

19. When Predictions Fail: The Dilemma of Unrealistic Optimism

David A. Armor and Shelley E. Taylor

One of the most robust findings in the psychology of prediction is that people's predictions tend to be optimistically biased. By a number of metrics and across a variety of domains, people have been found to assign higher probabilities to their attainment of desirable outcomes than either objective criteria or logical analysis warrants. Yet the very prevalence of optimistic biases presents an intriguing dilemma: Given that many of the decisions people make, most of their choices, and virtually all plans are based on expectations about the future, it would seem imperative that people's predictions and expectations be free from bias. If the majority of predictions, expectations and performance-relevant perceptions are optimistically biased, how can people make appropriate decisions, or choose effective courses of action?

We review research on optimistic biases in personal predictions and address the question of how people can maintain these biases when doing so would seem to be maladaptive. We begin by reviewing empirical evidence that has shown optimistic biases to be a common feature of people's predictions and expectations.

EVIDENCE OF OPTIMISTIC BIAS IN PERSONAL PREDICTIONS

Henrik Ibsen maintained "that man is in the right who is most clearly in league with the future" (in Sprinchorn, 1964). By similar logic, one might argue that the clearest demonstrations of optimistic biases are those that have revealed systematic discrepancies between people's predictions and the outcomes they ultimately attain. Empirical studies of the planning fallacy, for example, have shown that people expect to complete personal projects in less time than it actually takes to complete them (e.g., Buehler, Griffin, & Ross, 1994). Evidence that predictions often exceed outcomes has not been limited to estimates of task completion times, however. Documenting a tendency familiar to most students, if not their instructors, Shepperd, Ouellette, and Fernandez (1996) found that students expect to receive higher scores on exams, at least when those exams are still some time away, than they actually receive when they take those exams (see also Doleys & Renzaglia, 1963; Radhakrishnan, Arrow, & Sniezek, 1996). Second-year MBA students were found to overestimate the number of job offers they would receive, the magnitude of their starting salary, and how early

they would receive their first offer (Hoch, 1985). Even the forecasts of professional financial analysts have been found to be optimistically biased: Although the studied analysts were reasonably able to anticipate periods of growth and decline in corporate earnings, their forecasts consistently overestimated earnings realized (Calderon, 1993; see also Barefield & Comiskey, 1975). Also, in a set of studies by Mitchell, Thompson, Peterson, and Cronk (1997), incipient vacationers were found to anticipate greater enjoyment during upcoming trips than they actually expressed during their trips, suggesting that people may be overly optimistic even when asked to anticipate their own evaluations of future experiences.

Despite the conceptual clarity of these results and the lack of ambiguity of the criterion against which predictions are regarded optimistic, researchers have largely resorted to other methods in their investigations of optimistic bias. These methods, although less direct, have yielded a number of important insights about the nature of optimistic predictions.

One alternate strategy has been to compare people's predictions to outcomes attained by similar others. For example, Sherman (1980) asked college students to predict how they would behave in one of a variety of specific situations, and then compared their predictions to the observed behavior of students who had actually been placed in one of the targeted situations. The results of Sherman's studies revealed that students' predictions were optimistically biased: Participants consistently reported that they would behave in more socially desirable ways – for example, that they would be more resistant to unwanted social influence, or more likely to donate time to a worthy charity – than did people who had not first been asked to make predictions about their behavior. By the same logic, many newlyweds – who almost uniformly expect that their marriages will endure a lifetime (Baker & Emery, 1993) – can be considered unrealistically optimistic when their expectations are viewed against the high rate of divorce in contemporary society.

Research comparing personal expectations to population base rates has not uniformly revealed evidence of optimistic bias, however. Several studies have shown that, for important and personally relevant events such as unwanted pregnancy, people's expectations can be quite accurate with respect to the base rates of relevant populations (Whitley & Hern, 1991; Gerrard & Luus, 1995). People also appear to consistently overestimate the prevalence of, and their own likelihood of experiencing, low-frequency events (including extremely negative, life-threatening events such as AIDS) and to underestimate high-frequency events (e.g., Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978; Rothman, Klein, & Weinstein, 1996). One might hesitate to label the overestimation of negative but statistically infrequent outcomes as evidence of genuine, psychologically meaningful pessimism, however, as these estimates may simply reflect difficulties interpreting and reporting extreme probabilities. Indeed, these apparent pessimistic responses may make the unwanted consequence seem likely enough to warrant preventative action, but still sufficiently unlikely

to not be the cause for feelings of hopelessness, panic, or self-defeating behavior. Consistent with this interpretation, Rothman et al. (1996) found that even people who appeared pessimistic when their predictions were compared to population base rates appeared to be optimistic when assessed on an alternate measure of optimistic bias that relies on people's assessments of their relative likelihood of experiencing future events.

