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More Intense Experiences, Less Intense Forecasts: Why People Overweight Probability Specifications in Affective Forecasts

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We propose that affective forecasters overestimate the extent to which experienced hedonic responses to an outcome are influenced by the probability of its occurrence. The experience of an outcome (e.g., winning a gamble) is typically more affectively intense than the simulation of that outcome (e.g., imagining winning a gamble) upon which the affective forecast for it is based. We suggest that, as a result, experiencers allocate a larger share of their attention toward the outcome (e.g., winning the gamble) and less to its probability specifications than do affective forecasters. Consequently, hedonic responses to an outcome are less sensitive to its probability specifications than are affective forecasts for that outcome. The results of 6 experiments provide support for our theory. Affective forecasters overestimated how sensitive experiencers would be to the probability of positive and negative outcomes (Experiments 1 and 2). Consistent with our attentional account, differences in sensitivity to probability specifications disappeared when the attention of forecasters was diverted from probability specifications (Experiment 3) or when the attention of experiencers was drawn toward probability specifications (Experiment 4). Finally, differences in sensitivity to probability specifications between forecasters and experiencers were diminished when the forecasted outcome was more affectively intense (Experiments 5 and 6).

Keywords: affective forecasting, happiness, probability sensitivity, decision affect theory

People believe that the hedonic response to an outcome depends not only on the desirability of the outcome but also on the probability of its occurrence (e.g., Loewenstein & Lerner, 2003; Mellers, Schwartz, Ho, & Ritov, 1997). Losses are almost never pleasurable, but people believe losses hurt more when they are unexpected than when they are expected. Conversely, gains are almost always pleasurable, but are more pleasurable when they are unexpected than when they are expected. When people decide which potential losses to avoid and which potential gains to pursue, their decisions depend on predictions of their hedonic responses to those potential future gains and losses. Thus, an important question is whether affective forecasters are able to accurately predict the extent to which their hedonic responses to an outcome are influenced by the probability of its occurrence.

Various cognitive and motivational biases give rise to systematic errors in affective forecasting (e.g., Eastwick, Finkel, Krishnamurti, & Loewenstein, 2008; Hsee & Zhang, 2004; Morewedge & Buechel, 2013; Morewedge, Gilbert, & Wilson, 2005; Nelson & Meyvis, 2008; Sieff, Dawes, & Loewenstein, 1999; Wilson & Gilbert, 2003, 2005; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). Most experiments in this literature have examined the accuracy of forecasts for uncertain outcomes, but have not systematically measured or manipulated their probability of occurrence. In other words, this literature has not examined outcomes with precisely defined probabilities; nor has it precisely manipulated the probability of the forecasted outcomes. To illustrate, Gilbert, Pinel, Wilson, Blumberg, and Wheatley (1998) asked assistant professors to forecast how happy they would feel if they received or were denied tenure. Obtaining tenure is an uncertain outcome for most professors, but the probability of receiving tenure presumably varies among different universities and for different professors. Given that the probability of receiving tenure was not measured or manipulated, it is unclear whether and how the probability of receiving tenure influenced forecasts and experiences, or how the probability influenced forecasting errors.

The present research addresses this central topic in emotion and decision-making research. Our central premise is that there is a difference in the affective intensity of the outcome when making an affective forecast for that outcome and when experiencing it. Hedonic experiences are typically more affectively intense than mental simulations of those experiences. We suggest that, because of this difference, experiencers devote a larger share of their limited attentional resources to the outcome

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(e.g., receiving tenure) and a smaller share to its probability specifications (e.g., the likelihood of receiving tenure) than do affective forecasters. Thus, probability specifications receive less weight and have less impact on experienced hedonic responses to an outcome than on affective forecasts for that outcome, even when both experiencers and forecasters know its probability specifications. As a result, experiencers generally exhibit less sensitivity to the probability specifications of an outcome than do affective forecasters, and this leads to errors in affective forecasting. We report the results of six experiments that provide support for our hypothesis and the underlying mechanism.

Emotional Responses to Outcome Probabilities

Theories of expected value (e.g., prospect theory) suggest that the utility of an outcome that may occur in the future (i.e., a prospect) should be positively correlated with both the desirability of the outcome and the probability of its occurrence (Kahneman & Tversky, 1979; Laplace, 1814/1951). It is better to have a chance to win $100 than $1, for example, and to have a 99% chance of winning either amount than a 1% chance of winning either amount. In contrast, hedonic responses to an outcome that one is experiencing are believed to be positively correlated with the desirability of the outcome and inversely related to the probability of obtaining it (Kahneman & Miller, 1986; Mellers et al., 1997). It is more pleasurable to win $100 than $1, but it is presumably more pleasurable to have won either amount if one had a 1% chance of winning than if one had a 99% chance of winning.

More generally, hedonic responses toward an outcome depend on the utility of the outcome itself, comparisons between it and counterfactual alternatives, and the likelihood of its occurrence (Mellers et al., 1997). Winning $5 is more pleasurable when the alternative was winning $3 than when the alternative was winning $7 (Kassam, Morewedge, Gilbert, & Wilson, 2011), and receiving nothing is better when the alternative was losing $50 than when the alternative was winning $50 (Mellers et al., 1997). Furthermore, the less likely the actual outcome and the more likely a prominent counterfactual alternative, the more surprising is the outcome and the more intense is a person's emotional reaction. For instance, when an outcome (e.g., winning $100) is better than its counterfactual alternative (e.g., winning $0), the larger the probability of its counterfactual alternative is, the more elated one will feel if one experiences it. Conversely, when an outcome (e.g., winning $100) is worse than its counterfactual alternative (e.g., winning $200), the larger the probability of its counterfactual alternative is, the more disappointed one will feel if one experiences it (Brandstätter, Kuehberger, & Schneider, 2002; Kahneman & Miller, 1986; Mellers et al., 1997).

Probability specifications influence both predicted and reported hedonic responses to outcomes (Brandstätter et al., 2002; Mellers et al., 1997), but the accuracy of predictions regarding the impact of probability specifications has not been systematically examined. That is, whereas research has shown that probability specifications can influence both experienced and forecasted hedonic responses to outcomes, it is unclear how well people predict the influence of probability specifications on their hedonic responses to outcomes.

Affective Forecasting

Research on affective forecasting has demonstrated that people have difficulty predicting the intensity and the duration of affect evoked by future outcomes (Gilbert & Wilson, 2007). Affective forecasters exhibit an impact bias, a tendency to overestimate the intensity and duration of their emotional reactions to a diverse array of future events, including winning money, receiving an HIV-positive test result, being denied tenure, the dissolution of a romantic relationship, the outcome of political elections, narrowly missing a train, and their team winning or losing a sporting event (Eastwick et al., 2008; Gilbert, Morewedge, Risen, & Wilson, 2004; Gilbert et al., 1998; Meyvis, Ratner, & Levav, 2010; Sieff et al., 1999; Wilson et al., 2000).

Given that future events vary considerably with regard to their outcome specifications, such as their magnitude or probability of occurrence, and behavior is often determined by affective forecasts for future experiences (Hsee & Hastie, 2006; Morewedge & Buechel, 2013), it is similarly important to understand whether and when affective forecasters can accurately predict the influence of such outcome specifications on their hedonic responses to the events.

Initial evidence suggests that affective forecasters and experiencers differ in their sensitivity to one kind of outcome specifications, namely, magnitude specifications. Hsee and Zhang (2004), for example, found that people often predict that they will be more sensitive to the magnitude of outcomes than they actually are because predictions are often made in a joint evaluation mode (i.e., considering two or more outcomes simultaneously). Experiences, in contrast, occur in a single evaluation mode (i.e., realizing and experiencing a single outcome), with the latter making differences in magnitude less salient. Morewedge, Gilbert, Keysar, Berkovits, and Wilson (2007) examined affective forecasters' beliefs about the utility function for gains at small magnitudes in a single evaluation mode and found that affective forecasters underestimate the size of a gain necessary to change their hedonic experience. Dunn and Ashton-James (2008) found that people exhibit a greater impact bias for larger than for smaller death toll tragedies. Similarly, Gilbert, Lieberman, Morewedge, and Wilson (2004) showed that affective forecasters falsely predict that a less significant aversive event would cause shorter duration of pain than a more significant aversive event because they failed to consider that significant aversive events trigger psychological processes to attenuate them. Finally, Gilbert, Morewedge, et al. (2004) demonstrated that affective forecasters overestimate the amount of regret they would experience if they missed an outcome by a small margin as opposed to a large margin.

These findings demonstrate isolated cases in which affective forecasters and experiencers exhibit different sensitivity to the magnitude of future events (e.g., the amount of money won or number of lives lost). Given the extent to which outcomes vary with regards to specifications such as magnitude and probability, a more precise understanding of when and why outcome specifications differently influence affective forecasts and experiences is important and missing.

Theoretical Model

We propose a general theory of why and when affective forecasters and experiencers differ in their sensitivity to outcome specifications. The objective of the present research is to investigate whether affective forecasters are accurate in predicting how much probability specifications will impact hedonic responses to an outcome. Our theory posits that affective forecasters will overestimate how sensitive hedonic responses to an outcome will be to the probability of its occurrence.

First, we propose that there is a difference in the affective intensity of an outcome when making an affective forecast for that outcome and when actually experiencing it. The experience of an outcome is vivid, concrete, and replete with emotional responses, including physiological reactions, arousal, facial expressions, and the cognitive appraisals of the experience (Myers, 2004). An affective forecast of an outcome, in contrast, is an imagined or a simulated reaction toward an abstract and hypothetical event. Although affective forecasters often overestimate the hedonic response that the outcome will evoke (Wilson & Gilbert, 2003), the affective intensity of that outcome while simulating or "prefeeling" it is usually less than the affective intensity of that outcome while experiencing it (Gilbert & Wilson, 2007; Loewenstein, 1996). Thus, the forecasted experience of an outcome is typically less affectively intense during judgment than is the actual corresponding experience of it (Loewenstein, Prelec, & Shatto, 1998). When imagining how one would feel while skydiving, for example, one may overestimate how exciting it would be to skydive (as the impact bias suggests), but the mere simulation of that experience is not as affectively intense as is the actual experience of skydiving. In other words, when imagining skydiving, one might anticipate intense feelings of fear and an increased heart rate at the moment that one is jumping out of a plane, possibly triggering a fluttery feeling in the moment (Gilbert & Wilson, 2007), but one is less likely to experience the same intensity of fear and increase in heart rate at the moment of imagination than at the moment when one is actually jumping out of that plane.

