable while or after they occur if a

person can easily generate *counterfactual alternatives*. Counterfactuals are alternative ways that the past could have unfolded that would have produced a different present than the one that was or is being experienced (Kahneman & Miller, 1986). If one is in a car accident that could not have been avoided, for example, it may seem mutable if it is easy to imagine having left home earlier or later or if there were other routes that one might have taken to one's destination (Kahneman & Varey, 1990).

II. Recent Advances

Utility

Research in the past decade on consumers' predictions of utility has attempted to discern why people make errors in their predictions and fail to make choices that reflect their predictions when they are accurate (e.g., Alba & Williams, 2013; Dunn, Gilbert, & Wilson, 2011; Hsee & Hastie, 2006; Morewedge, in press). In the domain of decision utility, this research has focused on why people make choices that fail to maximize their utility – choose the option that would provide them with the most pleasure. In the domain of predicted utility, this research has focused on elucidating the process by which predicted utility is inferred and why and when predicted utility is most susceptible to “affective forecasting” errors.

Theoretically, decision utility is not subject to error. Most (economic) models of decision utility assume that an informed consumer chooses what would best maximize her utility (Bruni & Sugden, 2007). Postmortems of decision making reveal that people often do not maximize their utility, however, as revealed by the considerable number of decisions that people regard to have been regrettable or self-control failures (Baumeister, 2002; Morewedge, in press; Simonson, 1992). Research examining why consumers make choices that do not maximize their utility has generally sorted their mistakes into two categories: (1) failing to accurately predict the consequences of choice options (predicted utility) and (2) failing to select the choice option identified by prediction as maximizing utility (e.g., Hsee & Hastie, 2006). A consumer fails to maximize her utility due to prediction errors, for example, if she incorrectly predicts that she would enjoy eating a banana more than a bagel and chooses the banana on the basis of this false belief. Even if she does correctly predict that she would enjoy eating the bagel more, she may succumb to the latter error. Impulsivity may get the better of her, and she may decide to eat the banana because she does not have the patience to wait for the bagel to be toasted (Hsee & Hastie, 2006; Morewedge, in press; Wittman & Paulus, 2008).

Errors in Prediction

Two general accounts have been proposed by which consumers make predictions about how much pleasure or pain future experiences will evoke. A theory-based

account suggests that people attempt to anticipate the consequences of future events and then anticipate how those consequences will make them feel (Loewenstein & Lerner, 2003; Tversky & Griffin, 1991). A simulation-based account suggests that people mentally simulate the future event, note how that simulation makes them feel in the present, and make corrections for any differences in context between the future and the present of which they are aware. People then use this corrected “pre-feeling” as a proxy for their response to the future event (Gilbert & Wilson, 2007).

Errors according to the theory-based account stem from inaccurate theories about the consequences of future events, the emotional impact of those consequences, or the influence of incidental (irrelevant) emotions on the anticipated consequences and impact (Loewenstein & Lerner, 2003). Gym goers predicting whether they would be worse off if they packed insufficient food or water on a hike, for example, were more likely to predict they would regret forgetting food if they had yet to exercise than if they had already exercised. After working out, they were more likely to anticipate accurately how much more thirsty they would be than hungry (Van Boven & Loewenstein, 2003). People may also fail to anticipate accurately how the consequences of an event will make them feel if they are in a state that is not aligned with the preferences they will have in the future. Students, for example, are more likely to underestimate how uncomfortable they will feel telling a joke to their class when they are in a state of calm relaxation than when making their prediction in a state of negative arousal (Van Boven, Loewenstein, Welch, & Dunning, 2012).

Errors according to the simulation-based account occur when people fail to correctly simulate the future experience and when people fail to sufficiently correct for differences in the context in which the experience is forecasted and had (Gilbert & Wilson, 2007). Simulations of future experiences may be flawed because they are based on unrepresentative past experiences. When predicting how much they will enjoy a baseball game they are about to watch, for example, baseball fans tend to recall the best game they can remember and base their prediction on their memory of that unusually good game (Morewedge, Gilbert, & Wilson, 2005).

People also simulate unrepresentative portions of experiences. When people simulate future experiences or remember the past, they tend to focus most closely on the moments from those experiences that are nearest to the present (the beginning or end, respectively). When imagining how happy they will feel after acquiring a new gadget or car, people think about how they will feel in the moments right after it has been purchased rather than how they will feel a week or a month later after they have adapted to their acquisition. They thus overestimate how long new consumer goods will make them happy (Wang, Novemsky, & Dhar, 2009). In other words, people base their predictions on the experience of acquiring the good rather than on a typical moment during its consumption (Hsee, Hastie, & Chen, 2008). Predictions for the future also rely on memories of the past, and interference in memory leads people to best remember the last moments of recent past consumption experiences (Garbinsky,

Morewedge, & Shiv, 2014a). As a consequence, enjoyment of the latter moments of a consumption experience is overweighted when people decide how soon to repeat that consumption experience again in the future (Garbinsky, Morewedge, & Shiv, 2014b).

Even when forecasters accurately simulate future events, they may fail to correct for differences between the circumstances under which forecasts are made and experiences occur. Forecasters tend to overestimate the extent to which they will be tempted and able to compare experiences to their alternatives. As a consequence, they overestimate the extent to which their enjoyment of an experience will be influenced by its comparative value and by the likelihood of experiencing an alternative (Buechel, Zhang, Morewedge, & Vosgerau, 2014; Gilbert, Morewedge, Risen, & Wilson, 2004; Hsee & Zhang, 2004; Morewedge et al., 2010; Morewedge, Kassam, Hsee, & Caruso, 2009).

Differences in circumstances may also be due to different goals or preferences that are salient or important when making a forecast and having an experience. Intense emotions or cravings may change how one values experiences, and those changes appear to be difficult to anticipate (e.g., Lerner, Small, & Loewenstein, 2004; Sayette, Loewenstein, Griffin, & Black, 2008). People believe that the person they are now is the person who they will always be. Although they recognize how much they have changed from the past, they think that their personality and preferences will remain stable in the future and consequently overpay to enjoy the things they enjoy now in that future (Quoidbach, Gilbert, & Wilson, 2013).