By far the most commonly used method of assessing excessive optimism relies on the comparison of what people expect for themselves and what they expect for others (e.g., Weinstein, 1980; Perloff & Fetzer, 1986). Results from hundreds of empirical investigations have shown that, on average, people tend to view themselves as more likely to experience positive outcomes, and less likely to experience negative ones, than the average members of the group from which they have been drawn (Weinstein, 1998b). For example, most people expect that they have a better-than-average chance of living long, healthy lives; being successfully employed and happily married; and avoiding a variety of unwanted experiences such as being robbed or assaulted, injured in an automobile accident, or experiencing health problems (Weinstein, 1980). Although such comparisons cannot be used to identify optimistic biases within any one individual – any one person may be (and up to half of any group will be) more likely to attain favorable outcomes relative to the average member of their group – the proportion of individuals expecting to be above the median in terms of future outcomes is commonly found to be impossibly large. Representative studies from our own lab, for example, have found that between 85% and 90% of respondents claim that their future will be better – more pleasant and less painful – than the future of an average peer (Armor, 2000, unpublished raw data). This suggests that at least some (and possibly many) are assessing their relative prospects too favorably.

THE DILEMMA

Although expressions of unrealistic optimism appear to be quite common, intuition dictates a number of compelling reasons why unrealistic optimism might be expected to be inhibited or even extinguished. First, and most obviously, for those who expect to attain positive outcomes, there is a very real possibility that those outcomes will not be attained, and for those who maintain optimistically biased expectations, the failure to attain these outcomes would, by definition, be guaranteed. The failure to attain desired outcomes can have obvious social and psychological costs (such as disappointment in one's efforts, mistrust in one's ability, or even hostile ridicule for promises unfulfilled) as well as costs associated with any investment of time, effort, or financial resources that had been expended in the failed effort. Moreover, the cumulative effects of continued failure to meet optimistically biased predictions might be expected to have disastrous consequences for people's abilities to effectively regulate their behavior, as repeated disappointment has been found to compromise people's

ability to set and meet future goals and undermine motivation (e.g., Hiroto & Seligman, 1975).

Additional concerns arise if, as many researchers suggest, people use their optimistic expectations as a basis for action. People who have unrealistic expectations about how likely they will be to attain positive outcomes may feel it less necessary to complete actions that are necessary for them to attain these outcomes. Similarly, people who do not expect negative events to happen to them may behave in ways that put themselves in actual danger. Much of the research on unrealistic optimism has been conducted in the domain of health, and many researchers in this area have expressed concern that false belief about personal invulnerability to a variety of health threats may lead people to forgo necessary preventative actions (e.g., Weinstein, 1987). There is also some concern that overly positive expectations about the consequences of one's actions may lead people to persist in vain to complete actions for which they are ill-prepared, or to seek outcomes that are impossible to achieve or that are noncontingent on continued efforts (e.g., Janoff-Bulman & Brickman, 1982; but see Aspinwall & Richter, 1999). Finally, optimistic social comparisons – in which people believe their own chances of success are greater than the likelihood that other people will succeed – may be especially problematic when accurate understanding of one's relative chances of success is relevant for particular decisions, such as whether to enter into a competitive market (Camerer & Lovallo, 1999).

