

In one illustrative study, researchers asked students who were working on a class assignment to indicate the time within which they were 50% certain they could finish the project, as well as the time within which they were 99% certain they could finish it. On average, if the students were accurate, about half would have finished by the 50% deadline and 99% would have finished by their very conservative 99% deadline. However, only 13% had actually finished by their 50% deadline, and only 45% had finished by their 99% deadline. Thus, even for a deadline that students were virtually certain they would meet, their confidence far exceeded their accomplishments (Buehler, Griffin, & Ross, 2002). In a similar vein, citizens typically believe they will complete their tax returns more than a week sooner than they actually do (Buehler, Griffin, & MacDonald, 1997).

Overconfidence in Judgment and Prediction

Finally, people place too much confidence in the insightfulness of their judgments, overestimating the chances that their decisions about the present are sound and that their predictions about the future will prove correct. This phenomenon is known as the *overconfidence effect*. College students overestimate the probability that their answers to general knowledge questions are correct (Fischhoff, Slovic, & Lichtenstein, 1977). They are also overconfident in their forecasts of what events they will experience over the course of a semester (Dunning & Story, 1991; Vallone, Griffin, Lin, & Ross, 1990), as well as in their forecasts of the events their college acquaintances will experience (Dunning, Griffin, Milojkovic, & Ross, 1990). Analysts at the U.S. Central Intelligence Agency overestimate the accuracy of their predictions about future world events (Cambridge & Shreckengost, 1980). Surgical trainees place too much confidence in their diagnoses after looking at X-ray evidence (Oksam, Kingma, & Klasen, 2000). After looking over a client's case materials, clinical psychologists overestimate the chance that their predictions will prove accurate (Oskamp, 1965).

Indeed, even when people are the most confident, that certainty is no guarantee of accuracy. In studies in which college students expressed absolute (100%) certainty in their answers, they still were wrong roughly one time out of every five (Fischhoff et al., 1977). In another study, when doctors diagnosed their patients as having pneumonia, predictions made with 88% confidence turned out to be right only 20% of the time (Christensen-Szalanski & Bushyhead, 1981).

PSYCHOLOGICAL MECHANISMS

A wide variety of psychological mechanisms underlie these flawed self-assessments, and it would be difficult, if not impossible, to catalogue all of them in a single document. Instead, we focus on two of the most widely documented biases described in the preceding section—above-average effects and overestimation of the likelihood of desirable events—and describe two general themes that explain why these biases arise. The first

theme is that people typically do not possess all the information required to reach perfectly accurate self-assessments. Gaining an accurate view of self is an intrinsically difficult task (Dunning, 2005). There are too many factors that are unknown, unknowable, and undefinable for people to make adequate evaluations of their performance or accurate forecasts about how they will act in the future. We certainly do not blame people for failing to know everything, but we can say that people should take into account what they fail to know and adjust their predictions accordingly. The second theme we discuss is that even when people do have valuable information that would guide them toward appropriate self-evaluations, they often neglect it or give it too little weight; thus, they make potentially avoidable errors.

Let us consider the above-average effect and the overly optimistic prediction of desirable events, in turn, to see how lack of information on the one hand and neglect of valuable information on the other serve to produce each effect.

Explanations for the Above-Average Effect

People lack crucial information they need when they compare themselves against others; they also ignore valuable information that they actually possess or could seek out. These twin themes are quite evident when one examines research on the above-average effect. We cite four informational deficits that lead people to believe they are doing much better than their peers. In addition, people neglect important information that could prompt them to reach more accurate conclusions.

Information Deficits

The Double Curse of Incompetence. People often do not have the knowledge and expertise necessary to assess their competence adequately. Consider, for example, the plight of the incompetent, who are often not in a position to recognize just how poor their decisions are. In many significant social and intellectual domains, the skills necessary to recognize competence are extremely close if not identical to those needed to produce competent responses. For example, recognizing whether an argument is logically sound requires a firm grasp of the rules of logic. If people do not understand the rules of logic, not only will they make logical errors, but they will also not recognize that their arguments are logically defective—or that anyone else's argument is logically superior. Thus, incompetent individuals suffer a double curse: Their deficits cause them to make errors and also prevent them from gaining insight into their errors.