Errors in Execution

Even when people do correctly predict which choice options will bring them the most utility, impulsivity or an overreliance on heuristics may lead them to select options that fail to maximize their utility. People make impulsive decisions when choosing options that have fewer benefits in the long term than their alternatives but more benefits in the present. Immediate rewards may have more salient benefits, or options with greater future reward may seem less appealing because those future rewards are discounted. As impulsive choice options become near in time or space, their incentive value increases to the extent that they can be more tempting than larger future rewards (Ainslie, 2001; Caruso, Gilbert, & Wilson, 2008; Kivetz, Urminsky, & Zheng, 2006). A candy bar is most difficult to resist when it is in one's desk or within arms' reach in the checkout aisle. In some cases, motivational urges can be strong enough to prompt actions that are experienced as unpleasant. Smokers may experience strong cravings to smoke even when they have a negative attitude toward smoking (De Houwer, Custers, & De Clercq, 2006). Future rewards may also be overly discounted because of irregularities in the subjective perception of temporal or social distance (Hershfield, 2011; Zauberman, Kim, Malkoc, & Bettman, 2009), obtaining them seems more uncertain (Keren & Roelofsma, 1995), or the default is to receive the immediate reward rather than the delayed reward unless action is taken (Weber et al, 2007).

Relying too much on heuristics or decision rules may also lead people to fail to choose options that would maximize their utility because those rules fail to capture preferences that are implicit or difficult to articulate (e.g., Maison, Greenwald, & Bruin, 2004), are inappropriate to apply to the present context, or are simply wrong. People have difficulty saving and thus generally try to maximize their earnings when given the opportunity. Sometimes they over apply this rule, however, and end up *overearning* – working to acquire more resources than they can possibly consume (Hsee, Zhang, Cai, & Zhang, 2013). Reason-based choice may more generally lead people to make decisions that can be justified with results that are less satisfactory than decisions that are more difficult to justify. People believe that it is generally beneficial to have variety and more choice options (Botti, 2004). When making choices in advance, however, people may overestimate how much variety they will want in the future and underestimate how soon they will want their favorite option again (Simonson, 1992).

Having many choices can result in having options that better match one's preferences, but too many choices may be demotivating and lead one to delay or avoid choosing any of a set of desirable options (Iyengar & Lepper, 2000). Moreover, satisfaction with chosen options is not only a function of the utility those options provide, but also what those options lack that would have been provided by their alternatives. Consequently, the more, and more varied, choice options that one rejected when choosing, the less one enjoys the option that one chose, even it was indeed the best option (Diehl & Poynor, 2010; Sagi & Friedland, 2007).

Psychological Distance

By definition, a consumer can make predictions only about events that will occur in the future, but clearly not the past. Yet, the future comprises many different points in time. A consumer can make a prediction about how much he or she will enjoy a given meal in the next hour, the next day, or even years away. Recent advances in consumer psychology research have found that predictions are influenced by the psychological distance of a relevant target, regardless of whether that target is an event or a person. As noted earlier, distance does not have to be solely confined to the temporal domain, and can additionally be conceptualized in terms of geographic, social, and hypothetical distance. All of these perceived distances can affect consumer prediction, and they can do so in terms of confidence judgments, probability estimates, and planning for the future.

Confidence

Construal level theory (CLT) holds that distant events evoke an abstract mindset whereas events that are closer elicit more of a concrete mindset (Trope & Liberman, 2010). Indeed, evaluations and decisions regarding distant future events are more based on high-level aspects of alternatives (e.g., temporal, social,

spatial, and hypothetical distance increases the weight given to ends versus means; Liberman & Trope, 1998; Liviatan, Trope, & Liberman, 2008; Sagristano, Trope, & Liberman, 2002; Todorov, Goren, & Trope, 2007). Accordingly, *predictions* made about a distant event should be based more on abstract or high-level construals compared to concrete or low-level construals. To test this possibility, Henderson, Fujita, Trope, and Liberman (2006) had research participants at New York University's Washington Square campus view a series of graphs that depicted events (e.g., number of inches of rainfall) over a five-year period from 1999 to 2004. The events were described as either occurring in New York (spatially near) or at NYU's Florence campus (spatially distant), and in each case there was a general trend for the first four years, followed by a deviation in the final year. Participants then predicted whether the following year's event would follow the general trend or be more in line with the previous year's aberration. In line with predictions made by CLT, participants in the spatially distant condition were more likely to base their predictions off of the high-level general trend (which represents an abstract rule), whereas participants in the spatially near condition were more likely to base their predictions off of the most recent year's aberrant event (a low-level, concrete piece of information).

Temporal distance and information format should subsequently affect confidence judgments about future events as well. Consider a student who is asked to make a confidence judgment about his or her performance on a test in the near or distant future. With more temporal distance between now and the date of the test, we would expect the student to rely more on abstract, high-level information (e.g., general knowledge of the subject matter) when making a prediction about his or her performance than on low-level concrete information (e.g., the format of the test). Along these lines, Nussbaum, Liberman, and Trope (2006) had research participants make predictions about their performance on an upcoming trivia quiz, either in the near or distant future (i.e., fifteen minutes or one month later). Additionally, half of the participants were told that the format was multiple-choice and half were told that it was open-ended, the latter being harder and more likely to tap into general knowledge. Participants who were led to believe that the quiz would take place in the near future were more confident in their ability to do well, but only if they were told that the quiz was a multiple-choice one compared to when it was described as open-ended. A more difficult format, in other words, engendered lower confidence for the near-future quiz. However, both question formats resulted in similarly high levels of confidence when the quiz was framed as taking place in the distant future. Said differently, temporal distance reduced the amount of weight assigned to low-level information (e.g., question format) and accordingly prevented the reduction in confidence that went along with this low-level information.

Probability

Previous work has found that the hypotheticality of an event is correlated with other distances. For example, people are more likely to say that something

“seems to be the case” than something “is the case” when addressing a socially distal person (Stephan et al., 2011). To what extent, however, is the distance of an event related to the likelihood – or probability – of an event’s occurrence? Earlier research, which speaks tangentially to this question, demonstrated that people believe that frequent events are more likely to occur to the self and rare events more likely to happen to others, in both positive and negative domains (e.g., Chambers, Windschitl, & Suls, 2003; Kruger & Burrus, 2004). More recently, Wakslak (2012) proposed that unlikely events would be seen as intuitively more likely to occur in distal contexts and likely events seen as more likely to occur in more proximal contexts. This prediction is based on construal level theory inasmuch as distant events are thought about abstractly (which is more in line with an “improbable” occurrence) and near events are thought about concretely (which is more in line with a “probable” occurrence). Indeed, earlier work has conceptualized likelihood as a dimension of psychological distance (Wakslak, Trope, Liberman, & Aloni, 2006). Events are seen as more distant (that is, more removed from one’s direct experience) if they are hypothetical rather than actual.