Although there are a number of intuitively plausible concerns about the negative consequences of optimistic biases, there has been surprisingly little research to justify them. It is possible that research relevant to the potentially punishing effects of optimistic biases has not been conducted because these effects seem so intuitively plausible that researchers may find them hardly worth testing. The overall lack of evidence documenting any of the punishing consequences of optimistic bias is nonetheless surprising given that the potential for these consequences is often cited as a reason for why the study of optimistic biases is so important. Moreover, what little evidence there is that speaks to these issues does not consistently reveal adverse effects of optimistic bias. For example, there have been a number of studies in which optimistic expectations were disconfirmed, and disappointment, although expected, had not been found. In one study, heart transplant patients who had initially expressed optimistic expectations were no more discouraged following medical complications than were patients who initially had been less optimistic (Leedham, Meyerwitz, Muirhead, & Frist, 1995; see also Wagener & Taylor, 1986). Prospective studies on the relationship between optimistic expectations of personal invulnerability and risk-related activity have consistently failed to confirm the common-sense fear that overly optimistic expectations predict risky behavior (Aspinwall, Kemeny, Taylor, Schneider, & Dudley, 1991; Joseph et al., 1987; Montgomery et al., 1989; Taylor et al., 1992). In fact, at least some evidence suggests that the opposite is true: A study by Taylor et al. (1992) found that unrealistic optimism about developing AIDS among HIV-seropositive men was associated

with several positive health behaviors and was not associated with any health-compromising behaviors.

This lack of evidence of adverse effects does little to resolve the dilemma of unrealistic optimism. If predictions are unrealistically optimistic, how can they not have negative consequences? Why are people who make unrealistically optimistic predictions not especially vulnerable to disappointment, endangerment, and despair? The very prevalence of evidence showing that people are optimistically biased would seem to indicate that these biases have not been so punished that they have been stricken from our cognitive repertoire. How optimistic beliefs can be maintained and the dangers associated with these beliefs avoided are issues to which we now turn.

RESOLVING THE DILEMMA OF UNREALISTIC OPTIMISM

People Are Not Indiscriminately Optimistic

Although a considerable amount of evidence suggests that people's predictions tend to be optimistically biased, the predictions that people make do not appear to be entirely unreasonable. For example, although people's predictions about their future are often not accurate in an absolute sense, their predictions do tend to show a high degree of relative accuracy. In other words, even though people's predictions tend to be optimistically biased when their predictions are compared to the outcomes they attained, correlations between predictions and outcomes are positive and often substantial (e.g., in the studies of the planning fallacy conducted by Buehler et al., correlations between predicted and actual task completion times ranged from .4 to .7). People also appear to be sensitive to their skills and circumstances when making predictions. For example, whereas most people tend to believe that they are relatively invulnerable to a variety of unwanted outcomes, studies of people who are actually at risk reveal that these people are not oblivious to the fact that they are at risk. Most smokers do recognize that they are more at risk for developing any of a variety of smoking-related diseases than is the average nonsmoker (notably, however, most smokers maintain the belief that they are less at risk than are others who smoke; see, e.g., Weinstein, 1998a). Similarly, people's performance predictions appear to reflect an appreciation of their own capabilities, and not simply fanciful projections of what might be accomplished. In a study that assessed predictions and performance on a verbal skills task, people's predictions – including the predictions of those who were optimistically biased – were found to correlate strongly with their own past performance on similar tasks, implying that participants were sensitive to this information when formulating their predictions (Buehler, Griffin, & MacDonald, 1997).

People also appear to be more optimistically biased under conditions of greater uncertainty. Early research on optimistic bias (e.g., Irwin, 1953; Marks, 1951), for example, revealed that the tendency to expect success unreasonably on a task determined purely by chance was greatest when the objective odds

for success or failure was closest to 50–50 (i.e., when uncertainty was at a maximum). When the objective odds for success over failure were more extreme (i.e., either very high or very low), optimistic biases were considerably reduced in magnitude (see also Buckley & Snizek, 1992; McGregor, 1938; cf. Dunning, Meyerowitz, & Holzberg, 1989).

Finally, people appear to be sensitive to the context in which they make their predictions, and tend to exhibit greater optimism when it is less likely that the accuracy of their predictions will be tested or challenged or when they expect that the consequences of being inaccurate will be less severe. Most studies of optimistic bias, however, have not taken such context-based variability into account. Indeed, studies of optimistic bias have almost uniformly been conducted in settings in which participants make predictions anonymously and without regard to the consequences of their predictions. Participants in these studies had thus been free to indulge in grandiose estimates of what could be done in the situations that were described to them without fear of adverse consequences if their predictions were found to be erroneous. Of course, many situations in which people make predictions will not provide such a psychological safe haven. In recognition of this, social psychologists have begun to examine how features of the prediction context influence the expression of optimistic biases.

