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3

Self-serving Beliefs and the Pleasure of Outcomes

BARBARA MELLERS AND A. PETER MCGRAW

People like to think well of themselves. Most endorse high levels of self-esteem (Greenwald 1980; Baumeister, Tice, and Hutton 1989). They believe they will experience more good outcomes and fewer bad outcomes than similar others (Weinstein 1980). They see themselves as more ethical, more productive, more charitable, and simply *better* on just about any socially desirable outcome (Alicke 1985). They often attribute their successes to strong skills rather than good luck and their failures to bad luck rather than weak skills (Cohen 1964; Weiner et al. 1971). Finally, they believe they have more influence over chance than reality dictates (Langer 1975; Langer and Roth 1975).

These self-serving beliefs also influence one's beliefs about one's performance. Overconfidence, for example, is the common tendency to believe that one's knowledge, skills, or abilities are better than one's actual accomplishments (Lichtenstein, Fischhoff, and Phillips 1982; Yates 1990; Baron 1994). The hindsight bias is the tendency to remember one's predictions of events as more accurate than they actually were (Fischhoff 1975; Fischhoff and Beyth 1975).

Self-serving belief systems can be highly adaptive and are usually associated with mental health (see Taylor and Brown 1988). They promote achievement, support happiness, and facilitate well-being. People with high self-esteem tend to have fewer ulcers, less insomnia, less depression, and fewer addictions than those with low self-esteem. They tend to persist longer in difficult tasks, and they are less susceptible to peer pressure (Brockner and Hulton 1978). Yet, despite the numerous benefits, there are some costs.

A discussion of the downside to self-serving beliefs typically emphasizes the cognitive drawbacks. Unrealistic assessments of one's abilities can prematurely weaken or stop one's search for information prior to a decision. One might attend to irrelevant data and/or ignore critical data. For example, Bedau and Radelet (1987) found 350 instances in which innocent defendants were convicted of serious crimes. At the time of the review, twenty-three had already been executed. Other catastrophic mistakes have been linked to overconfidence, such as the 1986 space shuttle disaster. Overconfidence can lead to suboptimal settlements or no settlements because negotiators overestimate their positions

(Neale and Bazerman 1985). Moreover, hindsight biases makes learning from the past difficult. How can we learn to correct our mistakes if our memories tell us we never made them?

A largely neglected topic in discussions of self-serving beliefs are the affective drawbacks. This chapter examines the emotional costs of two self-serving biases, overconfidence and hindsight. We begin with a discussion of the judged pleasure of events. With overconfidence, our focus is on the feelings associated with successes and failures in tasks of skill. With the hindsight bias, our focus is on the emotions associated with positive and negative events more generally. Then we examine how overconfidence and the hindsight bias shape emotional experiences. Although there are some exceptions to the rule, self-serving biases reduce the pleasure and enjoyment of outcomes. In sum, we argue that the costs of self-serving beliefs may be broader than previously thought. There are affective, as well as cognitive downsides to self-serving beliefs.

1. JUDGMENTS OF PLEASURE FOLLOWING A CHOICE

Most psychological research on decision-making examines the search, evaluation, and comparison processes that occur *prior* to choice. It is also important to consider what happens *after* a choice. The pleasure associated with the outcome of a decision is not only a good predictor of future decisions, as with consumer choices, but is also essential to understanding of what underlies preferences and tastes.

Many psychologists assume that the post-decision pleasure and satisfaction of outcomes are reasonably well described by utilities. However, when held up to scrutiny, the assumption breaks down, even with simple judgments of the pleasure of monetary outcomes. There are two major reasons. First, while psychological conceptions of value, as developed in prospect theory (Kahneman and Tversky 1979; Tversky and Kahneman 1992), incorporate one reference point (the status quo), pleasure is likely to vary with multiple reference points. People's feelings are influenced by such factors as the outcomes of relevant peers (Tesser 1988), counterfactual possibilities (Kahneman and Tversky 1982), aspirations (Kunda 1990), and expectations (Roese and Olson 1995). For example, even a loss can be pleasurable, depending on what else could have occurred.