Applying this logic to prediction, Wakslak (2012) found that research participants were more likely to think that a rare protein would be found in a friend’s pet if the friend lived far away rather than close, would bet more on a boxing underdog if the fight were occurring across the country rather than nearby, were more likely to believe that a rare hand in poker would occur at the end of the night rather than the beginning, and that an unlikely but insurable event would be more likely to occur in a year rather than in a day. The latter finding has particular relevance for consumer prediction to the extent that consumers must regularly make probability judgments when deciding whether and how much insurance to purchase (Kunreuther, Pauly, & McMorro, 2013). With greater distance (temporal or geographical in this case), consumers are more likely to assume that a relatively low-likelihood event actually has a relatively higher likelihood of occurring, which could cause them to enroll in insurance plans from which they are unlikely to benefit.

Planning

When it comes to making predictions about future behavior, one pervasive problem plaguing consumers is their tendency to exceptionalize the present and fail to connect past behavior to future outcomes. People, for example, fail to budget appropriately because they easily write off big-ticket expenses from each month as “special” expenditures that are unlikely to occur again (Sussman & Alter, 2012). Consumers are also prone to perceiving resource slack in the future (Zauberman & Lynch, 2005), inasmuch as they are overly optimistic in thinking about how much they will save in a specific upcoming month (Tam & Dholakia, 2011). Along similar lines, people underestimate how much they will spend in a coming week, even if they know that they typically spend more than the predicted amount (Pietz & Buehler, 2009). These findings are in line with a

host of studies on the planning fallacy, many of which suggest that people grossly underestimate the amount of time a given future task will take because they fail to adequately take into account past task completion times (e.g., Buehler, Griffin, & Peetz, 2010; Buehler, Griffin, & Ross, 1994).

In understanding the reasons underlying the planning fallacy, Buehler, Griffin, and Peetz (2010) have suggested that people are likely to take one of two approaches to making predictions: the inside view and the outside view (e.g., Kahneman & Lovallo, 1993). When adopting the “inside view,” people are likely to consider the specific aspects of a given case at hand, making it all the more likely that they will see that particular instance as unique. Taking the “outside view,” on the other hand, results in a less extreme planning fallacy because people are more likely to consider how a target event fits into a broader pattern of other events.

Peetz and Buehler (2012) recently proposed that one way to induce an outside perspective – and therefore, one way to help consumers make more accurate planning predictions – is to encourage an abstract construal, given that abstract construals tend to help people see events as part of a pattern rather than as unique occurrences (e.g., Fujita & Roberts, 2010; Ledgerwood, Wakslak, & Wang, 2010). To this end, when consumers were primed to be in an abstract rather than a concrete mindset, they made less optimistic (i.e., more realistic) spending predictions for the subsequent week (Peetz & Buehler, 2012). Furthermore, when consumers were asked to make spending predictions for the distant rather than near future, leading to a more abstract rather concrete construal, their predictions were more realistic.

Utility and Distance

Consumers assess utility for decisions that have immediate as well as more distant consequences. Indeed, many, if not all, purchasing decisions can in some way be related back to an estimation of future utility (Dunn, Gilbert, & Wilson, 2011; MacInnis, Patrick, & Park, 2006; Morewedge, in press). Yet, despite the importance of these types of intertemporal spending predictions, consumers often fail to identify with the person who they will become (e.g., Bartels & Rips, 2010; Bartels & Urminsky, 2011; Hershfield, 2011) leading to decisions that can be considered suboptimal over time when enough temporal (and by extension, social) distance exists between the present self and the future self.

Parfit (1971), Schelling (1984), and others (e.g., Thaler & Shefrin, 1981) have suggested that people often act as if their future selves are different people altogether. With enough temporal distance, the distant self actually feels, on an emotional level, as if it is a stranger. This theoretical prediction is grounded in recent empirical work that has found that greater emotional intensity can reduce perceived psychological distance (Van Boven, Kane, McGraw, & Dale, 2010). People who feel more connected and similar to their future selves discount future rewards less (Bartels & Rips, 2010; Ersner-Hershfield et al., 2009; Pronin, Olivola, & Kennedy, 2008). One way, then, to help consumers

identify with their future selves (and therefore make more accurate assessments of distant utility) is to heighten the emotional intensity of thoughts about those later selves.

In one recent study, retirement messages that appealed to a sense of social duty to one's future self were most effective among consumers who already feel a strong sense of emotional connection to those distant selves (Bryan & Hershfield, 2012). Participants who read vignettes about people with disrupted identities over time (e.g., from a divorce) discounted future rewards less (Bartels & Urminsky, 2011). Moreover, Hershfield and colleagues (2011) found that research participants who were exposed to vivid, visual images of their future selves allocated more hypothetical money to a long-term savings account compared to participants who simply saw images of their present selves. In follow-up work, Brown, Hershfield, Kouri, and Bryant (under review) found that this relationship between exposure to the future self and heightened saving was due to great episodic future thinking and an intensified emotional connection to the future self.

With more temporal distance, the future self becomes more socially distant as well. In fact, both forms of distance can lead to heightened discounting of rewards. When research participants were asked how much money they would forgo in order to give \$75 to another person, the amount decreased hyperbolically along with social distance (Jones & Rachlin, 2006; see also Simon, 1995). Reducing the social distance between the current and future self, then, can lead to more accurate predictions and decisions regarding what the future self might want (to the extent that adults do in fact want more wealth later in life; Carstensen, 2011).

III. Open Questions

The last decade has been one of considerable advance in the study of consumer prediction. Faulty predictions and suboptimal choices have been identified and elucidated. The causes, consequences, and relationships among various forms of psychological distance have begun to be explored. Interactions among these dimensions beyond utility and probability have begun to be explored. Yet, as each dimension and their relationship has become better specified, more questions arise and many remain.

Utility

A major question for future research is how predicted utility and decision utility are related. People usually choose experiences that they believe will bring them more pleasure and less pain than their alternatives (Gilbert & Wilson, 2007; Hsee & Hastie, 2006), and how pleasurable they believe an experience will be influences how hard they work to experience it (Morewedge & Buechel, 2013). How people translate the predicted utility they anticipate in each moment of an experience into an assessment of its total utility and decision utility, however, is less well understood. Past research in this area has primarily focused on biases in

the translation of predicted utility to decision utility. Given the choice between experiences that should increase in the utility they provide or decrease in the utility that they provide, for example, people prefer sequences with increasing levels of utility (Loewenstein & Prelec, 1993). Most people would prefer a job with a salary that will increase over time to a job with a salary that will decrease over time, even if both will pay them the same total amount of money.