Temporal Proximity. One set of studies has found that people's predictions tend to be more optimistic – and more optimistically biased – when the outcome of their predictions will not be revealed for some time. For example, Calderon's (1993) analysis of analysts' predictions of corporate earnings revealed a systematic decline in optimistic bias as a function of the proximity of the forecast date to the realization date (although optimistic bias was still evident even among the most proximal predictions). These results are sensible because analysts who made more proximal predictions undoubtedly had access to additional information that would allow them to make more accurate predictions. The availability of additional information may not be necessary for the reduction of optimistic bias, however. Gilovich, Kerr, and Medvec (1993) were able to obtain distal and proximal predictions from research participants who had been asked to estimate how well they would perform on a number of laboratory-based tasks (e.g., memory tests) for which additional information was not available between predictions. Predictions that were made well before the performance was to take place were considerably more optimistic than were predictions made immediately before the tasks were completed (notably, however, even the "proximal" predictions appeared to be optimistically biased, as the means of the estimated percentile rankings for all tasks were higher than 50). Additional data provided by Shepperd et al. (1996) revealed that people's expectations not only became less optimistic when the time to perform a task grew near, but became pessimistic (relative to actual performance) immediately prior to receiving feedback about that performance.

Several explanations for the effects of outcome proximity on prediction biases have been offered. One suggests that people are motivated to protect

themselves from disappointment and thus express optimism and pessimism strategically (although not necessarily deliberately) by changing their expectations in situations in which feedback is more or less likely. According to this view, people may become preemptively pessimistic in anticipation of potentially negative feedback so that the feedback they actually receive will be experienced as less negative by comparison (cf. Norem & Cantor, 1986; see also Taylor & Shepperd, 1998). Another explanation suggests that the very awareness that one's predictions will be publicly tested motivates people to try to be more accurate when making predictions; people, in this view, feel accountable to their own performance and then respond to this accountability by critically evaluating the basis of their predictions (Gilovich et al., 1993; cf. Tetlock, 1992). Still another explanation suggests that people may feel greater anxiety when a performance situation is imminent, and that people may interpret this anxiety as reflecting lesser confidence and consequently make more modest, if not overtly pessimistic, predictions (Savitsky, Medvec, Charlton, & Gilovich, 1998; Shepperd et al., 1996). Although the anxiety interpretation hypothesis is the only one to be researched directly to date, the alternative accounts remain plausible and, at present, there is no basis for choosing among them.

Deliberative and Implemental Mind Sets. Another line of research suggests that optimistic biases may be minimized before decisions are made to implement plans that are based on potentially biased assessments, expectations, and predictions. Several studies suggest that temporal positioning with respect to decisions – that is, whether one is in a predecisional state of deliberation or in a postdecisional (but still preactional) state marked by thoughts of implementation – influences how people evaluate themselves, the tasks they are considering, and their expectancies for success (Armor & Taylor, 2000; Taylor & Gollwitzer, 1995). This research has found that optimistic biases are attenuated when people are choosing between goals or selecting among possible courses of action to attain those goals, but exaggerated once a particular goal is selected and the individual begins thinking about implementing particular plans for action. For example, Armor and Taylor (2000) found that people who had been asked to deliberate the pros and cons of participating in a particular task were less optimistic about how they might perform on that task as compared to people who were asked to imagine that they were about to complete the task. These effects appear to have been at least partially mediated by the manner in which the two groups thought about the task. Not surprisingly, participants who had been asked to imagine that they were about to complete the task generated specific plans about how they would go about it. The participants who had been asked to deliberate whether they would want to complete the task, however, did more than just consider pros and cons: These participants appeared to consider the task from a variety of perspectives and to think about how alterations in task parameters might influence their performance, or how other people might perform on the task at hand.

Taken together, these results suggest that at the moment when unrealistic optimism might be especially likely to be injurious or to lead to actions that ought to be avoided, optimistic biases may be at their lowest ebb; in contrast, at times when optimistic biases may provide a motivational edge, as when an already chosen course of action is being initiated, these biases may be more prevalent.