Second, while most theories of choice assert that utilities are independent of beliefs, judgments of pleasure interact with beliefs and hunches about the likelihood of outcomes. For example, a small, surprising win can produce greater pleasure than a large, expected win. The reverse can also be true; a small and surprising loss can be more painful than a larger, but expected loss.

We investigated judgments of pleasure associated with monetary outcomes (Mellers et al. 1997; Mellers, Schwartz, and Ritov 1999). Our goal was to compare the judged pleasure of an outcome with the utility of that outcome. Participants were asked to make choices between gambles with monetary outcomes. Gambles were presented as pie charts on a computer screen, with different regions of the

pie representing the probabilities of monetary wins or losses. Participants selected the gamble they preferred to play.

What happened next depended on the study. In some cases, the unchosen gamble vanished, and a spinner appeared in the center of the chosen gamble. The spinner rotated for some time and eventually stopped in one region or the other. Participants learned their outcome and rated their emotional reaction to it on a category rating scale labeled "Very Happy" to "Very Unhappy." In other cases, spinners appeared in the center of both gambles. Spinners rotated independently and eventually stopped. Participants learned not only their outcome but the outcome they would have received if they had selected the other gamble. Again, they rated their pleasure with the outcome.

2. PLEASURE IS A CHANGE, NOT A STATE

Much of what gives us pleasure or pain is change. Wins and losses are no exception. Our gambling studies were designed to have multiple reference points, the most salient of which was the status quo. Virtually all descriptive theories of risky choice assert that people evaluate outcomes relative to a neutral point (Kahneman and Tversky 1979; Lopes 1990; Birnbaum and Thompson 1996). Utilities are changes in wealth, not states of wealth.

The second reference point was the outcome that would have occurred under another state of the world. When participants learned their outcome, they naturally compared it to what would have happened if the spinner had stopped in the other region. Loomes and Sugden (1986) and Bell (1985) refer to these comparisons as "disappointment" when the comparison makes the obtained outcome appear worse and "elation" when it makes the obtained outcome seem better. Of course, participants had no control over the spinner, yet the unobtained outcome was still a salient anchor for comparison.

The third reference point was the outcome of the *unchosen* gamble. When participants learned their outcome and that of the other gamble, they compared what they got to what would have happened if they had made the other choice. Loomes and Sugden (1982) and Bell (1982) call these comparisons "regret" when the comparison makes the obtained outcome seem worse and "rejoicing" when it makes the outcome seem better.

An important feature of most comparisons is asymmetry. Negative comparisons tend to have greater impact than positive comparisons. The first theory to incorporate this property in the value function was prospect theory. Kahneman and Tversky referred to it as loss aversion; the pain of a loss is greater in magnitude than the pleasure of an equivalent gain. This asymmetry is also common in counterfactual comparisons and appears related to a more general effect of negativity dominance (Baumeister et al. 2001; Rozin and Royzman 2001). Both disappointment and regret functions typically reveal that negative comparisons have greater effects on pleasure than positive comparisons (Mellers, Schwartz, and

Ritov 1999). We suspect that loss aversion occurs with both real and apparent losses. Disappointment and regret can occur with gains as well as losses.

Figure 3.1 summarizes some results from our gambling studies (Mellers, Schwartz, and Ritov 1999). The judged pleasure of an $8 win and an $8 loss are shown on the left and right, respectively. Points tend to be higher on the left than on the right. Not surprisingly, pleasure is greater for wins than for losses, reflecting the effect of the status quo. Values on the abscissa represent counter-factual outcomes across alternative states of the world or disappointment effects. The slopes of the curves show the effect of disappointment when the unobtained outcome of the chosen gamble was either a $32 win or a $32 loss. Both wins and losses of $8 are more pleasurable when the reference point was $32 loss than when it was a $32 gain Values of the curves represent counter-factual outcomes across alternative choices or regret effects. The spaces between the curves represent the effect of regret when the outcome of the unchosen gamble was a $32 win or a $32 loss. Again, $8 wins and losses are more pleasurable when the outcome of the other gamble was worse, not better, than the obtained outcome.