Much research on the relationship between decision utility and remembered utility (which shares many similarities with predicted utility) has been studied in this vein, focusing on how biases in memory lead the utility provided by peak and end moments to be overweighted in retrospective evaluations of utility and decisions based on those evaluations (e.g., Frederickson & Kahneman, 1993; Kahneman, Fredrickson, Redelmeier, & Schrieber, 1993). When eating a food, for instance, memory for enjoyment of the last bites of the meal interfere with recollection of memory for enjoyment of the initial bites, which leads end enjoyment to be better remembered later and to determine when that food will be consumed again (Garbinksy, Morewedge, & Shiv, 2014a).

Promising new research in this area has developed models to create profiles of the *total utility* of experiences (the sum of all experienced utility they would provide) based on their component features (Baucells & Sarin, 2013). These models, even if subject to some error, are important because they provide a new normative standard for consumer predictions. In other words, these models will allow researchers to test whether consumers are able to forecast accurately the total utility of an experience – to predict accurately how much benefit to their life, on the whole, an experience will bring them. At the present, these comparisons will have to be very basic in nature – comparing the model predictions to consumer choices. This is because no normative way to measure predictions of total utility has been widely adopted that does not rely on methods used to elicit decision utility (e.g., maximum willingness to pay or choice). Kahneman (1999) suggested one duration-weighted method that shares many similarities with the quality-adjusted life years method that is used in medicine, but, to our knowledge, no comparisons between total predicted utility and experienced total utility have been directly tested (Morewedge, in press).

It is possible that people do not attempt to predict the total utility of future experiences. They may only anticipate how they will feel in particular moments. They may focus on the experienced utility associated with an event and underweight the pleasure they will feel from its anticipation or recollection. Or they may only take anticipation and recollection into account for very brief experiences that provide considerable (dis)utility from anticipation and recollection, such as an electric shock or a kiss (Loewenstein, 1987). Indirect methods of utility elicitation are likely to help understand where biases in these predictions are present and absent, but the development of more direct measures is needed to compare the accuracy of predictions and experiences.

Another major question is whether consumers use predicted utility as the primary determinant of decision utility. Other features of experiences, such as the moral and societal consequences of the experience or the religious and secular

ideals and beliefs of the consumer, may contribute more to decision utility than the total pleasure the experience might yield (e.g., Dunn, Aknin, & Norton, 2008; Rucker & Galinsky, 2009). An important example of this is the decision to have children. Most adults decide to have children, yet the evidence that the decision to have children maximizes one's experienced utility is ambiguous at best (Bhargava, Kassam, Loewenstein, 2014). When making moral decisions, people also often choose according to their moral principles and beliefs rather than according to principles of utility maximization (Greene, 2013). It is possible that for many choices, both important and mundane, the total utility that choice options provide has relatively little to do with the option that is chosen.

This question is particularly relevant for consumer decision making, as consumers often are forced to make trade-offs between the utility they imagine they will derive from a good and other attributes such as its price (and opportunity costs). Whether people choose a good because of a sophisticated calculation that takes into account overall utility or because of a particular feature is a crucial question that is difficult to answer. Indeed, consumers seem to neglect important features of the utility of alternatives such as opportunity costs (Frederick et al., 2009). Those consumers who do attempt to engage in utility maximization (maximizers) often appear to struggle with choices during and after decisions. They even are less satisfied in some cases with the (better) choices they have made than satisficers (i.e., consumers who simply choose the first option that surpassed a basic threshold of acceptability; Iyengar, Wells, & Schwartz, 2006).

Distance

Seeing into the Future

Much of our society overeats, undersaves, and mistreats the environment. Given these ubiquitous problems with intertemporal (present vs. future) decision making, it is perhaps not surprising that a large body of research has examined the many ways that people interact with the future. People make fundamentally different decisions for the present than for the future, for example, and these decisions are often erroneous. These suboptimal decisions can arise when people commit one of several different "errors of prospection" (Gilbert & Wilson, 2007), such as failing to simulate the future accurately. Such prospection requires mental time travel (Suddendorf & Corballis, 2007) from one state (the present) to another (the future), crossing a dividing line that separates the two. A major determinant of impulsivity and self-control failure, whether people prefer a smaller reward sooner to a larger reward later, is whether the smaller reward will be received immediately (Hsee & Hastie, 2006; McClure, Laibson, Loewenstein, & Cohen, 2004).

Surprisingly, the literature to date has offered little insight by way of defining this dividing line. In other words, *when is the future?* People perceive time as a sequence of episodes (Newton, Engquist, & Bois, 1977), but when does the present end and the future begin, and what determines this end and beginning?

Maglio and Hershfield (2014) have begun exploring this question on a general level, and more specifically, whether people differ in their perceptions of when the present ends, if such perceptions are linked to intertemporal decision making, and whether the sense of when the present ends (and the future starts) can be altered. Preliminary results suggest that consumers who perceive a sooner end to the present are more likely to make more patient long-term decisions. If the present ends sooner, the future will bleed more into the “now,” causing it to be viewed as starting sooner, and in turn, receiving more weight than it would otherwise receive. This general question is not confined to temporal distance. It is ambiguous how people determine what is not the “origin”: what is here and what is there, socially close and distant, and the malleability of these conceptual boundaries.

Beyond the basic distinction of now and later, even less is known about whether people differently perceive the near and far future. In other words, at what point does the future move from being a detailed, vivid scene to a vague and essentialized one? How far can we see into the future before an event ceases to be a realistic picture and becomes more of a cartoonish representation or unfathomable? When is an event so distant that we are unable to picture it, an event sufficiently unlikely that it seems impossible, or a person so different that we cannot imagine what it is like to be her?

Relationships with Different Selves

Consumers are marked by different relationships to different selves in time. People tend to think that their future self will be more similar to their present self than the degree of similarity between their past self and their present self (Quoidbach, Gilbert, & Wilson, 2013). With a great deal of temporal distance, however, we suspect that a young enough past self will be thought of in positive terms, whereas a much older future self might be imbued with negativity. Early childhood, after all, is marked by potential, which can be more valued than actual outcomes (Tormala, Jia, & Norton, 2012), and older adulthood sometimes suffers from negative stereotypes (North & Fiske, 2012). But not all past selves are considered equally: people often denigrate recent past versions of themselves in an effort to feel better about their current selves (Wilson & Ross, 2001), and yet at the same time they idealize slightly earlier versions of themselves and frequently experience nostalgia for a past that is no longer present (Wildschut, Sedikides, Arndt, & Routledge, 2006). An open question, then, concerns the ways in which differing relationships to past selves predict the sense of connection one feels toward the future self.