Optimism May Lead to (Almost) Self-Fulfilling Prophecies

In circumstances in which the attainment of predicted outcomes is at least partially under the predictor's control, the potentially negative consequences associated with overly optimistic expectations may be avoided to the extent that the statement of optimistic expectations helps people attain the outcomes they desire. Studies that have manipulated people's expectations about how they would perform on particular tasks have found that the induction of positive expectations can lead to significant improvements in performance (Armor & Taylor, 2000; Buehler & Griffin, 1996; Campbell & Fairey, 1985; Peake & Cervone, 1989; Sherman, Skov, Hervitz, & Stock, 1981). This appears to be true even for predictions that can, at the time they are made, be considered to be overly optimistic. In an early and influential set of studies (Sherman, 1980), people were found to predict that they would behave in more socially desirable ways than base-rate data indicated (thereby demonstrating unrealistic optimism); however, people who had initially made these "unrealistic" predictions were subsequently more likely to behave in a socially desirable manner than were people who had not been first asked to make predictions about their behavior. In these studies, then, optimistic errors in prediction could be considered "self-erasing." Additional evidence of self-erasing errors has been obtained in studies of voting behavior, in which merely asking people if they intend to vote has been found to increase the likelihood that they will vote (Greenwald, Carnot, Beach, & Young, 1987) and of consumer decision making, in which a mere inquiry about purchasing intent increased the likelihood of purchasing even big-ticket items such as automobiles (Morwitz, Johnson, & Schmittlein, 1993).

An important caveat, however, is that optimistic predictions are rarely completely fulfilled: Although people who make optimistic predictions tend to attain more than they would have had they not made those predictions, they do not necessarily achieve the standards they initially set for themselves. A study by Buehler and Griffin (1996) illustrates this point. In this study, expectations about how long it would take to complete a particular assignment were manipulated by anchoring participants' predictions around relatively optimistic or pessimistic estimates (cf. Tversky & Kahneman, 1974). Although neither group completed their assignments within the time they said they would, the group that had been induced to predict relatively early completion times did complete the assignment significantly earlier than did the group induced to predict relatively late completion times. These results suggest that even overly optimistic expectations tend to get people further toward their goals than they would have otherwise.

At present, the mechanisms by which optimistic expectations enhance performance are not fully understood. One explanation is outcome based, and derives largely from social learning theories (e.g., Bandura, 1977, 1997), expectancy-value theories of motivation (e.g., Atkinson, 1964) and, more recently, from cybernetic models of self-regulation (e.g., Carver & Scheier, 1981, 1998; Scheier & Carver, 1988). According to these models, goal-directed behaviors are strongly influenced by people's expectations about what the outcomes of their behaviors might be. If people anticipate success, behavior is initiated (and ongoing behaviors maintained); if success appears to be less likely, people disengage from their pursuit (or refrain from initiating that pursuit) and abandon either the task or the currently selected means for completing that task. These models make a straightforward prediction: At least in situations where tenacity is rewarded (cf. Aspinwall & Richter, 1999), people who are optimistic—even people who are unrealistically optimistic—should achieve more than people with more modest expectations.

Another possible explanation for how even unrealistically optimistic expectations may influence behavior is more process-oriented, and draws on information about how these expectations are derived. According to one of the leading explanations for why people exhibit optimistic biases, people tend to infer the likelihood of different outcomes on the basis of case-specific plans or scenarios about how the future will unfold, and several lines of evidence suggest that the very processes of constructing and considering these scenarios tends to render people prone to bias (Buehler et al., 1994; Griffin & Buehler, 1999; Kahneman & Tversky, 1979, 1982; Newby-Clark, Ross, Buehler, Koehler, & Griffin, 1999). To the extent that the scenarios people generate in the context of making predictions provide a mental script for how to behave, however, these scenarios may facilitate effective performance (Anderson, 1983; Pham & Taylor, 1999). According to this model, optimistic forecasts may be associated with the attainment of desired outcomes (or the avoidance of undesired ones) only when the person making the forecast has a clear idea of how the considered outcome could reasonably be attained (or avoided). If the scenarios that people generate in an effort to divine the future provide a sort of mental road map for how that future might be attained, then it may be that one of the causes of optimistic bias will be a source for its cure.