Second, we propose that this difference in the affective intensity of forecasts for an outcome and the corresponding experience leads to differences in attention to outcome specifications, such as outcome probability. People tend to pay more attention to affectively intense stimuli (Bradley, 2009; Bradley, Houbova, Miccoli, Costa, & Lang, 2011) than to neutral stimuli, and affectively intense experiences such as pain and consumption draw attention to the experience itself (Eccleston & Crombez, 1999; Morewedge, Gilbert, Myrseth, Kassam, & Wilson, 2010; Walker, 1971). Because attentional resources are limited (Broadbent, 1958; Deutsch & Deutsch, 1963), if more attention is devoted to the experienced outcome itself, then less attention is devoted to more peripheral and abstract specifications associated with the outcome (Bradley, Keil, & Lang, 2012). Consequently, experiencers should typically devote less attention to the probability specifications of an outcome than should affective forecasters.

Finally, we suggest that this difference in the allocation of attention between affective forecasters and experiencers leads to differential sensitivity to outcome specifications, such as outcome probability. If probability specifications are to influence a person's affective forecast or hedonic response to an experience, they have to be attended to, appraised, and incorporated into judgment (Bhatia, 2013; Lazarus, 1991). Because experiencers attend less to probability specifications, we predict that probability specifications typically have less influence on hedonic responses to outcomes than on affective forecasts for those outcomes.

As tentative support for our theory, research in the domain of risky gambles has shown that vivid or affect-rich outcomes, which elicit more intense affect in the judge, reduce sensitivity to probability specifications (Arkes, Herren, & Isen, 1988; Loewenstein, Weber, Hsee, & Welch, 2001; Rottenstreich & Hsee, 2001; Slovic, Finucane, Peters, & MacGregor, 2004; Sunstein, 2002), such that probability specifications seem to be largely neglected (Suter, Pachur, & Hertwig, 2012). Rottenstreich and Hsee (2001) found that the difference in the monetary amount participants demanded to opt out of a gamble in which they had a 1% or 99% chance of winning was smaller when the prize was a $500 trip to Europe (i.e., an affect-rich outcome) than when the prize was a $500 tuition remission (i.e., an affect-poor outcome). Our theory provides a process explanation of these results and makes predictions regarding the difference in sensitivity between affective forecasts and hedonic responses to the probability specifications of an outcome.

It is important to note that our theory also predicts when forecasters and experiencers should be similarly sensitive to probability specifications. Forecasters should be similarly insensitive to probability specification as experiencers if their attention is diverted away from probability specifications to another task and if the forecasted outcome is sufficiently affectively intense while forecasting their response to it. Our theory also predicts that experiencers should be sensitive to probability specifications of an outcome if their attention is drawn toward its probability specifications.

Overview

We report six experiments that directly tested each of our predictions. Experiment 1 and Experiment 2 tested our main prediction that affective forecasters are more sensitive than experiencers to probability specifications for both positive and negative outcomes. Experiment 3 and Experiment 4 tested whether differences in the allocation of attention underlie this difference in sensitivity. Experiment 3 tested whether diverting the attention of forecasters away from probability specifications reduces their sensitivity to those specifications. Experiment 4 tested whether drawing attention to probability specifications increases the sensitivity of experiencers to those specifications. Experiment 5 and Experiment 6 tested our core theory that differences in the affective intensity of forecasts and experiences underlie the attention paid to and influence of probability specifications. Each tested whether differences in sensitivity to probability specifications between forecasters and experiencers were diminished when the forecasted outcome was made more affectively intense.

Experiment 1

Experiment 1 tested the hypothesis that affective forecasters overestimate the extent to which probability specifications of a positive outcome will influence their hedonic response to that outcome. Forecasters predicted how happy they would be if they won $1, given either a 10% or a 90% probability of winning. Experiencers won $1, given either a 10% or a 90% probability of winning, and reported how happy they were. We expected that forecasters would be more sensitive than experiencers to the probability of winning $1.

Method

Participants and design. Sixty-one pedestrians on the University of Miami campus (38 women and 23 men; M_{age} = 36.02 years, SD = 12.70) participated in the experiment. Participants were randomly assigned to one of four conditions in a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) between-subjects design.

Procedure. Participants played a game of chance in which they drew a ball from an opaque bag containing 10 balls of the same shape and size. A drawstring at the top of the bag enabled the experimenter to close the opening, making the contents of the bag nonvisible to the participants. Participants were told that they would win $1 if they drew a ball marked with an *X* and that they would not win anything ($0) if they drew a ball not marked with an *X*. Half of the participants were told that one of the 10 balls (i.e., 10%) was marked with an *X*. The other half were told that nine of the 10 balls (i.e., 90%) were marked with an *X*. In fact, all balls were marked with an *X*, so that all participants drew a winning ball and won $1.

Before drawing a ball, forecasters predicted how happy they would be if they drew a ball with an *X* and won $1 on a 13-point scale with endpoints *Very Unhappy* (1) and *Very Happy* (13). They then drew a ball with an *X* and were given $1. Experiencers reported their happiness on the same scale after drawing a ball with an *X* and receiving $1. Finally, as a manipulation check, participants assessed their subjective likelihood of winning on an 11-point scale with endpoints *Very Low* (1) and *Very High* (11).

Results

Manipulation check. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) between-subjects analysis of variance (ANOVA) on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 10% conditions reported a lower subjective likelihood of winning ($M = 5.82$, $SD = 3.03$) than did participants in the 90% conditions ($M = 7.70$, $SD = 3.84$), $F(1, 57) = 4.57$, $p = .04$, $\eta^2 = .07$. No other effects were significant (Fs < 1).

Forecasted and experienced happiness. Happiness ratings were submitted to a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA. The analysis revealed a main effect of role, $F(1, 57) = 8.35$, $p = .005$, $\eta^2 = .13$. There was no main effect of probability of winning, $F(1, 57) = 1.52$, $p = .22$. More important, there was a significant role × probability of winning interaction, $F(1, 57) = 4.74$, $p = .03$, $\eta^2 = .08$. As predicted, forecasters were more sensitive to the probability specifications than were experiencers (see Figure 1). Forecasters predicted that they would be happier winning $1 when their probability of winning was 10% ($M = 9.53$, $SD = 2.07$) than when it was 90% ($M = 7.27$, $SD = 2.65$), $F(1, 57) = 5.27$, $p = .03$, $\eta^2 = .09$. In contrast, experiencers were similarly happy having won $1, whether their probability of winning was 10% ($M = 10.00$, $SD = 2.67$) or 90% ($M = 10.63$, $SD = 2.78$), $F < 1$.

Discussion

Affective forecasters were more sensitive to probability specifications than were experiencers. Thus, forecasters overestimated the extent to which the probability specifications would influence the hedonic responses of experiencers to that outcome. Forecasters predicted that winning $1 given a 10% probability of winning would yield greater happiness than winning $1 given a 90% probability of winning. Experiencers, however, were startlingly insensitive to the probability specifications of the outcome. Experiencers were equally happy whether they won $1 in a gamble given a 10% or a 90% probability of winning.

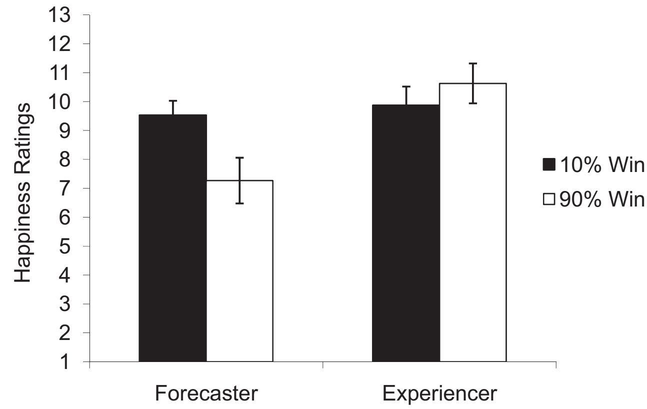

Figure 1. Affective forecasters were more sensitive to the probability of winning $1 (i.e., 10% or 90%) than were experiencers in Experiment 1. Bars represent ±1 *SEM.*

It is important to note that, within the low- and high-probability conditions, forecasters and experiencers in this and the following experiments did not differ with respect to the perceived likelihood of obtaining the outcome. Consequently, their different sensitivity to probability specifications cannot be attributed to differences in perceived likelihood of winning.

Experiment 2

Experiment 2 examined whether the different sensitivity to probability specifications between forecasters and experiencers that was found in Experiment 1 generalizes to situations involving negative outcomes and less extreme probability specifications. Forecasters predicted how happy they would be if they won or did not win $3, given a 20% or an 80% probability of winning. Experiencers reported how happy they were after winning or not winning $3, given a 20% or an 80% probability of winning. We expected that forecasters would be more sensitive than experiencers to probability specifications for both positive and negative outcomes.

Additionally, Experiment 2 began to explore why affective forecasters are more sensitive to probability specifications than are experiencers. A key assumption of our theory is that affective forecasters are more likely to attend to probability specifications than are experiencers and that forecasters therefore are more likely to be influenced by these specifications than are experiencers. We conducted a preliminary test of our theory by including an open-ended question that asked participants to spontaneously report any information influencing their reports. If our theory is true, affective forecasters should be more likely than experiencers to spontaneously mention probability specifications (i.e., their likelihood of winning).

Method

Participants and design. Three hundred and seventy-two University of Miami students (143 women and 229 men; M_{age} = 20.15 years, SD = 3.30) participated in the experiment as part of a 1-hr laboratory session in exchange for course credit. Participants were randomly assigned to one of eight conditions of a 2 (role: forecaster, experiencer) × 2 (probability of winning: 20%, 80%) × 2 (outcome: winning, losing) between-subjects design.