Relationships with Uncertainty

Consumers and professionals both have difficulty conceptualizing uncertain future events, whether the origin of their uncertainty is their own lack of knowledge or a random process determining whether the future event will

happen. Better differentiating these different kinds of uncertainty and designing better elicitation techniques are two promising new areas of development in consumer prediction. Both forms of uncertainty are different, but also share common sources of bias. When judging their relative abilities or likelihood of experiencing a future event, for example, people overweight their own abilities or likelihood of experiencing the event and underweight distributional information such as the general ability level of the population or how frequently other people experience similar events (Kruger & Dunning, 1999; Moore & Healy, 2008; Price, Pentecost, & Voth, 2002). More generally, new elicitation methods are being developed to improve the precision of judgments about the likelihood or prevalence of future events, such as having judges complete subjective probability interval estimates (SPIES; Haran, Moore, & Morewedge, 2010), which explicitly remind judges to consider the full range of possible outcomes of an uncertain future before eliciting their confidence in an uncertain future event.

Utility and Distance

The various instantiations of distance appear to have a similar discount utility, but it is not clear whether a common mechanism(s) or different mechanisms underlie discounting by uncertainty, space, time, and social distance. One factor may underlie all of these instances, or each instance may be singly or multiply determined. Discounting by time, for example, appears to be influenced by several factors. Both the nonlinear perception of the passage of time (Zauberman, Kim, Malkoc, & Bettman, 2009) and the perception that the same event in the future will provide less pleasure than it would in the present appear to lead to temporal discounting (Caruso, Gilbert, & Wilson, 2008; Van Boven, White, & Huber, 2009). Time delay and the uncertainty of future rewards are also deeply interrelated. Foregoing an immediate reward for a larger future reward introduces the risk that one may not receive the reward in the future, and discount rates are sensitive to the amount of risk that the larger future reward will not be paid (Keren & Roelofsma, 1995).

Williams, Huang, and Bargh (2009) have argued that physical distance is the form of psychological distance that most children first experience. Consequently, physical distance may provide the foundation for the mental representation of distance. The other, more abstract, instantiations of distance may then be “scaffolded” upon this initial representation built upon physical interaction with objects in the outside world in childhood. Indeed, asymmetric priming effects among the instantiations of distance are observed such that priming spatial distance constructs (e.g., “local” versus “foreign”) appear to have a stronger priming effect on judgments in other dimensions of psychological distance (spatial, temporal, or uncertainty) than does priming the other dimensions of psychological distance on judgments of spatial distance (Zhang & Wang, 2009). Thus, one possibility is that the common discounting effect observed across various forms of distance is due to some facet of the mental representation of physical distance.

A second possible source of the common discounting effect has been suggested by Liberman, Trope, and Halamish (in prep), who propose it is due to the greater dilution of states of the world in which one will experience the focal outcome that occurs as the psychological distance to that outcome increases. More specifically, they suggest that introducing psychological distance increases the number of imagined possible outcome-less states, counterfactual states of the world in which one would not experience the pleasant or unpleasant event. Increasing the distance from a reward increases the number of states in which one would not get to experience it: for temporal distance, the number of distinct selves until the reward is received; for spatial distance, the number of states through which one must travel until the reward is reached; for uncertainty, the number of counterfactual states in which the reward may not be experienced; and for social distance, the states in which some share of the reward may not be experienced (e.g., shared with the self). In support of their theory, the authors find that the same span of time delay results in greater discounting for the values of gains and losses when it cues thoughts of more outcome-less states of the world (e.g., days in which one would not receive a reward or have to pay a penalty).

We suggest that uncertainty is a third possible source of these similar forms of discounting. All forms of distance introduce the uncertainty that an event will be experienced, as distance from the present self becomes larger. Time, space, and social distance all reduce the probability that future rewards and punishments will be experienced. Experiences that happen to one now have a greater guarantee to affect one than experiences that happen in the future, elsewhere, or to another person. Introducing a temporal delay introduces the chance that one may not live to have the experience (or that the party responsible for providing the experience will not be around to produce it). Introducing spatial distance introduces the uncertainty that an event happening somewhere else will also affect where one is. An earthquake farther away is less likely to hurt people one knows and damage homes and infrastructure if it happens thousands of miles away rather than nearby. Introducing social distance increases the uncertainty that one will experience the event or its consequences. The chance of receiving some share of a lottery win is likely to be greater if the person who won the lottery is oneself, one's spouse, or a close family member rather than a distant relation or stranger.

It is possible that any one, all, or none of these mechanisms may drive the common pattern of discounting that is evoked by the various instantiations of distance. Much more research is needed to explain how different forms of psychological distance lead people to discount the perceived value of future experiences, and how truly comparable are the processes underlying these discounting effects.

Conclusion

The last fifteen years of research on consumer prediction has seen greater distinctions drawn between forms of utility and more connections drawn

between instantiations of distance. In the coming years, these directions are likely to reverse, with more attention being paid to the overlap between predicted and decision utility to better integrate the research on each from marketing, psychology, and economics and apply these findings to problems faced by consumers and practitioners in the field. It is possible that forecasts of predicted utility that are simulation-based or theory-based may better reflect decision utility, or it may be estimated according to a completely different process. It is likely that more research will be done to connect and differentiate the various instantiations of psychological distance. Most predictions involve multiple forms of distance. A better understanding of how each dimension overlaps with and affects other dimensions will increase the precision of our understanding of how consumers envision the future. Finally, the prospect of expanding the expected value framework from the interaction of utility and probability to that of utility and other instantiations of distance is a potential major advance in the conceptualization of consumer prediction and worthy of considerable testing and attention.

References

- Ainslie, G. (2001). *Breakdown of Will*. Cambridge: Cambridge University Press.
- Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *Journal of Positive Psychology, 4*, 523–527.
- Alba, J. W., & Williams, E. F. (2013). Pleasure principles: A review of research on hedonic consumption. *Journal of Consumer Psychology, 23*, 2–18.
- Baillargeon, R., Spelke, E.S., & Wasserman, S. (1985). Object permanence in five-month old infants. *Cognition, 20*, 191–208.
- Bar-Anan, Y., Liberman, N., Trope, Y., & Algom, D. (2007). Automatic processing of psychological distance: Evidence from a stroop task. *Journal of Experimental Psychology: General, 136*, 610–622.
- Bartels, D. M. & Rips, L. J. (2010). Psychological connectedness and intertemporal choice. *Journal of Experimental Psychology: General, 139*, 49–69.
- Bartels, D.M. & Urminsky, O. (2011). On intertemporal selfishness: The perceived instability of identity underlies impatient consumption. *Journal of Consumer Research, 38*, 182–198.
- Baucells, M. & Sarin, R. K. (2013) Determinants of experienced utility: Laws and implications. *Decision Analysis, 10*, 135–151.
- Baumeister, R. F. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior. *Journal of Consumer Research, 28*, 670–676.
- Bhargava, S., Kassam, K. S., & Loewenstein, G. (2014). A reassessment of the defense of parenthood. *Psychological Science, 25*, 299–302.
- Botti, S. (2004). The psychological pleasure and pain of choosing: when people prefer choosing at the cost of subsequent outcome satisfaction. *Journal of Personality and Social Psychology, 87*, 312.
- Boven, L. V., Loewenstein, G., Welch, E., & Dunning, D. (2012). The illusion of courage in self-predictions: Mispredicting one's own behavior in embarrassing situations. *Journal of Behavioral Decision Making, 25*, 1–12.