Several other explanations for the prediction-performance link have been offered, although the unique aspects of these explanations have not yet been subjected to empirical test. One hypothesis is that the statement of prediction implies some amount of self-definition (e.g., "I am the type of person who can accomplish X"), and that people strive to meet their predictions in order to maintain consistency with the implied self-image (e.g., Sherman, 1980; cf. Aronson & Carlsmith, 1962). Another possibility is that the statement of optimistic expectations may be associated with an enhanced motivational state (here optimistic bias could be seen either as a cause of this motivational state or as a consequence of it), and it may be this state that either directly or indirectly

facilitates the attainment of desired outcomes. At present, there are insufficient grounds for choosing among these explanations.

Optimistic Reinterpretation

Although people do not appear to be indiscriminately optimistic, and although stating optimistic expectations may help facilitate the attainment of desired outcomes, optimistic predictions will sometimes be disconfirmed. It may still be possible, however, for the disappointment associated with unmet expectations to be avoided if the evaluation of outcomes is biased in a manner that minimizes any discrepancies between what had been expected and what was ultimately attained. Evidence consistent with this notion reveals that, following failure, people may bias both their perceptions of what was achieved and their recall of what they had initially expected.

Reinterpreting Outcomes. A series of studies conducted by Klaaren, Hodges and Wilson (1994) provides what may be the most direct evidence that people with positive expectations put a favorable spin on outcomes they receive, even when these outcomes might reasonably be considered to be disappointing. In these studies, people who had expected a positive experience but actually experienced a negative one (i.e., those who had been overly optimistic) subsequently evaluated their experiences in a way that appeared to be more consistent with their initial expectations than with the experiences themselves. In their first study, students' expectations about how much they would enjoy their winter vacations were found to influence their subsequent evaluations of their vacations, independent of how favorably they had reported their actual vacation experiences to be (similar results were obtained by Mitchell et al. (1997), who found that vacationers' evaluations of their trips were lower during their trip than they either expected or recalled them to be). In Klaaren et al.'s second study, in which both expectations and the actual pleasantness of experiences were manipulated, the induction of favorable expectations led people to evaluate the experience more favorably (regardless of whether the actual experience was pleasant), and to report greater willingness to repeat the experience by participating in the study again.

Similar results have been obtained in correlational analyses of the determinants of entrepreneurs' satisfaction with their business ventures (Cooper & Artz, 1995). In this study, and counter to the researcher's initial expectations, entrepreneurs' level of satisfaction after three years of business ownership were positively related to their initial expectations (measured at startup) even after the performance of their businesses had been controlled. Together with the results of Klaaren et al.'s (1994) experiments, these results suggest that those who are the most optimistic going into a situation may be the most likely to view their outcomes favorably, regardless of whether their predictions are ultimately fulfilled. These results are the opposite of what one would expect if excessive optimism provided a strong point of contrast against which any lesser outcome would be seen as disappointing.

Shifting Standards of Comparison. In addition to direct reinterpretations of outcomes, people may avoid the ramifications of disconfirmed expectations by shifting the standard against which outcomes are evaluated. There are at least three ways in which these shifts may occur. First, people may simply forget their initial standard, thereby removing it as a basis for evaluating the outcomes they receive. Even in situations in which people claim to remember their initial predictions, their recollections may be distorted so that the predictions they recall are more in-line with eventual outcomes than they actually had been (Fischhoff & Beyth, 1975). At least some evidence suggests that these distortions tend to be larger when initially positive expectations are disconfirmed by a negative outcome (Schkade & Kilbourne, 1991), as would occur if people's initial expectations had been excessively optimistic.

Second, people may reevaluate the standard that they had initially set for themselves. In other words, people may respond to an otherwise obvious failure by questioning how reasonable their initial prediction had been. Because people make predictions in states ranging from partial to complete uncertainty, they may be more likely to disregard their initial (potentially naive) predictions than to accept the conclusion that they had failed to meet an entirely reasonable and indisputable goal. This sort of response is at least partly justifiable because people will have new information about the objective likelihood of the outcome, the difficulties involved in bringing about that outcome, and their own motives, qualities, and resources that may have been difficult (if not impossible) to ascertain at the time of the initial prediction. To the extent that this new information may influence retrospective evaluations of initial expectations, potential disappointment may fade with the newfound clarity of hindsight (cf. Fischhoff, 1982).