Procedure. Participants played a game of chance in which they picked one of 10 identical opaque envelopes. They were told that they would win $3 if they picked an envelope containing a ticket displaying a dollar sign and that they would not win anything ($0) if they picked an envelope containing a blank ticket. Half of the participants were told that two of the 10 envelopes (i.e., 20%) contained a winning ticket. The other half were told that eight of the 10 envelopes (i.e., 80%) contained a winning ticket. In fact, five of the 10 envelopes contained a winning ticket in all conditions, making the objective probability of winning 50% for all participants.

Before drawing an envelope, half of the forecasters predicted how happy they would be if they drew an envelope containing a winning ticket and won $3. The other half predicted how happy they would be if they drew an envelope containing a blank ticket and did not win anything ($0). All forecasts were made on analog scales with endpoints *Very Unhappy* (−100) and *Very Happy* (100). The slider was initially positioned at the midpoint (0). After they made their predictions, forecasters were asked to write down any thoughts that had occurred to them while making their predictions in an open-ended response text box. They then drew an envelope and received $3 if it contained a winning ticket and $0 if it contained a blank ticket. Experiencers drew a ticket, noted the outcome, and reported their happiness on the same scale as did forecasters. Subsequently, experiencers wrote down any thoughts that had occurred to them while reporting their happiness. Finally, as a manipulation check, all participants reported their subjective likelihood of winning on an analog scale with the endpoints *Very Unlikely* (1) and *Very Likely* (100).

Results

Manipulation checks. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 20%, 80%) × 2 (outcome: winning, losing) between-subjects ANOVA on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 20% probability of winning conditions reported a lower subjective likelihood of winning (M = 42.18, SD = 24.87) than did participants in the 80% probability of winning conditions (M = 61.15, SD = 26.23), $F(1, 363) = 53.95$, $p < .001$, $\eta^2 = .13$. There was also a significant main effect of outcome, such that participants in the winning conditions reported a higher subjective likelihood of winning (M = 55.27, SD = 26.83) than did participants in the losing conditions (M = 46.91, SD = 27.05), $F(1, 363) = 11.22$, $p = .001$, $\eta^2 = .03$. No other effects were significant (Fs < 1).

Forecasted and experienced happiness. Happiness ratings were submitted to a 2 (role: forecaster, experiencer) × 2 (probability of winning: 20%, 80%) × 2 (outcome: winning, losing) between-subjects ANOVA. The analysis revealed a main effect of outcome, $F(1, 364) = 386.66$, $p < .001$, $\eta^2 = .52$; a marginally significant main effect of role, $F(1, 364) = 3.42$, $p = .07$, $\eta^2 = .01$; and a marginally significant probability of winning × outcome interaction, $F(1, 364) = 3.40$, $p = .07$, $\eta^2 = .01$. More important, these effects were qualified by a significant role × probability of winning × outcome interaction, $F(1, 364) = 6.79$, $p = .01$, $\eta^2 = .02$. As predicted, forecasters were more sensitive to probability specifications than were experiencers for both winning and losing (see Figure 2). No other effects were significant (Fs < 1). For the purpose of clarity, we present the results split by outcome.

Winning conditions. In the winning conditions, there was a marginally significant role × probability of winning interaction, $F(1, 198) = 3.30$, $p = .07$, $\eta^2 = .02$. Forecasters predicted that they would be happier winning the gamble (and winning $3) when their probability of winning was 20% (M = 61.15, SD = 25.08) than when it was 80% (M = 45.78, SD = 27.86), $F(1, 198) = 6.08$, $p = .02$, $\eta^2 = .03$. In contrast, experiencers were similarly happy having won the gamble (and winning $3), whether their probability of winning was 20% (M = 60.50, SD = 32.22) or 80% (M = 60.64, SD = 34.07), $F < 1$.

Losing conditions. In the losing conditions, there was a marginally significant role × probability of winning interaction, $F(1, 166) = 3.38$, $p = .07$, $\eta^2 = .02$. As predicted, forecasters predicted that they would be unhappier about losing the gamble (and not winning $3) when their probability of winning was 80% (i.e., 20%

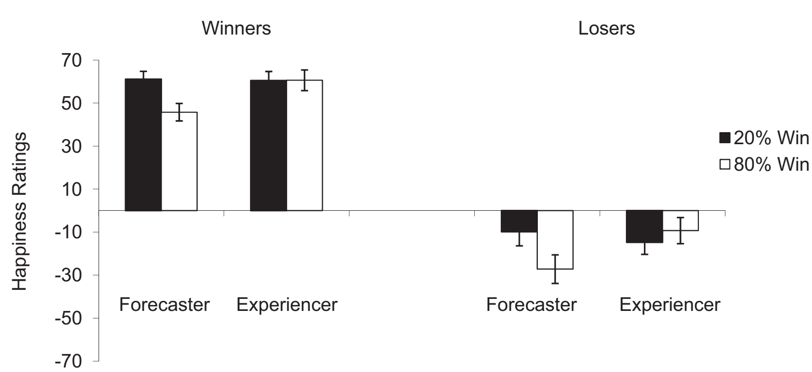

Figure 2. Affective forecasters were more sensitive to the probability of winning $3 or not winning $3 (i.e., 20% or 80%) than were experiencers in Experiment 2. Note that an 80% of winning equals a 20% of losing. Bars represent ±1 *SEM*.

probability of losing; $M = -27.21$, $SD = 43.14$) than when it was 20% (i.e., 80% probability of losing; $M = -9.85$, $SD = 41.35$), $F(1, 166) = 3.78$, $p = .05$, $\eta^2 = .02$. In contrast, experiencers were similarly unhappy having lost the gamble (and not winning \$3), whether their probability of winning was 80% ($M = -9.30$, $SD = 39.87$) or 20% ($M = -14.75$, $SD = 37.47$), $F < 1$.

Thought listing. Spontaneous thought listings were coded by two research assistants who were blind to the hypotheses. The coders noted whether participants mentioned thoughts related to probability specifications (i.e., probability, percentage, likelihood, chance, certainty, odds, expectation, number of winning envelopes; *No* [0], *Yes* [1]). The coders agreed in over 99% of all cases. Two cases of disagreement were resolved through discussion. A logistic regression using the dummy coded factors and their interactions tested how the manipulations influenced the mention of probability specifications in the open-ended responses. The analyses revealed that forecasters mentioned probability specifications more often than did experiencers, $b = -1.65$, $SE = 0.82$, $\chi^2(1, N = 371) = 4.02$, $p = .05$. No other effects were significant, χ^2s $(1, N = 371) < 1.50$, $ps > .20$.

Discussion

Affective forecasters were more sensitive to the probability specifications of positive and negative events than were experiencers. Consequently, affective forecasters overestimated the extent to which the probability specifications of an outcome would influence hedonic responses to that outcome. Forecasters predicted that winning \$3 given a 20% probability of winning would yield greater happiness than winning \$3 given an 80% probability, and that losing the gamble given a 20% probability of losing would yield greater unhappiness than losing given an 80% probability of losing. In contrast, experiencers were similarly happy having won \$3 given either probability of winning, and they were similarly unhappy about losing given either probability. These results replicate those of Experiment 1 and generalize its findings to include negative outcomes.

Affective forecasters also mentioned probability specifications more often in their spontaneous thought listings than did experiencers. This result is initial tentative evidence suggesting that affective forecasters may be more likely to attend to and rely on probability specifications than are experiencers. We tested this possibility more directly in the following experiments.

Experiments 3 and 4: Attention and Sensitivity

Affective forecasters in the foregoing experiments were more influenced by probability specifications than were experiencers. We suggest that this difference arises because the experience of an outcome is typically more affectively intense than are affective forecasts for that outcome; experiencers thus are led to allocate more attention to the outcome itself and less to its probability specifications than do affective forecasters. We directly tested our attentional account in Experiments 3 and 4. Experiment 3 examined whether diverting the attention of forecasters away from probability specifications would decrease their sensitivity to probability specifications, rendering them as insensitive as experiencers. Experiment 4 examined whether drawing the attention of experiencers to the probability specifications of the experienced outcome would increase their sensitivity to its probability specifications.

Experiment 3

Experiment 3 directly tested our attentional account by manipulating the attentional resources available to affective forecasters and experiencers. According to our theory, the overestimation of probability sensitivity in Experiments 1 and 2 should disappear if affective forecasters and experiencers devote a similar amount of attentional resources to probability specifications during judgment. If the attention of affective forecasters is diverted from the probability specifications of the outcome to a cognitive load task, their forecasts should exhibit a decrease in sensitivity to its probability specifications. In contrast, because experiences capture attention and experiencers already devote less attentional resources to probability specifications, the cognitive load task should have little effect on their sensitivity to the probability specifications of the outcome.

Forecasters under high or low cognitive load predicted how happy they would be if they won a cookie, given a 10% or a 90% probability of winning. Experiencers under high or low cognitive load won a cookie, given a 10% or a 90% probability of winning, and reported how happy they were. We expected that forecasters would be more sensitive than experiencers to probability specifications in the low cognitive load conditions but that forecasters would be no more sensitive to probability specifications than experiencers in the high cognitive load conditions.

Method

Participants and design. One hundred and eighty-five University of Miami students (80 women and 105 men; $M_{age} = 19.25$ years, $SD = 1.90$) participated in the experiment as part of a 1-hr laboratory session in exchange for course credit. Participants were randomly assigned to one of eight conditions in a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (cognitive load: low, high) between-subjects design.

Procedure. Participants played a game of chance in which they picked one of 10 identical opaque envelopes. They were told that they would win a cookie (shown in its original opaque wrapper) if they picked an envelope containing a ticket with a winning sticker and that they would not win anything if they picked an envelope containing a blank ticket. Half of the participants were told that one of the 10 envelopes (i.e., 10%) contained a winning ticket. The other half were told that nine of the 10 envelopes (i.e., 90%) contained a winning ticket. In fact, all envelopes contained winning tickets, so that all participants won a cookie.