- Brown, A. D., Hershfield, H. E., Kouri, N. A., & Bryant, R. A. (Under review). Old man you're a lot like me: Similarity between current and future self mediates the relationship between episodic future thinking and temporal discounting.
- Bruni, L., & Sugden, R. (2007). The road not taken: How psychology was removed from economics, and how it might be brought back. *Economic Journal*, *117*, 146–173.
- Bryan, C. J., & Hershfield, H. E. (2012). You owe it to yourself: Boosting retirement saving with a responsibility-based appeal. *Journal of Experimental Psychology: General*, *141*, 429–432.
- Buechel, E. C., Zhang, J., Morewedge, C. K., & Vosgerau, J. (2014). More intense experiences, less intense forecasts: Why affective forecasters overweight probability specifications. *Journal of Personality and Social Psychology*, *106*, 20–36.
- Buehler, R., Griffin, D., & Peetz, J. (2010). The planning fallacy: Cognitive, motivational, and social origins. In M. P. Zanna & J. M. Olson (eds.), *Advances in Experimental Social Psychology* (vol. 43, pp. 1–62). San Diego, CA: Academic Press.
- Buehler, R., Griffin, D., Ross, M. (1994). Exploring the “planning fallacy”: Why people underestimate their task completion times. *Journal of Personality and Social Psychology*, *67*, 366–81.
- Carstensen, L. L. (2011). *A Long Bright Future*. New York: Random House.
- Caruso, E. M., Gilbert, D. T., & Wilson, T. D. (2008). A wrinkle in time: Asymmetric valuation of past and future events. *Psychological Science*, *19*, 796–801.
- Chambers, J. R., Windschitl, P. D., & Suls, J. (2003). Egocentrism, event frequency, and comparative optimism: When what happens frequently is “more likely to happen to me.” *Personality and Social Psychology Bulletin*, *29*, 1343–1356.
- De Houwer, J., Custers, R., & De Clercq, A. (2006). Do smokers have a negative implicit attitude toward smoking? *Cognition and Emotion*, *20*, 1274–1284.
- Diehl, K., & Poynor, C. (2010). Great expectations?! Assortment size, expectations, and satisfaction. *Journal of Marketing Research*, *47*, 312–322.
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, *319*, 1687–1688.
- Dunn, E. W., Gilbert, D. T., & Wilson, T. D. (2011). If money doesn't make you happy, then you probably aren't spending it right. *Journal of Consumer Psychology*, *21*, 115–125.
- Ersner-Hershfield, H., Garton, M.T., Ballard, K., Samanez-Larkin, G.R., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, *4*, 280–286.
- Fiedler, K., Jung, J., Wänke, M., Alexopoulos, T. (2012). On the Relations between Distinct Aspects of Psychological Distance: An Ecological Basis of Construal-Level Theory. *Journal of Experimental Social Psychology*, *48*, 1014–1021.
- Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity cost neglect. *Journal of Consumer Research*, *36*, 553–561.
- Fredrickson, B. L., & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. *Journal of Personality and Social Psychology*, *65*, 45–55.
- Fujita, K., & Roberts, J. C. (2010). Promoting prospective self-control through abstraction. *Journal of Experimental Social Psychology*, *46*, 1049–1054.

- Fujita, K., Henderson, M., Eng, J., Trope, Y., & Liberman, N. (2006). Spatial distance and mental construal of social events. *Psychological Science, 17*, 278–282.
- Garbinsky, E. N., Morewedge, C. K., & Shiv, B. (2014a). Interference of the end: Why recency bias in memory determines when a food is consumed again. *Psychological Science, 25*, 1466–1474.
- Garbinsky, E. N., Morewedge, C. K., & Shiv, B. (2014b). Does liking or wanting determine repeat consumption delay? *Appetite, 72*, 59–65.
- Gilbert, D. T., Morewedge, C. K., Risen, J. L., & Wilson, T. D. (2004). Looking forward to looking backward: The misprediction of regret. *Psychological Science, 15*, 346–350.
- Gilbert, D. T., & Wilson, T. D. (2007). Propection: Experiencing the future. *Science, 317*, 1351–1354.
- Greene, J. (2013). *Moral Tribes: Emotion, Reason, and the Gap between Us and Them*. New York: Penguin Press.
- Haran, U., Moore, D. A., & Morewedge, C. K. (2010). A simple remedy for over-precision in judgment. *Judgment and Decision Making, 5*, 467–476.
- Henderson, M. D., Fujita, K., Trope, Y., & Liberman, N. (2006). Transcending the “here”: The effect of spatial distance on social judgment. *Journal of Personality and Social Psychology, 91*, 845–856.
- Hershfield, H. E. (2011). Future self-continuity: How conceptions of the future self transform intertemporal choice. *Annals of the New York Academy of Sciences, 1235*, 30–43.
- Hershfield, H. E., Goldstein, D. G., Sharpe, W. F., Fox, J., Yeykelvis, L., Carstensen, L. L., & Bailenson, J. (2011). Increasing saving behavior through age-progressed renderings of the future self. *Journal of Marketing Research, 48*, S23–S27.
- Hsee, C. K., & Hastie, R. (2006). Decision and experience: Why don’t we choose what makes us happy? *Trends in Cognitive Sciences, 10*, 31–37.
- Hsee, C. K., Hastie, R., & Chen, J. (2008). Hedonomics: Bridging decision research with happiness research. *Perspectives on Psychological Science, 3*, 224–243.
- Hsee, C. K. & Zhang, J. (2004). Distinction bias: Misprediction and mischoice due to joint evaluation. *Journal of Personality and Social Psychology, 86*, 680–695.
- Hsee, C. K., Zhang, J., Cai, C. F., & Zhang, S. (2013). Overearning. *Psychological Science, 24*, 852–859.
- Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology, 79*, 995–1006.
- Iyengar, S. S., Wells, R. E., & Schwartz, B. (2006). Doing better but feeling worse: Looking for the “best” job undermines satisfaction. *Psychological Science, 17*, 143–150.
- Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science, 17*, 283–286.
- Kahneman, D. (1999). Objective happiness. In D. Kahneman, E. Diener, & N. Schwartz (eds.), *Well-being: The Foundations of Hedonic Psychology* (pp. 3–26). New York: Russell Sage.
- Kahneman, D., Fredrickson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993). When more pain is preferred to less: Adding a better end. *Psychological science, 4*, 401–405.
- Kahneman, D., & Lovallo, D. (1993). Timid choices and bold forecasts: A cognitive perspective on risk taking. *Management Science, 39*, 17–31.

- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, *93*, 136–153.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*, 263–291.
- Kahneman, D., & Varey, C. A. (1990). Propensities and counterfactuals: The loser that almost won. *Journal of Personality and Social Psychology*, *59*, 1101–1110.
- Kahneman, D., Wakker, P. P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *Quarterly Journal of Economics*, *112*, 375–405.
- Keren, G., & Roelofsma, P. (1995). Immediacy and certainty in intertemporal choice. *Organizational Behavior and Human Decision Processes*, *63*, 287–297.
- Kivetz, R., Urminsky, O., & Zheng, Y. (2006). The goal-gradient hypothesis resurrected: Purchase acceleration, illusionary goal progress, and customer retention. *Journal of Marketing Research*, *43*, 39–58.
- Kruger, J., & Burrus, J. (2004). Egocentrism and focalism in unrealistic optimism (and pessimism). *Journal of Experimental Social Psychology*, *40*, 332–40.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, *77*, 1121–1134.
- Kunreuther, H., Pauly, M. V., & McMorro, S. (2013). *Insurance and Behavioral Economics: Improving Decisions in the Most Misunderstood Industry*. New York: Cambridge University Press.
- Ledgerwood, A., Wakslak, C. J., and Wang, M. A. (2010) Differential information use for near and distant decisions. *Journal of Experimental Social Psychology*, *46*, 638–642.
- Lerner, J. S., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings: Carryover effects of emotions on economic decisions. *Psychological Science*, *15*, 337–341.
- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, *38*, 523–534.
- Liberman, N. & Trope, Y. (2014). Traversing psychological distance. *Trends in Cognitive Science*, *18*, 364–369.
- Liberman, N. & Trope, Y. (1998). The role of feasibility and desirability in near and distant future decisions: A test of temporal distance on level of construal. *Journal of Personality and Social Psychology*, *75*, 5–18
- Liberman, N., Trope, Y., & Halamish, V. (in preparation). A Proximity x Value Theory of Utility and Motivation. Tel Aviv University.
- Liviatan, I., Trope, Y., & Liberman, N. (2008). Interpersonal similarity as a social distance dimension: Implications for perception of others' actions. *Journal of Experimental Social Psychology*, *44*, 1256–1269.
- Loewenstein, G. (1987). Anticipation and the valuation of delayed consumption. *Economic Journal*, *97*, 666–684.
- Loewenstein, G., & Lerner, J. S. (2003). The role of affect in decision making. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (eds.), *Handbook of Affective Sciences* (pp. 619–642). New York: Oxford University Press.
- Loewenstein, G. F., & Prelec, D. (1993). Preferences for sequences of outcomes. *Psychological Review*, *100*, 91–108.

- MacInnis, D. J., Patrick, V., and Park, C. W. (2006). Looking through the crystal ball: Affective forecasting and misforecasting in consumer behavior. *Review of Marketing Research*, 2, 43–80.
- Maglio, S. & Hershfield, H.E. (2014). *When Does the Future Start?* Paper presented at the Society for Personality and Social Psychology Annual Conference, Austin, TX.
- Mathieu, M.T. & Gosling, S.D. (2012). The accuracy or inaccuracy of affective forecasts depends on how accuracy is indexed: A meta-analysis of past studies. *Psychological Science*, 23, 161–162.
- Maison, D., Greenwald, A. G., & Bruin, R. H. (2004). Predictive validity of the Implicit Association Test in studies of brands, consumer attitudes, and behavior. *Journal of Consumer Psychology*, 14, 405–415.
- McClure, S. M., Laibson, D. I., Loewenstein, G., & Cohen, J. D. (2004). Separate neural systems value immediate and delayed monetary rewards. *Science*, 306, 503–507.
- Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, 115, 502.
- Morewedge, C. K. (In press). Utility: Anticipated, experienced, and remembered. In G. Keren and G. Wu (eds.), *Blackwell Handbook of Judgment and Decision Making*, 2nd ed. Malden, MA: Blackwell Press.
- Morewedge, C. K., & Buechel, E. C. (2013). Motivated underpinnings of the impact bias in affective forecasts. *Emotion*, 13, 1023–1029.
- Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science*, 16, 626–630.
- Morewedge, C. K., Gilbert, D. T., Myrseth, K. O. R., Kassam, K. S., & Wilson, T. D. (2010). Consuming experiences: Why affective forecasters overestimate comparative value. *Journal of Experimental Social Psychology*, 46, 986–992.
- Morewedge, C. K., Kassam, K. S., Hsee, C. K., & Caruso, E. M. (2009). Duration sensitivity depends on stimulus familiarity. *Journal of Experimental Psychology: General*, 138, 177–186.
- Newton, D., Engquist, G. A., & Bois, J. (1977). The objective basis of behavior units. *Journal of Personality and Social Psychology*, 35, 847–862.
- North, M. S., & Fiske, S. T. (2012). An inconvenienced youth? Ageism and its potential intergenerational roots. *Psychological Bulletin*, 138, 982–997.
- Nussbaum, S., Liberman, N., & Trope, Y. (2006). Predicting the near and distant future. *Journal of Experimental Psychology: General*, 135, 152–161.
- Pareto, Vilfredo (1906). *Manuale di economia politica, con una introduzione alla scienza sociale*. Milan: Societa Editrice Libreria.
- Parfit, D. (1971). Personal identity. *Philosophical Review*, 80, 3–27.
- Peez, J., & Buehler, R. (2009). Is there a budget fallacy? The role of savings goals in the prediction of personal spending. *Personality and Social Psychology Bulletin*, 35, 1579–1591.
- Peez, J., & Buehler, R. (2012). When distance pays off: The role of construal level in spending predictions. *Journal of Experimental Social Psychology*, 48, 395–398.
- Price, P. C., Pentecost, H. C., & Voth, R. D. (2002). Perceived event frequency and the optimistic bias: Evidence for a two-process model of personal risk judgments. *Journal of Experimental Social Psychology*, 38, 242–252.