Figure 3.1 shows that regret effects are greater in magnitude than disappointment effects. The average change in the slopes of the curves which reflects the disappointment effect is approximately 10 on a category scale that ranges from +50 to −50. The average vertical difference between curves shows regret effects. This change is approximately 28. In this experiment, regret effects are almost three times as large as disappointment effects across wins and losses.
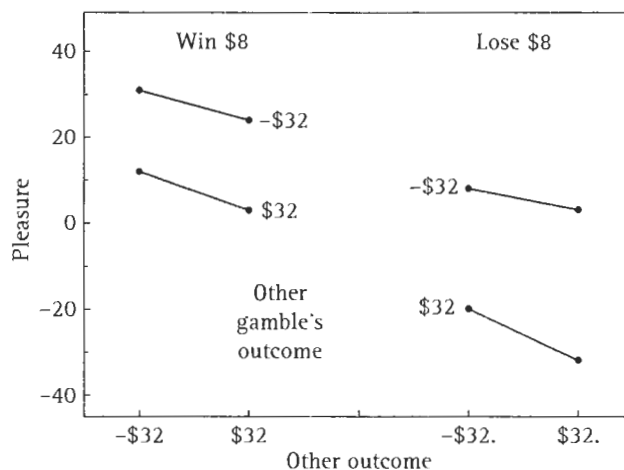

Figure 3.1. *Status quo, disappointment, and regret effects with wins and losses of $8*

Note: Each point is the average of three judgements of pleasure for outcomes that differed only in probabilities of occurrence (0.5 and 0.8)

Source: From Mellers, Schwartz, and Ritov (1999).

Making the wrong choice feels quite different from being unlucky. It is this element of control that presumably increases the potency of the comparison.

Two data points in Figure 3.1 are particularly interesting and illustrate the power of reference points. Consider the pleasure of an $8 win when the decision maker has two better reference points of $32 wins. Now consider the pain of an $8 loss when the decision maker has two worse reference points of $32 losses. The $8 loss is actually pleasurable, even more pleasurable than the $8 win. The combined effects of disappointment and regret actually reversed the effect of the status quo such that the $8 loss was *more pleasurable* than the $8 gain.

3. SURPRISE EFFECTS

Another intriguing effect that occurs in judgments of pleasure is what we call the surprise effect. Figure 3.2 shows the influence of surprise on pleasure with outcomes in a basketball task, a spelling bee, and a gambling study of the sort described earlier. The results in Figure 3.2(a) come from an experiment that investigated beliefs, performance, and affect in physical skill task. We invited recreational basketball players to come to a university gymnasium and take shots from pre-designated locations on the basketball court. Before each shot, they judged their confidence that they would make the shot on a scale from 0 to 100 percent, where 0 percent "Certain of Missing the Shot" and 100 percent "Certain of Making the Shot." After the shot, players rated their feelings of pleasure with the outcome. Responses are shown on a scale from −9 to 9, where −9 "Very Unhappy" and 9 "Very Happy."

In this study, we did not ask players to rate the degree to which they were surprised by the outcome. Instead, we converted confidence ratings into measures of surprise. Surprise was assumed to be one's confidence in whatever
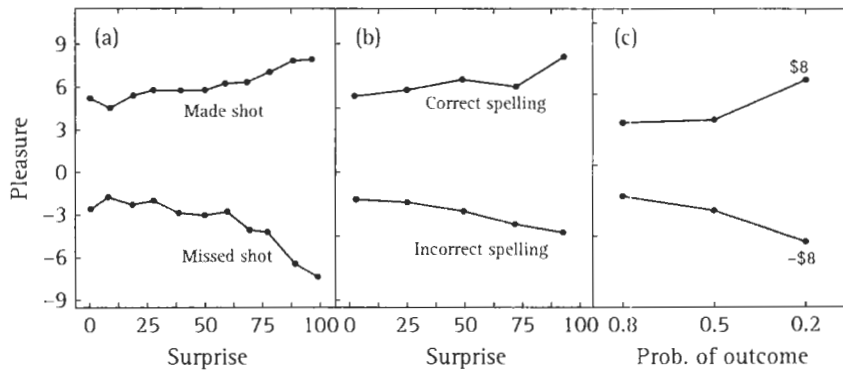