After receiving these instructions, participants were given 8 s to encode a sequence of numbers that they would have to recall later in the experiment. Participants in the low cognitive load condition were given a two-digit sequence to encode. Participants in the high cognitive load condition were given an eight-digit sequence to encode (Macrae, Hewstone, & Griffiths, 1993).

While under low or high cognitive load, forecasters predicted how happy they would be if they drew an envelope with a winning ticket and won the cookie on an analog scale with endpoints *Very Unhappy* (−100) and *Very Happy* (100). The slider was initially positioned at the midpoint (0). Forecasters also rated the affective intensity evoked by the forecasted outcome (i.e., its emotionality) on an analog scale with endpoints *Not at all Emotional* (−100) and *Very Emotional* (100). They then drew an envelope, won, and received a cookie. Experiencers, while under low or high cognitive load, drew an envelope, received a cookie, and rated their happiness and the affective intensity evoked by the experienced outcome on the same scales.

As a manipulation check, participants reported their subjective likelihood of winning on an analog scale with endpoints *Very Unlikely* (1) and *Very Likely* (100). Participants then recalled the sequence of digits they had been asked to remember.[1] Participants also rated how difficult it was to remember the number sequence on an analog scale with endpoints *Very Easy* (0) and *Very Difficult* (100), and they rated the perceived cognitive resources required to memorize the sequence on an analog scale with endpoints *Not much at all* (0) and *A lot* (100).

Results

Manipulation checks.

Subjective likelihood estimates. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (cognitive load: low, high) between-subjects ANOVA on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 10% conditions reported a lower subjective likelihood of winning ($M = 33.39$, $SD = 30.83$) than did participants in the 90% conditions ($M = 86.40$, $SD = 15.29$), $F(1, 177) = 210.75$, $p < .001$, $\eta^2 = .55$. No other effects were significant (Fs < 1).

Perceived cognitive load. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (cognitive load: low, high) between-subjects multivariate analysis of variance (MANOVA) on perceived difficulty and cognitive resources required for memorizing the number sequence revealed two main effects of cognitive load, such that participants in the high-load conditions reported experiencing more difficulty remembering the number sequence ($M = 71.22$, $SD = 23.90$) and requiring more cognitive resources to memorize it ($M = 65.62$, $SD = 24.13$) than did participants in the low-load conditions ($M = 13.35$, $SD = 20.07$, and $M = 22.27$, $SD = 24.59$, respectively), $F(1, 89) = 144.89$, $p < .001$, $\eta^2 = .62$, and $F(1, 89) = 67.10$, $p < .001$, $\eta^2 = .43$, respectively. No other effects were significant, Fs$(1, 89) < 2.11$, ps $> .15$.

Affective intensity. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (cognitive load: low, high) between-subjects ANOVA on affective intensity revealed a significant main effect of role. The outcome evoked lower affective intensity for forecasters ($M = -10.11$, $SD = 43.37$) than for experiencers ($M = 6.14$, $SD = 45.12$), $F(1, 177) = 7.18$, $p = .01$, $\eta^2 = .04$. There was also a significant main effect of probability of winning, such that participants in the 10% conditions reported higher affective intensity ($M = 8.42$, $SD = 41.77$) than did participants in the 90% conditions ($M = -11.33$, $SD = 45.73$), $F(1, 177) = 9.42$, $p = .002$, $\eta^2 = .05$. No other effects were significant (Fs < 1).

Forecasted and experienced happiness. Happiness ratings were submitted to a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (cognitive load: low, high) between-subjects ANOVA. The analysis revealed a marginally significant main effect of load, $F(1, 177) = 3.00$, $p = .09$, $\eta^2 = .02$. More important, the analysis revealed the predicted three-way role × probability of winning × cognitive load interaction, $F(1, 177) = 4.65$, $p = .03$, $\eta^2 = .02$ (see Figure 3). No other effects were significant, Fs$(1, 177) < 2.25$, ps $> .13$. For purposes of clarity, we present the results split by low and high cognitive load.

Low-load conditions. In the low-load conditions, there was a significant role × probability of winning interaction, $F(1, 87) = 4.52$, $p = .04$, $\eta^2 = .05$. As predicted, forecasters were more sensitive to probability specifications than were experiencers. Forecasters predicted that they would be happier winning the cookie when the probability of winning was 10% ($M = 64.22$, $SD = 30.53$) than when it was 90% ($M = 46.62$, $SD = 29.61$), $F(1, 87) = 3.73$, $p = .06$, $\eta^2 = .04$. Experiencers, in contrast, were similarly happy having won the cookie, whether the probability of winning was 10% ($M = 50.60$, $SD = 25.46$) or 90% ($M = 60.94$, $SD = 32.27$), $F(1, 87) = 1.20$, $p = .28$. These results replicate the findings of Experiments 1 and 2 with a nonmonetary reward.

High-load conditions. In the high-load conditions, there was no role × probability of winning interaction ($F < 1$). As predicted, forecasters were no more sensitive to probability specifications than were experiencers. Forecasters predicted that they would be similarly happy winning the cookie, whether the probability of winning was 10% ($M = 60.20$, $SD = 32.77$) or 90% ($M = 60.17$, $SD = 27.13$), $F < 1$. Likewise, experiencers were similarly happy having won the cookie, whether the probability of winning was 10% ($M = 71.72$, $SD = 27.28$) or 90% ($M = 61.55$, $SD = 32.09$), $F(1, 90) = 1.30$, $p = .26$.

Discussion

Changing the allocation of attentional resources by diverting attention away from probability specifications decreased the sensitivity of affective forecasters to probability specifications of a nonmonetary reward (i.e., winning a cookie), but it did not influence the sensitivity of experiencers to its probability specifications. Forecasters were sensitive to probability specifications under low cognitive load but were insensitive to probability specifications under high cognitive load. Experiencers, in contrast, were insensitive to probability specifications, whether they were under low or high cognitive load.

Additionally, the manipulation check revealed that the forecasted outcome was less affectively intense than the experienced outcome. The results are consistent with our proposition that the affective intensity of a forecasted outcome is less intense than the experience of that outcome and that, consequently, forecasters devote less attention to the outcome and more attention to its probability specifications than do experiencers.

Experiment 4

Experiment 4 further tested our attentional account by manipulating the salience of probability specifications among experiencers. Our theory assumes that experiencers attend less to probability specifications because the greater affective intensity of experiences draws a larger proportion of attentional resources to the

[1] Due to a programming error, the load manipulation check questions were not displayed to the participants on the first day of data collection.

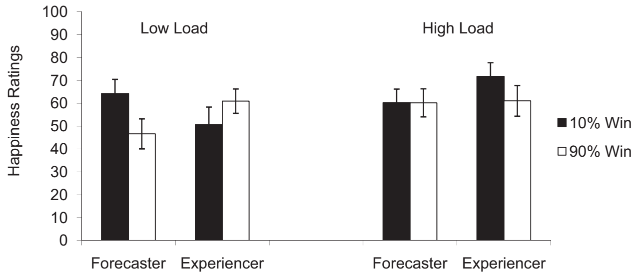

Figure 3. Affective forecasters were more sensitive to the probability of winning a cookie (i.e., 10% or 90%) than were experiencers under low cognitive load, but they were no more sensitive than were experiencers under high cognitive load in Experiment 3. Bars represent ±1 *SEM.*

experienced outcome itself and away from its probability specifications.

Alternatively, it is possible that experiencers are not sensitive to probability specifications while reporting feelings because they choose to neglect this information—perhaps because they deem it as irrelevant—or because intense experiences reduce their ability to appraise and incorporate probability specifications into judgment. If experiencers are insensitive to probability specifications because they do not attend to them, as we predict, then directing their attention toward probability specifications should increase their sensitivity to probability specifications. If experiencers deem probability specifications to be irrelevant or are unable to process those specifications, then drawing their attention to probability specifications should not influence their sensitivity to those specifications.

Experiencers in Experiment 4 won $1, given a 10% or a 90% probability of winning, and then either reported how happy they were or first recalled their probability of winning and then reported how happy they were. Immediately afterward, all participants were shown two probabilities and asked to identify their probability of winning the gamble. Their reaction time to identify the correct probability was recorded and served as a measure of attention to probability specifications. We expected that experiencers who were explicitly asked to recall the probability specifications of their outcome would devote more attention to those specifications (measured as a decrease in reaction time) and would therefore be more sensitive to its probability specifications and be faster to identify their probability of winning.

Method

Participants and design. Seventy-five pedestrians in Pittsburgh, Pennsylvania, who were recruited into a nearby behavioral laboratory (37 women and 38 men; $M_{\text{age}} = 28.87$ years, $SD = 13.89$), correctly completed the experiment in exchange for a beverage and candy.[2] Participants were randomly assigned to one of four conditions of a 2 (probability specification salience: low, high) × 2 (probability of winning: 10%, 90%) between-subjects design.

Procedure. Participants first performed a simple task designed to familiarize them with a paradigm with which we later measured the time needed to identify their probability of winning. Participants placed their fingers on the letter keys *E* and *I.* They were then shown two numbers (one even and one uneven) displayed under the two letters. In each of 30 trials, participants identified which of the two numbers was the even or odd number by pressing the corresponding letter key. Instructions at the top of the screen indicated whether they should identify the even or odd number.

Participants then played a game of chance in which they picked one of 10 identical nutshells displayed on a computer screen. They were told that they would win $1 if they picked a nutshell containing a pearl and that they would not win anything ($0) if they picked a nutshell that was empty. Half of the participants were told that one of the 10 nutshells (i.e., 10%) contained a winning pearl. The other half were told that nine of the 10 nutshells (i.e., 90%) contained a winning pearl. In fact, the computer was programmed so that all nutshells would reveal a pearl, so that all participants won $1.

All participants selected a nutshell and won $1. Participants in the high salience condition first recalled their probability of winning the gamble and stated it in an open-ended answer format (i.e., as a percent chance or odds). They then reported how happy they were that they had won $1 in the gamble on a 13-point scale with endpoints *Very Unhappy* (1) and *Very Happy* (13). Participants in the low salience condition did not recall their probability of winning. Rather, they simply reported how happy they were that they had won $1 in the gamble on the same 13-point scale after a 5-s delay.