A third strategy for shifting standards involves the selection of a worse-off social comparison target that allows the individual to maintain a belief that his or her current status is not as bad as more objective standards might suggest it would be (Taylor & Lobel, 1989). Results of studies with cancer patients, for example, have shown that patients at all levels of physical outcomes see themselves as somewhat better off than other cancer patients (except, perhaps, at the very end-stages of the disease; e.g., Wood, Taylor, & Lichtman, 1985). This constant advantage across physical conditions can be achieved, of course, only by manipulating and continually shifting the person or group with whom one compares oneself. So robust is this tendency that if a worse-off social comparison target is not available, people often generate hypothetical others who are "doing worse" for the purposes of these comparisons (Taylor, Wood, & Lichtman, 1983).

Getting What You Want by Revising What You Had. Another means by which people may effectively reinterpret their outcomes to be more in line with their initial expectations is to exaggerate progress by reinventing the past (Conway & Ross, 1984; Ross, 1989). In a classic demonstration, Conway and Ross (1984) found that students who had participated in an (ineffective) study-skills program misremembered their initial skills as being worse than they had

originally reported them to be. By changing their views of their initial skill, students subsequently perceived their current (and unchanged) skill level to have improved by comparison. These results have generally been interpreted as being mediated by people's naive theories of change in a situation of actual stability; the underestimation of past skills could thus be understood as a consequence of people assuming change when none occurred. To the extent that optimistic expectations imply an expectation of positive change, people may derogate their past out of a conviction that they have achieved something in the present.

Alternatives to Reinterpretation: Explaining Away Failure. One well-documented strategy for avoiding the disappointment associated with even the most clearly disconfirmed expectations involves the generation of excuses (e.g., Buehler et al., 1994; Gilovich, 1983; see also Snyder, 1989; Snyder & Higgins, 1988). Several lines of research suggest reasons why the generation of excuses may be especially common following the disconfirmation of optimistic expectations. First, research has shown that people are particularly likely to search for causal explanations for events that are negative or unexpected (Pyszczynski & Greenberg, 1981; Weiner, 1985; Wong & Weiner, 1981). Given that the disconfirmation of optimistic expectations will, by definition, be experienced as both negative and unexpected, the active search for causal explanations seems especially likely. Commonly observed attributional asymmetries – by which people take credit for positive outcomes and deny responsibility for negative ones (see Miller & Ross, 1975, for a review) – may then bias this search in favor of excuses. Second, to the extent that people recognize that their expectations have been disconfirmed, they often react with surprise, and surprise itself indicates that a mental representation of some more expected outcome has been activated and is being used as a point of contrast (e.g., Kahneman & Miller, 1986). The ready availability of initial expectations following the disconfirmation of these expectations may help maintain their plausibility and, as a consequence, provide rationale for explaining away the expectancy violation as having been the consequence of essentially random, unanticipatable factors. To the extent that past failures and the recognition of past failures at prediction are so promptly explained away, they are not likely to influence outcome evaluations, relevant self-evaluations (Snyder, 1989), or future predictions (Buehler et al., 1994; Gilovich, 1983).

CONCLUSIONS AND IMPLICATIONS

A common concern among many who study optimistic biases is that these biases will have a number of costly consequences. People who are prone to excessive optimism might reasonably be expected to make poor decisions – to pursue unreasonable ambitions recklessly, to persist at fruitless endeavors, and to value prospects without fully appreciating their risks – and to suffer the consequences when reality fails to live up to their own lofty expectations. Although these

concerns are certainly plausible, and although the costs of excessive optimism may be quite high at times, several lines of research reviewed here suggest that these concerns may be overstated.

First, people do not appear to be blindly optimistic: even excessively optimistic predictions tend to be made within reasonable bounds and to be quite highly correlated with both past and future performance. Moreover, people appear to be less optimistic in situations in which excessive optimism would be expected to have the most worrisome consequences. Evidence was reviewed that suggests that optimistic biases are reduced when people make predictions about events that will take place in the near versus distant future, or when people are deliberating between different possible goals as opposed to developing plans for one of them. One might expect similar reductions in optimistic bias when people are asked to state predictions in specific as opposed to general terms, when the criteria for evaluating the accuracy of people's predictions are clearly specified as opposed to ambiguous, or when predictions are made publicly in front of an audience demanding accuracy as opposed to in private.