Figure 3.2. *Surprise effects in (a) physical task of skill (basketball), (b) cognitive task of skill (spelling), and (c) gambling task*

outcome *did not* occur. It ranged from 0 to 100 percent, where 0 percent is "No Surprise" and 100 percent is "Extremely Surprised". When a player made the shot, the measure of surprise was his confidence of failure. For example, if a player was 10 percent confident of making a shot and succeeded, his surprise was 90 percent (or 100 − 10 percent). When the player missed the shot, the measure of surprise was his confidence of success. For example, if a player was 10 percent confident of making a shot and missed it, his surprise was only 10 percent.

Figure 3.2(a) shows that players' emotional reactions to the outcomes of a basketball task vary with success and failure. More interesting is the fact that the pleasure of a success or failure depends on the degree to which the outcome was surprising. Successes and failures are more pleasurable and painful, respectively, when they are unexpected.

Figure 3.2(b) shows results from another experiment that focused on skill, but this time it was cognitive rather than physical. We invited students to participate in a spelling bee. On each trial, they heard a word, attempted to spell it, and rated their confidence that they were correct on a scale from 0 to 100 percent, where 0 percent is "Certain of Being Wrong" and 100 percent is "Certain of Being Correct." Students then learned the correct spelling of the word and rated their emotional reaction to the outcome on a scale from −50, "Very Unhappy," to +50, "Very Happy." Judgments were transformed to the −9 to +9 scale for simplicity. We converted ratings of confidence to measures of surprise and plotted emotions against surprise using the method described above. Correct spellings are more pleasurable than incorrect spellings, and surprise interacts with outcome. Unexpected successes are more pleasurable than expected successes, and unexpected failures are more painful.

Surprise effects occur when the source of the uncertainty is internal to the decision maker, as illustrated in Figures 3.2(a) and (b). Figure 3.2(c) shows that surprise effects also occur when the source of the uncertainty is external to the decision-maker, and outcomes are based purely on chance. Figure 3.2(c) shows judged pleasure from a gambling experiment. In this case, surprise is assumed to be the probability that the outcome *would not* occur. The occurrence of an outcome that had an 80 percent probability is less surprising than the occurrence of an outcome with only a 20 percent chance. Again, the pleasure of a win and the pain of a loss increase in magnitude with the unexpectedness of the outcome.

4. DECISION AFFECT THEORY

We have developed a theory of judged pleasure to describe the results in Figures 3.1 and 3.2. In this account, the pleasure of an outcome depends on the outcome, comparisons with reference points, and beliefs about what was likely to have occurred. To illustrate, consider a gamble with two outcomes, A and B. Suppose A occurs with probability, p_A, and B occurs with probability, $1-p_A$. Decision affect theory predicts that the pleasure associated with A is

$$R_A = J[u_A + d(u_A - u_B) \times (1 - s_A)],$$

where R_A is the judged pleasure of A, and J is a linear judgment function relating an internal feeling to a numerical response. The internal feeling depends on u_A, the utility of the outcome, and a comparison of A with B. This comparison is expressed as a disappointment function, $d(u_A - u_B)$. Last but not least, p_A (the probability of A) is represented as a subjective probability, s_A, and the surprisingness of A is assumed to be $(1 - s_A)$.