As a manipulation check of the salience of probability specifications, the response time to identify the probability of winning the gamble was measured immediately after participants made their happiness ratings. Participants were first told to prepare for a reaction time task similar to the task that they had performed at the beginning of the experiment. After clicking a space bar to proceed to the task, they saw an instruction at the top of the screen asking them to identify their probability of winning as quickly as possible by pressing either the *E* or *I* key on their keyboard, with each of those keys associated with either 10% or 90%.

As a manipulation check of probability of winning, participants rated their subjective likelihood of winning on a 9-point scale with endpoints *Very Unlikely* (1) and *Very Likely* (9). We then administered an instructional manipulation test (IMT; Oppenheimer, Meyvis, & Davidenko, 2009) to assess whether or not participants had paid attention to the instructions of the experiment. Only participants who passed the test were deemed to have correctly

[2] Correct completion was contingent on the passing of the Instructional Manipulation Test (IMT; Oppenheimer, Meyvis, & Davidenko, 2009), which was determined prior to the analysis of the data. The IMT is widely used to assess participants' reading of instructions. It was administered in Experiments 4 and 6 due to poor identification of the stated probability information in Experiments 1, 2, 3, and 5, which were collected prior to Experiments 4 and 6 (i.e., the experiments are not presented in chronological order).

The failure rate in Experiment 4 was 48%, which is slightly higher than the failure rate reported by the developers of the IMT; this could be due to differences in the quality of the participant sample. The analysis of the full sample is described in a separate footnote. The statistical significance in Experiment 4 and 6 increased with the exclusion of the participants who failed the IMT, suggesting that the quality of responses increased the effect size. Exclusions based on the IMT likely would have increased effect sizes in Experiments 1, 2, 3, and 5 as well, had it been administered.

completed the experiment and were included in the subsequent analyses.

Results

Manipulation checks.

Subjective likelihood estimates. A 2 (salience: low, high) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 10% conditions reported a lower subjective likelihood of winning (M = 2.71, SD = 2.75) than did participants in the 90% conditions (M = 7.20, SD = 2.47), $F(1, 71) = 55.45$, $p < .001$, $\eta^2 = .44$. There was also a significant salience × probability of winning interaction, $F(1, 71) = 6.28$, $p = .01$, $\eta^2 = .09$, indicating that participants who recalled the probability of winning made more extreme judgments of their perceived probability of winning. There was no main effect of salience ($F < 1$).

Probability salience. A 2 (probability specification salience: low, high) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA on the log-transformed reaction time to identify the probability of winning revealed a main effect of salience, such that participants in the high salience condition were quicker to identify the probability of winning the gamble (M = 1.09 s, SD = 1.17) than were participants in the low salience condition (M = 1.54 s, SD = 0.61), $F(1, 71) = 4.15$, $p = .04$, $\eta^2 = .06$. No other effects were significant (Fs < 1).

Reported happiness. Happiness ratings were submitted to a 2 (salience: low, high) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA.[3] The analysis revealed a main effect of probability of winning, $F(1, 71) = 7.23$, $p = .01$, $\eta^2 = .09$. There was no main effect of salience. More important, there was a significant salience × probability of winning interaction, $F(1, 71) = 9.06$, $p = .004$, $\eta^2 = .11$ (see Figure 4). Replicating the findings of Experiments 1–3, experiencers in the low salience condition were equally happy having won \$1, whether the probability of winning was 10% (M = 11.31, SD = 1.85) or 90% (M = 11.44, SD = 1.98), $F < 1$. In contrast, experiencers in the high salience condition were happier having won \$1 when the probability of winning was 10% (M = 12.84, SD = 0.375) than when it was 90% (M = 10.50, SD = 2.19), $F(1, 71) = 17.89$, $p < .001$, $\eta^2 = .20$.

Ancillary experiment. To examine if the salience manipulation would equally influence the sensitivity of affective forecasts, we conducted an ancillary experiment with a larger number of participants (N = 176) from the same population. Only the 108 participants who passed the same IMT attention check as used in Experiment 4 were included in the subsequent analyses. All participants in this ancillary experiment were affective forecasters. Because forecasted outcomes are less affectively intense than are the corresponding experiences and forecasters are thus already more likely to pay attention to probability specifications, drawing their attention to probability specifications should have a smaller effect on their sensitivity to probability specifications than it had on experiencers in Experiment 4. We thus expected that forecasters would be no more sensitive to probability specifications, whether or not their attention was drawn to those specifications.

The procedure and stimuli were identical to those of Experiment 4, except that participants *predicted* how happy they would be if they selected a winning nutshell and won \$1. Participants in the high salience condition made this forecast after the same salience manipulation (i.e., recalling their probability of winning the gamble). Participants in the low salience condition simply made their forecast after a 5-s delay. A 2 (salience: low, high) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA revealed a main effect of probability of winning, $F(1, 105) = 5.24$, $p = .01$, $\eta^2 = .05$. There was no main effect of salience, and, more important, there was no significant salience × probability of winning interaction (Fs < 1).

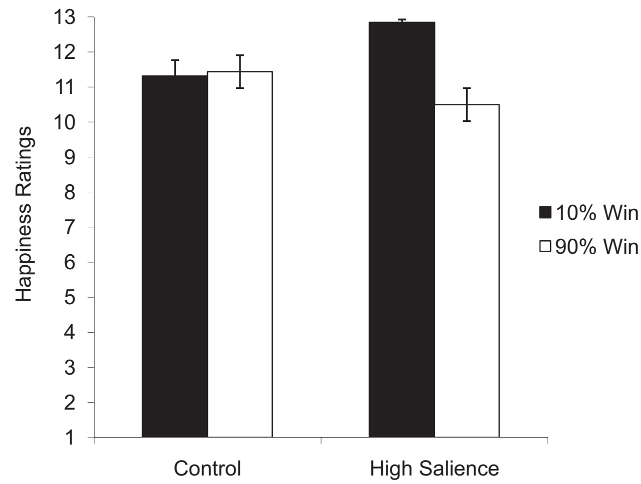

Figure 4. Experiencers were more sensitive to the probability of winning \$1 (i.e., 10% or 90%) when probability information was made salient immediately before they reported their happiness in Experiment 4. Bars represent ±1 *SEM*.

Discussion

Drawing attention to probability specifications increased the sensitivity of experiencers to those specifications. Experiencers were insensitive to probability specifications when their attention was not explicitly drawn to those specifications, but they were sensitive to probability specifications when their attention was explicitly drawn to those specifications. An ancillary experiment revealed that drawing attention to probability specifications did not have the same effect on affective forecasters, who presumably were already attending to probability specifications during judgment. These findings, together with those of Experiment 3, provide further evidence for our proposition that differences in the allocation of attention underlie differences in sensitivity to probability specifications between affective forecasters and experiencers.

[3] A 2 (salience: low, high) × 2 (probability of winning: 10%, 90%) ANOVA including the participants who failed the IMT attention check revealed a significant interaction, $F(1, 140) = 3.94$, $p = .05$, $\eta^2 = .03$, suggesting that the pattern holds for the full sample. Furthermore, a 2 (salience: low, high) × 2 (probability of winning: 10%, 90%) × 2 (IMT attention check: pass, fail) ANOVA revealed a significant three-way interaction, $F(1, 136) = 4.86$, $p = .03$, $\eta^2 = .03$, suggesting that the predicted salience × probability interaction was stronger among participants who passed the IMT than among those who failed it.

The results also rule out two possible alternative accounts of the difference in sensitivity to probability specifications between affective forecasters and experiencers. One alternative interpretation of the findings of Experiments 1 to 3 is that experiencers, as well as forecasters under high load, attend to probability specifications but do not have the ability to process such specifications. In other words, their attentional capacity is constrained to the extent that they cannot appraise and incorporate probability specifications into their evaluations. We found, contrary to this account, that when attention was drawn to probability specifications, experiencers were able to incorporate probability specifications into their hedonic evaluations.

Second, the results rule out the alternative explanation that experiencers simply choose to ignore probability specifications when evaluating their hedonic response to an outcome because they deem its probability specifications to be irrelevant (e.g., because they believe they should rely on their feelings to inform their judgment; Schwarz & Clore, 1983). Contrary to this alternative account, we found that experiencers did incorporate probability specifications into their hedonic evaluations when their attention was drawn to probability specifications.

Experiments 5 and 6: Intensity of Affect and Sensitivity

In the foregoing experiments, affective forecasters were found to be more sensitive to probability specifications than were experiencers. The results of Experiments 3 and 4 suggest that the difference in their sensitivity is due to an asymmetry in attention devoted to probability specifications, whereby affective forecasters are more likely to attend to and therefore be sensitive to probability specifications than are experiencers.

We theorize that this difference in attention to probability specifications is the result of a difference in the affective intensity elicited by an outcome when making an affective forecast for that outcome and when actually experiencing it. Outcomes are typically more affectively intense when experiencing those outcomes than when forecasting those outcomes, which leads experiencers to devote a larger share of their attentional resources to those outcomes than do affective forecasters. Consequently, probability specifications are less attended to and receive less weight in experiencer reports than in affective forecasts.

Experiments 5 and 6 directly tested the core assumptions of our theory. Experiment 5 examined whether increasing the affect richness of a reward (i.e., the stimulus) and thus the affective intensity of the outcome would decrease the sensitivity of affective forecasters to its probability specifications, rendering them as insensitive as experiencers to probability specifications. Experiment 6 held the reward constant and tested whether increasing the affective intensity of the outcome while participants made their affective forecasts would decrease the sensitivity of affective forecasters to its probability specifications and render them as insensitive as experiencers to those specifications.

Experiment 5

Experiment 5 manipulated the affective intensity of the forecasted outcome (winning a cookie) by presenting the reward—a chocolate-chip cookie—either in its opaque wrapper (affect-poor stimulus) or unwrapped (affect-rich stimulus; Hsee & Rottenstreich, 2004). This manipulation was based on the assumption that affect-rich stimuli would evoke greater affect intensity than affect-poor stimuli (Hoch & Loewenstein, 1991; Mischel, 1974) and would have a greater impact on affective forecasters (for whom the forecasted outcome is usually not intense) than on experiencers (for whom the experienced outcome is normally more intense).