Just as optimistic biases appear to be minimized in some situations, they may be exaggerated in others. Not only might one expect greater bias when people state general, difficult to confirm, private predictions, but one might find the most extreme biases in competitive or self-defining situations in which pride or one-upmanship may prompt people to generate optimistic forecasts in order to boost morale or to instill enthusiasm. Thus, even in situations in which accuracy of predictions would seem paramount, additional social pressures may encourage optimism over accuracy. In some sense, it may be these situations and not optimism per se that people should be worried about.

Second, people may avoid at least some of the negative consequences of unmet expectations to the extent that the statement of optimistic expectations helps people to achieve more than they would have had they not been initially optimistic. The causal significance of optimistic predictions – even unrealistically optimistic ones – in determining people's outcomes may have some important implications for interventions designed to reduce or eliminate optimistic biases. Although these interventions have been designed to enhance the accuracy of people's predictions, the net result of these interventions may be to undermine motivation and performance without actually improving predictive accuracy. Evidence of this can be seen in Buehler et al.'s (1994) studies of the planning fallacy. In their investigations, manipulations that were designed to enhance the accuracy of people's predictions succeeded in reducing optimism, but these manipulations did not improve the overall accuracy of the predictions that were made (see also Griffin & Buehler, 1999). Even if efforts to reduce optimistic biases do make people's predictions more accurate, it is not clear that the effects of being cautious but correct would be beneficial in all situations. One would not want a struggling student to resign himself to poor grades at the outset of a new academic term, nor would one want a bride and groom to believe in their hearts that their odds for living happily ever after were less than even.

To the extent that even optimistically biased predictions enhance performance and that optimistic predictions are associated with emotional and motivational variables such as mood, self-esteem, confidence, and determination, these predictions may sometimes have more self-regulatory benefits than costs and more self-regulatory benefits than accurate predictions would have.

Finally, people may avoid at least some of the consequences of unmet expectations by refusing to see their predictions as having been disconfirmed (or at least by not acknowledging the extent to which their predictions have been disconfirmed) or by making excuses if they do recognize that their predictions have not been met. Although hindsight biases and excusing rationalizations are often studied as judgmental errors, it is important to recognize that these post-hoc reinterpretations are often at least partially justifiable (although perhaps not to the degree that people take them). The prospects for making accurate predictions in complex, uncertain, and ever-changing environments appears to be rather limited, and people may use newly obtained information to evaluate their outcomes and to challenge or question the validity of their initial and potentially naive predictions. People may recognize, then, that what was realistic at the time of prediction may not seem so realistic by the time outcomes are attained, and that what appears realistic after the fact may not have been so readily foreseeable at the time predictions were made.

All predictions are made under varying degrees of uncertainty, with no meaningful prediction ever being completely certain. People's predictions will therefore necessarily contain at least some component of error. Most analyses of optimistic bias have focused on the costs of being wrong and have made strong assumptions about the benefits of being right. In the context of prediction, however, being realistic offers no guarantee that one's predictions will turn out to be accurate. Moreover, the consequences of optimistic and pessimistic deviations from accuracy may not be symmetrically valued; this suggests that the statistical strategy of minimizing squared deviations from a criterion may not provide the greatest benefit psychologically. Overly pessimistic predictions may be demoralizing if these predictions are believed and, if these predictions are fulfilled, the outcomes that are obtained may not be very satisfying. Overly optimistic predictions, however, may confer benefits simply by symbolizing a desired image of success, or more concretely by aiding people's progress to higher achievements. Given that predictions are often inaccurate at least to some degree, it is possible that people may derive benefits from shifting the range of their predictions to the positive, even if this means introducing an overall higher rate of error into the prediction process. Countering optimistic biases in the name of accuracy may undermine performance without achieving the accuracy that was intended, whereas the maintenance of optimistic predictions may serve to align us, both in thought and in action, more closely with our goals.