- Pronin, E., Olivola, C. Y., & Kennedy, K. A. (2008). Doing unto future selves as you would do unto others: Psychological distance and decision making. *Personality and Social Psychology Bulletin*, *34*, 224–236.
- Quoidbach, J., Gilbert, D., & Wilson, T. (2013). The end of history illusion. *Science*, *339*, 96–98.
- Rucker, D. D., & Galinsky, A. D. (2009). Conspicuous consumption versus utilitarian ideals: How different levels of power shape consumer behavior. *Journal of Experimental Social Psychology*, *45*, 549–555.
- Sagi, A., & Friedland, N. (2007). The cost of richness: the effect of the size and diversity of decision sets on post-decision regret. *Journal of Personality and Social Psychology*, *93*, 515–524.
- Sagristano, M. D., Trope, Y., & Liberman, N. (2002). Time-dependent gambling: Odds now, money later. *Journal of Experimental Psychology: General*, *131*, 364–376.
- Samuelson, P. A. (1937). A note on measurement of utility. *Review of Economic Studies*, *4*, 155–161.
- Sayette, M. A., Loewenstein, G., Griffin, K. M., & Black, J. J. (2008). Exploring the cold-to-hot empathy gap in smokers. *Psychological Science*, *19*, 926–932.
- Schelling, T.C. (1984). Self-command in practice, in policy, and in theory of rational choice. *American Economic Review*, *74*, 1–11.
- Shepperd, J. A., & McNulty, J. K. (2002). The affective consequences of expected and unexpected outcomes. *Psychological Science*, *13*, 85–88.
- Shiv, B., & Huber, J. (2000). The impact of anticipating satisfaction on consumer choice. *Journal of Consumer Research*, *27*, 202–216.
- Simon, J. L. (1995). Interpersonal allocation continuous with intertemporal allocation: Binding commitments, pledges, bequests. *Rationality and Society*, *7*, 367–392.
- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, *19*, 105–118.
- Stephan, E., Liberman, N., & Trope, Y. (2011). The effects of time perspective and level of construal on social distance. *Journal of Experimental Social Psychology*, *47*, 397–402.
- Suddendorf, T. & Corballis, M. C. (2007). The evolution of foresight: What is mental time travel and is it unique to humans? *Behavioral and Brain Sciences*, *30*, 299–313.
- Sussman, A. B., & Alter, A. L. (2012). The exception is the rule: Underestimating and overspending on exceptional expenses. *Journal of Consumer Research*, *39*, 800–814.
- Tam, L. & Dholakia, U. M. (2011). Delay and duration effects of time frames on personal savings estimates and behavior. *Organizational Behavior and Human Decision Processes*, *114*, 142–152.
- Thaler, R. H. & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of Political Economy*, *89*, 392–406.
- Todorov, A., Goren, A., & Trope, Y. (2007). Probability as a psychological distance: Construal and preferences. *Journal of Experimental Social Psychology*, *43*, 473–482.
- Tormala, Z. L., Jia, J. S., & Norton, M. I. (2012). The preference for potential. *Journal of Personality and Social Psychology*, *103*, 567–583.
- Trope, Y. & Liberman, N. (2010). Construal Level Theory of Psychological Distance. *Psychological Review*, *117*, 440–463.

- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology, 17*, 83–95.
- Tversky, A., & Griffin, D. (1991). Endowment and contrast in judgments of wellbeing. In F. Strack, M. Argyle, & N. Schwartz (eds.), *Subjective Well-being: An Interdisciplinary Perspective* (pp. 101–118). Oxford: Pergamon Press.
- Van Boven, L., Kane, J., McGraw, A. P., & Dale, J. (2010). Feeling close: Emotional intensity reduces perceived psychological distance. *Journal of Personality and Social Psychology, 98*, 872–885.
- Van Boven, L., & Loewenstein, G. (2003). Social projection of transient drive states. *Personality and Social Psychology Bulletin, 29*, 1159–1168.
- Van Boven, L., Loewenstein, G., Welch, E., & Dunning, D. (2012). The illusion of courage in self-predictions: Mispredicting one's own behavior in embarrassing situations. *Journal of Behavioral Decision Making, 25*, 1–12.
- Van Boven, L., White, K., & Huber, M. (2009). Immediacy bias in emotion perception: Current emotions seem more intense than previous emotions. *Journal of Experimental Psychology: General, 138*, 368–382.
- Von Neumann, J., & Morgenstern, O. (1947). *Theory of Games and Economic Behavior*. Princeton, NJ: Princeton University Press.
- Wakslak, C. J. (2012). The experience of cognitive dissonance in important and trivial domains. *Journal of Experimental Social Psychology, 48*, 1361–1364.
- Wakslak, C. J., & Trope, Y. (2009). Cognitive consequences of affirming the self: The relationship between self-affirmation and object construal. *Journal of Experimental Social Psychology, 45*, 927–932.
- Wakslak, C. J., Trope, Y., Liberman, N., & Aloni, R. (2006). Seeing the forest when entry is unlikely: Probability and the mental representation of events. *Journal of Experimental Psychology: General, 135*, 641–653.
- Wang, J., Novemsky, N., & Dhar, R. (2009). Anticipation adaptation to products. *Journal of Consumer Research, 36*, 149–159.
- Weber, E. U., Johnson, E. J., Milch, K. F., Chang, H., Brodscholl, J. C., & Goldstein, D. G. (2007). Asymmetric discounting in intertemporal choice a query-theory account. *Psychological Science, 18*, 516–523.
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology, 91*, 975–993.
- Williams, L. E., & Bargh, J. A. (2008). Keeping one's distance: The influence of spatial distance cues on affect and evaluation. *Psychological Science, 19*, 302–308.
- Wilson, A. E., & Ross, M. (2001). From chump to champ: People's appraisals of their earlier and current selves. *Journal of Personality and Social Psychology, 80*, 572–584.
- Wittmann, M., & Paulus, M. P. (2008). Decision making, impulsivity and time perception. *Trends in Cognitive Sciences, 12*, 7–12.
- Zauberman, G., Kim, B. K., Malkoc, S. A., & Bettman, J. R. (2009). Discounting time and time discounting: Subjective time perception and intertemporal preferences. *Journal of Marketing Research, 46*, 543–556.
- Zauberman, G. & Lynch, J.G. (2005). Resource slack and propensity to discount delayed investments of time versus money. *Journal of Experimental Psychology, 134*, 23–37.
- Zhang, M., & Wang, J., (2009). Psychological distance asymmetry: The spatial dimension vs. other dimensions. *Journal of Consumer Psychology, 19*, 497–507.