Forecasters predicted how happy they would be if they won a wrapped or unwrapped cookie, given a 10% or a 90% probability of winning. Experiencers won a wrapped or an unwrapped cookie, given a 10% or a 90% probability of winning, and reported how happy they were. We expected that increasing the affect richness of the reward would decrease the sensitivity of forecasters, but not the sensitivity of experiencers, to probability specifications.

Method

Pretest. To ensure that the manipulation of affect richness was effective, pretest participants ($N = 44$) were randomly assigned to evaluate either a wrapped chocolate-chip cookie (presented in its original opaque wrapper) or an unwrapped chocolate-chip cookie (presented on top of its original wrapper) placed before them on a desk in a private cubicle. Participants first estimated the value of the cookie on an analog scale with endpoints *$1* and *$3*. Then, they rated how much they liked the cookie type (i.e., chocolate chip) on a 5-point scale with endpoints *Dislike Extremely* (1) and *Like Extremely* (5). Finally, participants evaluated the appeal of the cookie, its vividness, its affect richness, its desirability, how tempting it was, how much emotion it elicited, and how easy it was to imagine eating it on analog scales with endpoints *Not at all* (1) and *Very* (100).

A factor analysis of all these measures (using extraction criterion of eigenvalue > 1) yielded two factors. One factor included the dimensions related to affect richness (i.e., appeal, vividness, affect richness, desirability, how tempting it was, how much emotion it elicited, ease of imagining eating it), whereas the second factor included the two remaining dimensions (i.e., the value estimate and liking of cookie type). Because the correlation between the value estimate and the liking of cookie type was low ($r = -.10$, $p = .51$), these measures were not treated as a factor but as separate constructs, leaving affect richness as the only factor. The affect-richness items were averaged to an index of affect richness ($\alpha = .91$). The affect-richness index, the value estimate, and the liking of cookie type were submitted to a 2 (wrapping: wrapped, unwrapped) $\times$ 3 (within-subject measures: affect richness, value, liking) mixed ANOVA. The analysis revealed a significant main effect of the within-subject measures, $F(2, 84) = 68.11$, $p < .001$, $\eta^2 = .60$; a significant between-subject effect of wrapping, $F(1, 42) = 10.59$, $p = .002$, $\eta^2 = .21$; and a significant interaction, $F(2, 84) = 10.87$, $p < .001$, $\eta^2 = .21$. Simple effects revealed that the affect-richness index was higher when the cookie was unwrapped ($M = 54.69$, $SD = 25.60$) than when the cookie was wrapped ($M = 24.79$, $SD = 34.16$), $F(1, 42) = 10.79$, $p = .002$, $\eta^2 = .20$. The wrapping manipulation did not influence the value estimate or the reported liking of the cookie type (Fs < 1; see Figure 5). The results of the pretest revealed that the unwrapped cookie was indeed perceived to be more affect-rich and that it evoked greater affective intensity than did the wrapped cookie, but the wrapping manipulation did not

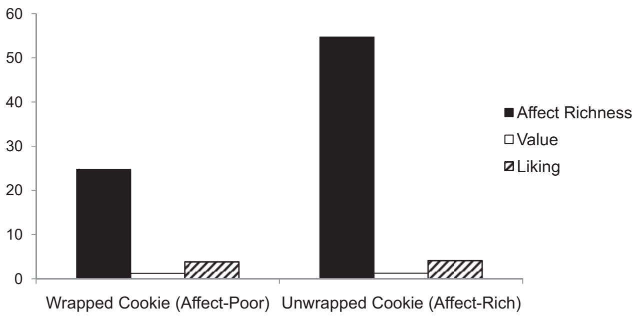

Figure 5. Participants perceived an unwrapped cookie to be more affect-rich than a wrapped cookie in Experiment 5. Perceived value of the cookie and liking for the cookie did not differ between the two wrapping conditions.

influence value estimates or how much participants liked the cookie.

Participants and design. Three hundred and forty-three students and pedestrians in Pittsburgh, Pennsylvania (175 women and 168 men, M_{age} = 27.12 years, SD = 12.88), participated in the experiment in either a stationary or a mobile research laboratory in exchange for a soft drink or course credit. Participants were randomly assigned to one of eight conditions of a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (affect richness: affect-poor, affect-rich) between-subjects design.

Procedure. Participants were seated in a private cubicle with a chocolate-chip cookie placed on a napkin in front of them. In the affect-poor condition, the cookie was presented in its original (opaque) wrapper. In the affect-rich condition, the cookie was unwrapped and placed on top of its original wrapper.

Participants then played a game of chance in which they picked one of 10 identical opaque envelopes. They were told that they would win the cookie in their cubicle if they picked an envelope containing a ticket with a winning sticker and that they would not win the cookie if they picked an envelope containing a blank ticket. Half of the participants were told that one of the 10 envelopes (i.e., 10%) contained a winning ticket. The other half were told that nine of the 10 envelopes (i.e., 90%) contained a winning ticket. In fact, all envelopes contained a winning ticket, so that all participants won a cookie.

Before drawing an envelope, forecasters predicted how happy they would be if they drew an envelope with a winning ticket and won the cookie on an analog scale with endpoints *Very Unhappy* (−100) and *Very Happy* (100). They then drew an envelope and won the cookie in their cubicle. Experiencers drew an envelope, won the cookie, and rated their happiness on the same scale. As a manipulation check of probability of winning, participants rated their subjective likelihood of winning on an analog scale with endpoints *Very Unlikely* (1) and *Very Likely* (100).

Results

Manipulation check. A 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (affect richness: affect-poor, affect-rich) between-subjects ANOVA on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 10% conditions reported a lower subjective likelihood of winning (M = 44.69, SD = 31.21) than did participants in the 90% conditions (M = 75.11, SD = 24.47), $F(1, 335) = 96.98$, $p < .001$, $\eta^2 = .23$. No other effects were significant (Fs < 1).

Forecasted and experienced happiness. Happiness ratings were submitted to a 2 (role: forecaster, experiencer) × 2 (probability of winning: 10%, 90%) × 2 (affect richness: affect-poor, affect-rich) between-subjects ANOVA, which revealed a marginally significant probability of winning × affect-richness interaction, $F(1, 335) = 2.98$, $p = .09$, $\eta^2 = .01$. More important, the analysis revealed the predicted three-way role × probability of winning × affective-richness interaction, $F(1, 335) = 4.11$, $p = .04$, $\eta^2 = .01$ (see Figure 6). No other effects were significant, Fs(1, 335) < 1.60, ps > .20. For the purpose of clarity, we present the results split by affect richness.

Affect-poor conditions. In the affect-poor conditions there was a main effect of probability of winning, $F(1, 156) = 4.16$, $p = .04$, $\eta^2 = .03$. More important, there was a significant role × probability of winning interaction, $F(1, 156) = 4.38$, $p = .04$, $\eta^2 = .03$. As predicted, forecasters were more sensitive to probability specifications than were experiencers. Forecasters predicted that they would be happier winning the cookie when the probability of winning was 10% (M = 56.81, SD = 32.79) than when it was 90% (M = 33.66, SD = 39.13), $F(1, 156) = 9.11$, $p = .003$, $\eta^2 = .06$. Experiencers, in contrast, were similarly happy having won the cookie, whether the probability of winning was 10% (M = 41.38, SD = 36.63) or 90% (M = 41.69, SD = 30.10), $F < 1$.

Affect-rich conditions. In the affect-rich conditions there was no role × probability of winning interaction ($F < 1$). Forecasters predicted that they would be similarly happy winning the cookie, whether the probability of winning was 10% (M = 38.85, SD = 33.13) or 90% (M = 44.36, SD = 37.67), $F < 1$. Likewise, experiencers were similarly happy having won the cookie, whether the probability of winning was 10% (M = 46.11, SD = 29.88) or 90% (M = 44.11, SD = 35.71), $F < 1$.

Discussion

Increasing the affective intensity of the outcome by increasing the affect richness of the reward decreased the sensitivity of affective forecasters to probability specifications, but it did not influence the sensitivity of experiencers. Forecasters were sensitive to probability specifications when the reward was affect-poor but were insensitive to probability specifications when the reward was affect-rich. Experiencers were insensitive to probability specifications regardless of the affect richness of the reward. The results provide direct support for our proposition that differences in the affective intensity of the forecasted and experienced outcome underlie the difference in sensitivity to probability specifications between affective forecasters and experiencers.

The results of Experiment 5 rule out three potential alternative interpretations that could account for different sensitivity of affective forecasters and experiencers to probability specifications in the previous studies. First, the results rule out the alternative account that forecasters are more likely than experiencers to be influenced by lay beliefs about how probability influences happiness with an outcome. Erroneous lay beliefs have been shown to underlie some affective forecasting errors (e.g., Novemsky & Ratner, 2003; Ratner, Kahn, & Kahneman, 1999). A key difference

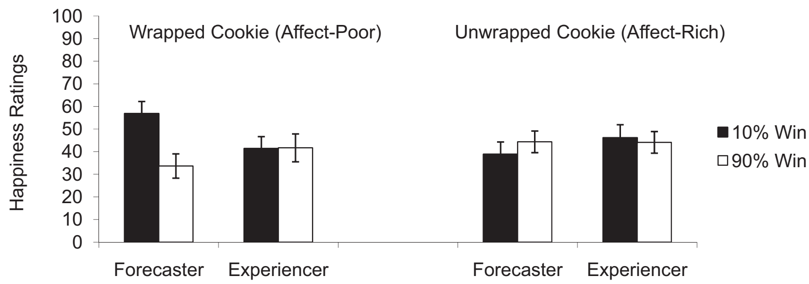

Figure 6. Affective forecasters were more sensitive to the probability of winning a cookie (i.e., 10% or 90%) than were experiencers when the reward was affect-poor, but they were no more sensitive than were experiencers when the reward was affect-rich in Experiment 5. Bars represent ±1 *SEM*.

between this alternative account and our theory is that our theory predicts that affect richness would influence the sensitivity of affective forecasters to probability specifications, as found in Experiment 5, whereas the erroneous-lay-belief account does not make such a prediction.