In this account, the impact of the counterfactual comparison (A with B) depends on the unexpectedness of the actual outcome (A). Surprise serves as a weight that is applied to the comparison. Kahneman and Miller (1986) argued that counterfactual thoughts were more likely to occur when an event *nearly* occurred or when the antecedents leading up to an event were *exceptional*. It is exactly these situations that lead to what seems like unusual, unexpected, or surprising events. Decision affect theory implies that the emotional impact of counterfactual thinking is moderated by perceptions of surprise, broadly defined.

Now consider a choice between gamble 1, with outcomes A and B, and gamble 2, with outcomes C and D and respective probabilities of p_C and $(1 - p_C)$. Suppose a decision-maker chooses gamble 1, A occurs, and the outcome of gamble 2 is known to be C. The pleasure of outcome A in the context of knowing that C also occurred is expressed:

$$R_{A(C)} = J[u_A + d(u_A - u_B) \times (1 - s_A) + r(u_A - u_C) \times (1 - s_A s_C)],$$

where the first two terms on the right side of the equation are identical to those in the equation above, and the third term, $r(u_A - u_C)$, is a regret function that reflects the comparison of A and C. In this case, the comparison is weighted by the surprisingness of what occurred. Regret is weighted by $(1 - s_A s_C)$, the surprisingness of the joint event (A and C).

We have investigated the ability of this theory to predict field data as well as laboratory studies (Mellers and McGraw 2001). Decision affect theory provides a good account of the judged pleasure of undergraduates upon receiving their final grades in a psychology class, of clients in a commercial weight loss program regarding their weekly weight changes, and of women learning the results of their pregnancy tests at pregnancy testing clinic. Additional support for the theory has been found in business and medical domains (Shepperd and McNulty 2002).

5. OVERCONFIDENCE

Now let us return to the question of how self-serving beliefs influence post-decision affect. We will begin with overconfidence. Overconfidence occurs when assessments of one's beliefs or performance are higher than reality warrants. Studies that examine the accuracy with which people can evaluate their abilities are called calibration studies. A person is well calibrated if his or her average

confidence of success is approximately equal to his or her average number of successes over a series of trials. When one's average confidence falls short of accuracy, an individual is said to be underconfident. When average confidence exceeds accuracy, the individual is called overconfident. Although not ubiquitous, overconfidence is the norm, rather than the exception.

Overconfidence is typically documented with tests of general knowledge (Phillips and Wright 1977; Lichtenstein, Fischhoff, and Phillips 1982; Yates 1990; Baron 1994). For instance, participants may be asked whether statements such as "The population of London is greater than that of Paris" are true or false. They then rate their confidence in their answer. Most participants believe they are more likely to be correct than their performance actually indicates. When participants were 100 percent confident in tasks like this, their accuracy rates were only 75 percent on average (Fischhoff, Slovic, and Lichtenstein 1986). Overconfidence has also been found in physicians' medical diagnoses, clinical predictions of psychological profiles, and even in forecasts of sports events made by fans and players (Oskamp 1962, 1965; Jagacinski, Isaac, and Burke 1977; Ronis and Yates 1987; Christiansen-Szalanski and Bushyhead 1981; Tape et al. 1991).

Overconfidence is closely tied to unrealistic optimism or the belief that one's future will be brighter than statistical evidence suggests. Unrealistic optimism is overconfidence about one's future successes on a task. Entrepreneurs believe that their chances of success are much higher than would be expected given their choice of business venture (Cooper, Woo, and Dunkelberg 1988). Drivers believe they are more skilled and safer behind the wheel than their peers (Svenson 1981), and financial investors typically think they can beat the market averages (Barber and Odean 2000).