Second, given that forecasters in the affect-rich and affect-poor conditions made the same evaluative judgment but exhibited different sensitivity to probability specifications, the results also rule out the possibility that the differences in sensitivity result from differences in information processing used to make forecasts and report experiences (e.g., that affective forecasts involve more comparative judgment or a more deliberate processing style than the reporting of an experience; Kahneman, 2011).

Third, given that both groups of forecasters were asked the same question, the differences observed between the forecasters in the affect-rich and affect-poor conditions also rule out the interpretation that differences in sensitivity result from different conversational norms (e.g., that forecasters in previous studies were more likely to think that they were supposed to rely on and incorporate probability specifications in their judgment than experiencers; Grice, 1975).

A fourth possible alternative explanation is that experiencers (and forecasters in the affect-rich conditions) in previous experiments had more information to make their judgments than forecasters had. For example, experiencers in Experiments 1 and 2 had information about how winning feels, whereas affective forecasters did not. Similarly, forecasters in the affect-rich condition in Experiment 5 saw the cookie without its wrapper, which might have provided them with more information about how it would taste than was provided to forecasters who saw the wrapped cookie. The availability of additional information might have made the experiencers (vs. the forecasters) in Experiments 1–2 and the forecasters in the affect-rich condition (vs. the affect-poor condition) in Experiment 5 ascribe less weight to probability specifications. We directly address this possibility in Experiment 6.

Experiment 6

Experiment 6 manipulated the intensity of affect experienced during judgment while controlling for information about the experienced and forecasted outcome. All participants won $1, given either a 10% or a 90% probability of winning. They then either reported their experienced happiness or forecasted how happy they would be if they won the same gamble again 1 week later. Forecasters in an immediate forecaster condition made their predictions immediately after winning the gamble (while the forecasted outcome was still affectively intense); forecasters in a delayed forecaster condition made their predictions after watching a 3-min neutral video (while the forecasted outcome was no longer affectively intense). We expected that both experiencers and forecasters who made their predictions immediately after winning the gamble would be less sensitive to probability specifications than forecasters who made predictions after watching the video.

Method

Pretest. A pretest ($N = 61$) was run to ensure that watching a neutral 3-min video (images of the universe) after winning the gamble would effectively reduce the affective intensity of the outcome. Pretest participants first won $1 with either a 10% or a 90% probability of winning. They then reported the intensity of affect evoked by the outcome on a 13-point scale with endpoints *None at all* (1) and *Very Intense* (13), either immediately after learning the outcome or watching the video.

A 2 (timing: immediate, delayed) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA on the affect intensity ratings revealed a significant main effect of timing such that affective intensity was greater when measured immediately after winning $1 ($M = 6.07$, $SD = 2.65$) than when it was measured after the 3-min video ($M = 4.23$, $SD = 2.69$), $F(1, 57) = 6.83$, $p = .01$, $\eta^2 = .10$. No other effects were significant (Fs < 1). The results of the pretest confirmed that the video delay manipulation successfully reduced the affective intensity of the outcome, independent of its probability specifications.

Participants and design. One hundred and thirty-three University of Miami students (73 women and 60 men, $M_{age} = 21.11$ years, $SD = 5.41$) correctly completed the experiment as part of a 1-hr laboratory session in exchange for course credit.[4] Participants were randomly assigned to one of six conditions of a 3 (role:

[4] As in Experiment 4, correct completion was contingent on the passing of the Instructional Manipulation Test (Oppenheimer et al., 2009), which was determined prior to the analysis of the data. The failure rate was 38%, which is consistent with the exclusion rate reported by the developers of the test. The analysis of the full sample is described in a separate footnote.

experiencer, immediate forecaster, delayed forecaster) × 2 (probability of winning: 10%, 90%) between-subjects design.

Procedure. Participants played a game of chance in which they picked one of 10 identical nutshells displayed on a computer screen. They were told that they would win $1 if they picked a nutshell containing a pearl and that they would not win anything if they picked a nutshell that was empty. Half of the participants were told that one of the 10 shells (i.e., 10%) contained a winning pearl. The other half were told that nine of the 10 shells (i.e., 90%) contained a winning pearl. In fact, the computer was programmed so that all nutshells would reveal a winning pearl, so that all participants won $1.

All participants selected a nutshell and won $1. Those in the experiencer condition reported their happiness about winning $1 in the gamble on a 13-point scale with endpoints *Very Unhappy* (1) and *Very Happy* (13), immediately after learning the outcome. Participants in the two forecaster conditions were asked to imagine playing the same gamble again 1 week later. They then predicted how happy they would be about winning $1 in that gamble on the same scale used by experiencers. The crucial difference between the two forecaster conditions was that half of the forecasters made their forecast immediately after winning $1, while the forecasted outcome was still affectively intense. The other half made their forecast after watching the pretested neutral 3-min video, when the forecasted outcome was no longer affectively intense. Both experiencers and immediate forecasters watched the video before playing the gamble to ensure that any differences between the delayed-forecaster condition and the other two conditions could not be attributed to the difference in exposure to the video.

As a manipulation check, all participants then rated their subjective likelihood of winning on a 7-point scale with endpoints *Very Unlikely* (1) and *Very Likely* (7). In addition, participants completed the instructional manipulation test (IMT; Oppenheimer et al., 2009), which assessed whether participants attended to the instructions. Only participants who correctly completed the IMT were included in the subsequent analyses.

Results

Manipulation check. A 3 (role: experiencer, immediate forecaster, delayed forecaster) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA on subjective likelihood estimates revealed a significant main effect of probability of winning, such that participants in the 10% conditions reported a lower perceived likelihood of winning (M = 2.55, SD = 2.21) than did participants in the 90% conditions (M = 5.10, SD = 1.71), $F(1, 127) = 48.75$, $p < .001$, $\eta^2 = .28$. No other effects were significant (Fs < 1).

Reported and forecasted happiness. Happiness ratings were submitted to a 3 (role: experiencer, immediate forecaster, delayed forecaster) × 2 (probability of winning: 10%, 90%) between-subjects ANOVA.[5] The analysis revealed the predicted role × probability of winning interaction, $F(2, 127) = 3.47$, $p = .03$, $\eta^2 = .05$ (see Figure 7). No other effects were significant, Fs(2, 127) < 2.27, ps > .1. Replicating the findings of the previous experiments, experiencers were equally happy having won $1, whether their probability of winning was 10% (M = 9.00, SD = 2.33) or 90% (M = 9.43, SD = 1.80), $F < 1$. Similarly, immediate forecasters predicted that they would be equally happy winning an identical gamble 1week later, whether their probability of winning

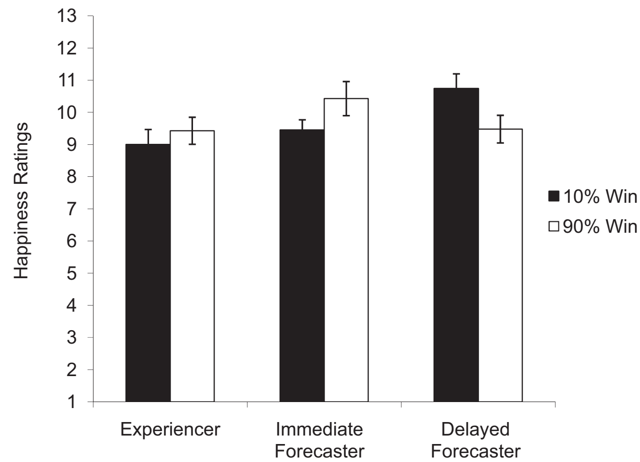

Figure 7. Forecasters who were experiencing less intense affect (delayed forecasters) were more sensitive to the probability of winning $1 (i.e., 10% or 90%) than were experiencers or forecasters who were experiencing more intense affect (immediate forecasters) in Experiment 6. Bars represent ±1 *SEM*.

was 10% (M = 9.45, SD = 1.84) or 90% (M = 10.43, SD = 1.91), $F(1, 127) = 2.50$, $p = .12$. In contrast, delayed forecasters predicted that they would be happier winning an identical gamble 1 week later when their probability of winning was 10% (M = 10.74, SD = 2.26) than when it was 90% (M = 9.48, SD = 1.94), $F(1, 127) = 3.99$, $p = .05$, $\eta^2 = .03$.

Discussion

The results of Experiment 6 provide compelling evidence that differences in the affective intensity of forecasted and experienced outcomes underlie the difference in sensitivity to probability specifications between affective forecasters and experiencers. Delayed forecasters, who made their forecast when the affective intensity of the outcome was low, were more sensitive to its probability specifications than were experiencers, despite having had the experience that they were forecasting 3 minutes prior to making their forecast. Immediate forecasters, who made their forecast while the forecasted outcome was affectively intense, were as insensitive to probability specifications as were experiencers.

The results thus rule out the alternative account that differences in available information during judgment could explain the different sensitivity of affective forecasters and experiencers to probability specifications that was observed in previous experiments. In this experiment, delayed forecasters and experiencers had identical information about the outcome, and yet the delayed forecasters

[5] A 3 (role: experiencer, immediate forecaster, delayed forecaster) × 2 (probability of winning: 10%, 90%) ANOVA including the participants who failed the IMT attention check did not reveal a significant interaction effect, $F(1, 211) = 1.64$, $p = .19$, $\eta^2 = .02$. However, a 3 (role: experiencer, immediate forecaster, delayed forecaster) × 2 (probability of winning: 10%, 90%) × 2 (attention check: pass, fail) ANOVA revealed a marginally significant three-way interaction, $F(2, 205) = 2.65$, $p = .07$, $\eta^2 = .025$, suggesting that the predicted role × probability of winning interaction was stronger among the participants who passed the IMT than among those who failed it.

were more sensitive to its probability specifications than were experiencers. This suggests that affective forecasters' increased sensitivity to probability specifications as compared to that of experiencers is not due to experiencers having more diagnostic information (i.e., knowing more about the outcome) or processing a greater amount of information, thus diluting the influence of probability specifications (Nisbett, Zukier, & Lemley, 1981).