Decision affect theory makes predictions about the effects of overconfidence on pleasure. The tendency to have exaggerated beliefs of success will have two detrimental effects that are illustrated in Figure 3.3. First, overconfidence makes
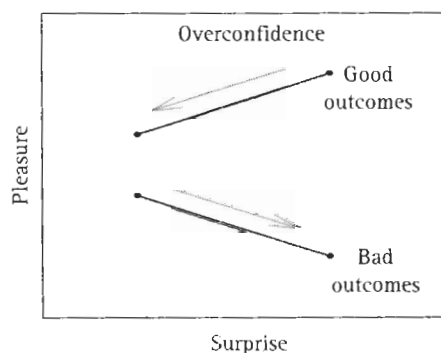

Figure 3.3. *The emotional effects of overconfidence as predicted by decision affect theory*

a success seem *less* surprising, and less surprising successes are less enjoyable. This effect is shown with the gray arrow on the upper curve pointing to the left. Overconfidence pushes one down the curve to a less pleasurable state than one "should" experience. Second, overconfidence makes a failure seem *more* surprising, and surprising failures are more painful than expected failures. This effect is shown with the gray arrow on the lower curve pointing to the right. Overconfidence pushes one down the curve to an even more painful state than one "should" feel. Unrealistic optimism has the same effects as overconfidence. Undue optimism about the future makes positive events seem less surprising and negative events more surprising. Again, the pleasure of outcomes is diminished.

McGraw, Mellers, and Ritov (in press) investigated this prediction of decision affect theory with another group of recreational basketball players, who also tend to be overconfident in judgments of their shooting performance (Jagacinski, Isaac, and Burke 1977). We randomly assigned players to one of two conditions. One group was exposed to a debiasing procedure and was alerted to the fact that people are often overconfident. They were also provided with average performance benchmarks at each location on the basketball court. Benchmarks were the success rates of others players similar in ability. The other condition was a control group that was given no such information. All other details of the experiment were as described earlier. The manipulations led to significantly better calibration of the debiased group than the control group with no difference in performance. However, these better-calibrated players also derived significantly more average pleasure from the task than the control players, as predicted by the theory. In short, we show that when overconfidence is reduced, people experience more pleasure on average because their successes are more surprising and their failures are less surprising.

6. HINDSIGHT

Another self-serving belief, also related to overconfidence, that may the influence pleasure of outcomes is the hindsight bias. People often remember their probability estimates as more accurate than those estimates actually were. Hindsight biases have been documented in elections (Leary 1982; Synodinos 1986), medical diagnoses (Arkes et al. 1981), business ventures (Bukszar and Connolly 1988), and historical records (Fischhoff 1975). How should hindsight biases influence post-decision pleasure? Figure 3.4 illustrates the effects. Remembering one's beliefs as more accurate than they really are makes past occurrences seem less surprising. Positive events that are less surprising are less pleasurable, as shown with the gray line on the upper curve pointing downward to the left. Negative events, however, are different. Unfavorable outcomes that are less surprising will be less painful. The gray line on the lower curve pointing
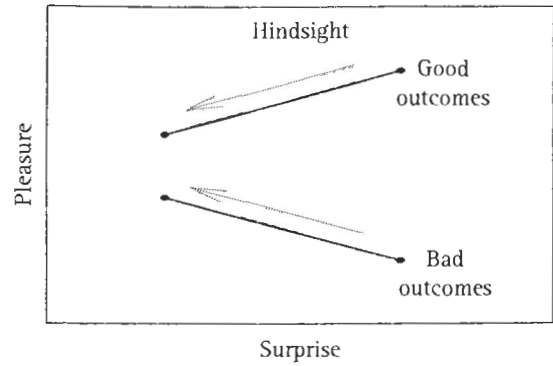
Figure 3.4. *The emotional impact of hindsight as predicted by decision affect theory*

upward shows how hindsight can increase the pleasure of an undesirable outcome.

The affective benefits of "knowing it all along" on undesirable experiences have been noted by other researchers. People who experience negative events may strategically shift their beliefs to cope with disappointment. Tykocinski Pick, and Kedmi (2002) refer to this process as retroactive pessimism. To reduce the pain of the event, people convince themselves that the outcome was inevitable. For example, believing that a favored politician who lost an election "never had a chance" or thinking that a favored sports team that lost a game "had the deck stacked again them" diminishes the pain of the loss.

A related behavior is the adjustment of expectations or beliefs *prior* to the resolution of the choice (Taylor and Gollwitzer 1995; Shepperd, Ouellette, and Fernandez 1996; Taylor and Shepperd 1998; Sanna 1999; van Dijk, Zeelenberg and van der Pligt 2003). In one example, Shepard et al. (1996) asked college sophomores, juniors, and seniors to estimate starting salary for their first post-graduate job. Salaries were predicted at the beginning and end of the spring term. Only seniors looking for jobs immediately after graduation lowered their estimates at the end of the term, right before they would face the world. Although people are aware that unexpected bad news makes them feel worse than expected bad news, they typically do not reduce their expectations. Such shifts in beliefs appear to be relatively rare, and even when attempted, they are not always successful.

7. SELF-SERVING BELIEFS AND PLEASURE-BASED CHOICE

Many of our choices are based on the imagined pleasure or pain of outcomes. The delight of a sunny vacation in the midst of winter, the pleasure of seeing an old friend, and the embarrassment of making a fool of oneself are emotion

that we vicariously experience to guide our choices. Because most of our choices involve the potential for pleasures and pains, we engage in affective tradeoffs. We have argued elsewhere that this tradeoff consists of a comparison of the relative pleasure of options (Mellers, Schwartz, and Ritov 1999; Mellers 2000). The process has been described as a maximization of expected pleasure. This theory, as well as many others (Inman, Dyer, and Jia 1997, Zeelenberg et al. 1998), incorporates reference points both within and across options.

To illustrate, consider a decision-maker choosing between two options that vary in difficulty. Option 1 is more difficult than Option 2, and the outcomes are success or failure. Option 1 has outcomes A (success) and B (failure), and Option 2 has outcomes C (success) and D (failure). The decision-maker assesses the average pleasure associated with Option 1 by imagining the affective experience of A and B and weighting those feelings according to his beliefs that they will occur, as follows:

$$s_A R_A + (1 - s_A) R_B,$$

where s_A and $1 - s_A$ are the subjective probabilities of success and failure, and R_A and R_B are the anticipated feelings that are predicted by decision affect theory. The expected pleasure of Option 2 is

$$s_C R_C + (1 - s_C) R_D,$$

and the decision-maker chooses the option with greater expected pleasure.

Overconfidence prior to the resolution of the choice will make successes seem less surprising, and therefore less pleasurable, and failures seem more surprising, and consequently more painful. For both options, feelings are anticipated to be less pleasurable than they would be if the decision-maker was accurately calibrated. However, those diminished feelings of pleasure could be offset by exaggerated beliefs in success (i.e. s_A and s_C are too large relative to actual performance), making the overall anticipated pleasure of the options actually greater than what would be expected with accurate beliefs.

Figure 3.5 shows an example of overconfidence with basketball players from McGraw, Mellers, and Ritov (in press). Notice that players are relatively well calibrated when the task is difficult (with actual success rates of 0–20 percent). But as the shots become easier, overconfidence starts to take off. When players are 100 percent confident they will make the shot, they are only making 75 percent of their shots.

When does overconfidence reverse the relative preference between the easier and the more difficult options? The answer depends on the estimated parameters of the theory (e.g. the utility of a success, the utility of a failure, elation and disappointment). If $s_A < s_C$, $u_A > u_C$, and $u_B = u_D$, overconfidence will tend to reduce the strength of preference between options. Options appear psychologically more similar because holding all else constant, the more difficult option would increase in average pleasure as overconfidence grew.
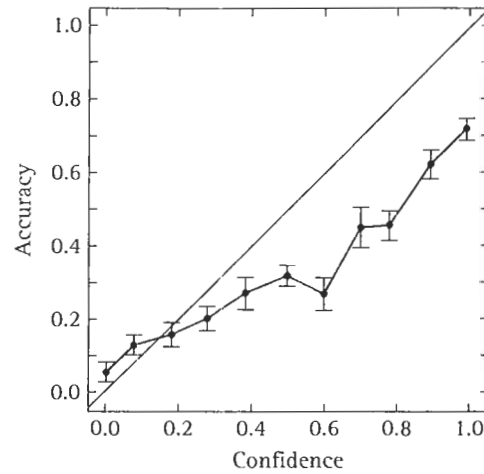
Figure 3.5. *Overconfidence in basketball players (an example)*
Source: McGraw, Mellers, and Ritov (in press).