Moreover, both the immediate forecasters and the delayed forecasters made forecasts for the same outcome, but they exhibited different sensitivity to probability specifications. The results of Experiment 6 therefore provide further evidence against the alternative explanations that were ruled out in Experiment 5; specifically, that differences in sensitivity to probability specifications result from differences in a reliance on lay beliefs, from differences in information processing during judgment, or from differences in conversational norms between affective forecasters and experiencers.

General Discussion

Affective forecasters overestimate how sensitive hedonic responses to an outcome are to the probability of its occurrence. We propose that differences in the affective intensity of the forecasted and experienced outcome lead to differences in attentional resources devoted to its probability specifications, which in turn lead to the observed differences in sensitivity to those specifications. The results of six experiments support our hypotheses.

Experiments 1 and 2 demonstrated the difference in sensitivity to probability specifications between affective forecasters and experiencers; this difference applies to both positive and negative outcomes and to different probability specifications. Experiments 3 and 4 showed that the allocation of attention toward probability specifications determines the sensitivity of affective forecasters and experiencers to probability specifications. Experiment 3 found that diverting attention away from probability specifications reduced the sensitivity of affective forecasters to probability specifications but did not influence the sensitivity of experiencers to these specifications. Experiment 4 revealed that drawing attention to probability specifications increased the sensitivity of experiencers to probability specifications.

Experiment 5 showed that increasing the affective intensity of an outcome by increasing the affect richness of the reward reduced the sensitivity of forecasters to its probability specifications but had no effect on the sensitivity of experiencers. Experiment 6 revealed that affective forecasters who had previously experienced an outcome were as insensitive to probability specifications as experiencers if they made their forecasts while the forecasted outcome was still affectively intense, but they were more sensitive than experiencers if they made their forecasts while the outcome was no longer affectively intense.

Because the affective intensity of the forecasted and experienced outcome was manipulated and information, type of judgment, and question wording were held constant, the results of Experiments 5 and 6 rule out several alternative explanations that could account for the differential sensitivity of affective forecasters and experiencers to probability specifications. In particular, sensitivity to probability specifications cannot be explained by an asymmetry in information available to forecasters and experiencers during hedonic evaluations, from differences in information processing used to make forecasts and report experiences, or from differential reliance on erroneous lay beliefs or conversational norms.

Although the present research has focused on the differential sensitivity to probability, our theory is likely to generalize to other outcome specifications. Similarly, although the probability specifications used in our experiments were always presented in an explicit, quantitative format and thus were objective and relatively easy to evaluate (Hsee, 1996), we believe that our findings would generalize to less objective and explicit likelihood formats, such as the perceived likelihood of missing a train, getting a promotion, or learning the outcome of a medical test. It would be beneficial for future research to test the generalizability of our findings to different outcome specifications and presentation formats.

The present research makes several contributions to our understanding of predicted and experienced utility as well as to our understanding of probability sensitivity. First, it identifies the differences in the intensity of affective responses evoked by mental simulations and corresponding hedonic experiences—and the accompanying differences in the allocation of attentional resources—as a source of errors in affective forecasting. In doing so, it complements research that has identified other origins of affective forecasting errors, such as immune neglect (Gilbert et al., 1998), focalism (Schkade & Kahneman, 1998; Wilson et al., 2000), and joint versus separate evaluation modes (Hsee & Zhang, 2004). Additionally, it demonstrates a qualitatively different forecasting error than has been documented in previous research. Much of the affective forecasting research to date has focused on the accuracy of predicted emotional reactions toward a given event, such as a football game, the dissolution of a romantic relationship, or the outcome of a political election (Eastwick et al., 2008; Gilbert et al., 1998; Wilson et al., 2000). The present research examines the accuracy of predicted emotional reactions toward variations in outcome specifications associated with a given event. By showing that affective forecasters overestimate the influence of the probability specifications of an outcome on hedonic responses to that experience, the present research extends the sparse literature on the predicted and experienced utility from outcome specifications from magnitude (Dunn & Ashton-James, 2008; Hsee & Zhang, 2004; Morewedge et al., 2007) to probability specifications. Importantly, our research shows that mispredictions of sensitivity to outcome specifications do not only arise due to contextual factors, such as whether forecasts are made in a joint evaluation mode, whereas experiences take place in a single evaluation mode (Hsee & Zhang, 2004). Mispredictions can also arise because of inherent differences in affective intensity of the forecasted and experienced outcomes, which result in differences in attention to the specifications of those outcomes.

Second, the present research aids the explanation and interpretation of related findings in the literature. It provides a process explanation for previously demonstrated differences in probability sensitivity for affect-rich versus affect-poor outcomes (Hsee & Rottenstreich, 2004; Loewenstein et al., 2001; Mukherjee, 2010; Rottenstreich & Hsee, 2001; Sunstein, 2002; Suter et al., 2012) as well as differences in sensitivity to other outcome characteristics between affective forecasters and experiencers (Dunn & Ashton-James, 2008; Ebert & Meyvis, 2011). The findings also further the understanding of the important role of attentional resources during hedonic evaluations. Whereas past research has shown that attentional processes influence the comparative value of an outcome (i.e., valuation and contrast effects) in affective forecasts and hedonic experiences (Kassam et al., 2011; Morewedge et al., 2010), the present research provides evidence that attentional processes also determine the influence of outcome specifications on hedonic evaluations.

Third, the present research increases our ability to specify the circumstances under which probability specifications are likely to influence hedonic evaluations. Previous research found that probability specifications influenced predicted (Brandstätter et al., 2002) and experienced emotional responses (Mellers et al., 1997) when participants jointly evaluated the impact of different probabilities in a within-subject design. Consistent with Brandstätter et al. (2002), we found that people predict that winning a reward will evoke greater happiness when the probability of winning that reward is small than when it is large, thus demonstrating that this effect occurs even when the probabilities are evaluated separately in a between-subjects design. Predicted sensitivity to probability specification in single evaluation mode disappears, however, when the forecasted outcome is affectively intense. Unlike Mellers et al. (1997), we find no influence of probability specifications on experienced happiness unless attention is explicitly directed toward those specifications. This discrepancy is likely due to differences in sensitivity to quantitative information in joint versus separate evaluation mode (Hsee & Zhang, 2004). Whereas participants in Mellers et al. (1997) won multiple outcomes with varying probabilities in a within-subject design, making probability specifications salient, participants in the present research evaluated the probability of only a single outcome. This difference in evaluation mode and the resulting differences in the salience of probability specifications likely influenced the sensitivity of experiencers to those specifications (Hsee & Zhang, 2004; see also Rottenstreich & Kivetz, 2006). Indeed, Experiment 4 found that drawing attention to probability specifications increased the sensitivity of experiencers to probability specifications. Taken together, probability specifications seem to have greater influence on forecasted happiness than experienced happiness unless they are made salient, such as when judgments are made in joint evaluation mode or when probability information is highlighted during judgment.

Over- and Underestimation in Affective Forecasts

Our theory implies that there is a stronger negative correlation between the probability specifications for an outcome and hedonic evaluations of that outcome for affective forecasters than for experiencers. It thus makes predictions for when affective forecasters will be more likely to overestimate or underestimate their hedonic response to an uncertain event. Forecasters should be more likely to overestimate the hedonic impact of low-probability outcomes and underestimate the hedonic impact of high-probability outcomes, which is generally consistent with the results of our experiments.

The idea that forecasters overestimate their response to low probability is also consistent with Gilbert, Morewedge, et al. (2004), who found that affective forecasters were more likely to overestimate how much regret they would feel when missing a train or prize by a narrow margin than by a wide margin. Narrow margin misses are likely to be perceived as more unexpected than wide margin misses because they are more mutable. In other words, because it is easier to generate a counterfactual in which one did not miss a train or prize by a narrow margin as opposed to a wide margin, narrow margin outcomes should seem more unlikely (Kahneman & Miller, 1986), leading to an overestimation of regret for narrow margin events.

The idea that forecasters underestimate their response to high probability events is also consistent with Andrade and Van Boven's (2010) finding that participants who rejected a gamble underestimated how pleased they would be upon learning that they would have lost had they chosen to play the gamble. In other words, affective forecasters in the experiment underestimated their hedonic response to learning that they avoided a negative outcome that they were certain to avoid (given that they had rejected the gamble). Similar to participants in our experiments, participants in Andrade and Van Boven (2010) who did not expect to experience a negative event (i.e., lose the gamble) underestimated how happy they would be to learn that they avoided that negative event.

We did find systematic errors in affective forecasting that are in line with our theory, but it is important to note that we did not observe a more general impact bias in the results of the six experiments. We believe that procedural idiosyncrasies in our experiments eliminating two major sources of the impact bias may explain why we did not consistently find an impact bias. Experiencers in our studies made their reports immediately upon learning an outcome and thus did not have as much time to adapt and rationalize the events as did experiencers in other affective forecasting studies (e.g., Gilbert, Lieberman, et al., 2004). Furthermore, given the timing and the phrasing of our questions, the focus of both affective forecasters and experiencers was on the outcome of the gamble. Participants did not have intervening experiences between the forecasted and reported experience that could have diluted the influence of the focal event on hedonic evaluations or changed their interpretation of what they should report (Levine, Lench, Kaplan, & Safer, 2012; Schkade & Kahneman, 1998; Wilson et al., 2000).

Conclusion

The present research reveals that one of the central dimensions of the utility of outcomes, their probability of occurrence, differently influences affective forecasts for and experiences of outcomes. Affective forecasters are more sensitive to the probability specifications of an outcome than are experiencers, leading to errors in affective forecasting. This difference appears to arise because a forecasted outcome is typically less affectively intense than the experienced outcome, which leads to a discrepancy in the attentional resources devoted to its probability specifications. The present research suggests that affective forecasters may be more accurate when the forecasted outcome is more affectively intense or when probability specifications are made salient. On a final, positive note, our results suggest that expected events, which are generally believed to be underwhelming, can bring surprising joy.

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