8. CONCLUSION

Self-serving beliefs have their advantages. Positive self-evaluations, unrealistic optimism, and exaggerated perceptions of ones' abilities can improve moods, encourage the acceptance of challenges, facilitate the achievement of goals, and buffer negative feedback (Taylor and Brown 1988). But there are serious disadvantages. The cognitive price of self-serving beliefs can be great. Being overly certain that one is correct can lead to insufficient collection of data, biased evaluations of the options, and, ultimately, poor decision-making. Suffering from the hindsight bias can also adversely affect cognition. Not remembering one's mistaken beliefs impairs learning. Furthermore, self-serving beliefs have feedback loops; maintaining one reinforces and sustains another.

The affective price of self-serving beliefs has not been carefully explored. We show that self-serving beliefs can reduce the pleasure and enjoyment of tasks by influencing the perception of unexpectedness associated with an event. Surprising events are emotionally amplified relative to expected events. Surprising positive events are more enjoyable than expected positive events, and surprising negative events are more painful than expected negative events. Because overconfidence is associated with stronger beliefs about the likelihood of success, actual successes are less surprising than they should be, and actual failures are more surprising than reality shows. From research on judgments of pleasure we know that an expected success is *less pleasurable* than a surprising success and a surprising failure is *more painful* than an expected failure. The hindsight bias can also reduce pleasure. "Knowing it all along" makes positive events seem

less surprising, and consequently, less pleasurable. Both of these effects are predicted by decision affect theory.

Although self-serving beliefs usually inhibit pleasure, they can also enhance pleasure. The hindsight bias dampens emotions, so positive feelings are less strong. But negative feelings can also be less strong. A negative event that seemed inevitable is less painful than a negative event that came out of the blue, an effect known as retrospective pessimism. Lowering expectations after the occurrence of a negative event can reduce disappointment and regret.

The extent to which an outcome appears surprising depends on many factors. This chapter shows that surprise is influenced by the objective probability of the event and one's confidence that the event will occur. Unusual, rare, or abnormal events can also seem surprising. Miller, Turnbill, and McFarland (1989) found that the more difficult it was to imagine an outcome occurring, the greater the impact of the counterfactual comparison to what could have occurred. Events that are easily "mutable" appear more surprising. For example, a catastrophic event is viewed as even more tragic if there were many ways it could have been avoided. Finally, cultural factors play a role. Choi and Nisbett (2000) show that East Asians tend to take contradictions and inconsistencies for granted and are less surprised by most events than Americans. East Asians are also less likely to demonstrate the hindsight bias.

If self-serving biases shape emotional experiences, how can pleasure be maximized? The answer involves tradeoffs between the benefits of self-serving beliefs *before* the event and the cost *after* the event. Greater confidence is often associated with greater achievement, but overconfidence makes whatever happens less pleasurable. In the same vein, hindsight biases can bolster self-esteem but, at the same time, reduce the pleasure of positive events. Perhaps the best compromise between the advantages and disadvantages of self-serving beliefs is to strive for something that is "not too much" or "not too little." In other words, accurate calibration, good memories, and realistic self assessment are probably the most desirable. Better calibration increases the pleasure of outcomes, as predicted by decision affect theory. Better calibration also promotes opportunities for learning. The simple awareness that we are *not* as skilled as we think and that our past beliefs were *not* as accurate as we had hoped may help us see our mistakes, learn to correct them, and generally derive greater pleasure from the outcomes of our choices and decisions.

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