Several studies have now shown that incompetent individuals (i.e., those performing poorly relative to their peers) fail to show much insight into just how deficient their performance is (Kruger & Dunning, 1999). College students scoring in the bottom 25% on a course exam walked out of the exam room thinking that they outperformed a majority of their peers (Dunning, Johnson, Ehrlinger, & Kruger, 2003). Debate teams performing in the bottom 25% at a regional tournament believed they were winning 59% of

their matches when in fact they were winning only 22% (Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2004). Medical students mishandling a mock interview with a patient rated their interviewing skills much higher than their instructors did (Hodges, Regehr, & Martin, 2001). In a hospital, lab technicians in the bottom 25% among their peers failed to realize that their performance was so low (Haun, Zeringue, Leach, & Foley, 2000).⁴

Other work also demonstrates that poor performers, relative to their more competent peers, have more difficulty differentiating accurate from inaccurate performance. Compared with good students, poor students less successfully identify which specific questions they have gotten right on an exam and which they have gotten wrong (Sinkavich, 1995). Novice bridge players are less likely than expert players to tell good moves from bad ones (Keren, 1987). Students with little experience in physics, compared with more accomplished physics students, have less accurate intuitions about which physics problems are generally difficult to solve (Chi, Glaser, & Rees, 1982). Paradoxically, although training people on logic improves their skill, such training also reveals to them past flaws in their logical reasoning, leading them to provide more pessimistic views of their logical reasoning ability at the moment their skill level rises (Kruger & Dunning, 1999).

Unknown Errors of Omission. But it is not only the incompetent who often do not have all the information they need to appraise their skill and performance accurately. For example, although people trying to solve a problem may find it easy to consciously critique the solutions they generate, by definition they are not aware of solutions they could generate but miss, that is, their *errors of omission*. For example, suppose we asked you to list as many English words as you could from the letters in the word *spontaneous* (e.g., *tan*, *neon*, *pants*), and you found 50. Whether this performance is good or bad depends, in part, on how many words are possible, and it is difficult to expect that you—or anyone else—would have an accurate intuition of what that figure is. In fact, more than 1,300 English words can be created from the letters in *spontaneous*.

Recent work shows that people tend to have little insight into their errors of omission (Caputo & Dunning, in press); however, they give these errors a good deal of weight (indeed, equal to what they give to the solutions they generate themselves) once they find out about them. For example, in one study (Caputo & Dunning, in press, Study 4), graduate students were given brief descriptions of research studies and asked to list all the methodological difficulties they could find. Students' initial evaluations of their knowledge of research methodology were not correlated with their objective performance on this task. But students provided

more pessimistic, and accurate, assessments of their knowledge about research methodology once their errors of omission (i.e., the study flaws they had failed to identify) were made known to them.

Uncertain Lessons From Feedback. People also receive incomplete feedback about their actions, which can lead them to harbor inflated views about the wisdom of their actions. Suppose an office manager takes a poorly performing employee aside and berates him. Next day, that employee performs better—a result that presumably provides evidence for the sagacity of the office manager's intervention. However, the manager does not know what might have been achieved by other alternatives, such as sitting down with the employee for a sympathetic talk, or even doing nothing. Perhaps these alternatives would have worked as well, or even better, but the office manager will never know (for further discussions about problems with real-world feedback, see Dawes, 1988, and Dunning, 2005).

The Ill-Defined Nature of Competence. Perhaps the most fundamental reason for people to have incomplete knowledge of their competence is that in many domains, what it takes to succeed is hard to define. It is easy, for example, to define successful math performance. In math, there are specific right answers that come with well-delineated algorithms designed to produce them. However, success in many domains is ill defined (Newell, 1969; H.A. Simon, 1973). No one has the exact optimal algorithm for composing a classic symphony, writing the great American novel, or generating an effective marketing plan—nor any way to know when someone has done the best job possible.

Many skills and personality traits themselves are ill defined in that many different criteria are arguably relevant for them. For example, how would one determine whether someone is the most intelligent person in the room? Does having a large vocabulary matter? What about ability to read other people's nonverbal behavior? Facility at math? Knowledge of fine wines? Recent research shows that people tend to take ill-defined traits and define them to their advantage. A person skilled in math considers math skill to be more centrally related to intelligence than does a person who is math challenged. A person who accepts social norms considers that habit a better sign of intelligence than does a nonconformist (Dunning, Perie, & Story, 1991).

As a consequence, people tend to believe themselves to be above average on traits that are ill defined, but not on ones whose definition is more constrained. For example, people tend to say they are more sophisticated, idealistic, and disciplined than their peers (ambiguous traits all), but are not likely to think they are any more neat, athletic, and punctual (traits that are more constrained in their meaning; Dunning, Meyerowitz, & Holzberg, 1989; Suls, Lemos, & Stewart, 2003). On ill-defined desirable traits, college students rate themselves more favorably than their roommates rate them (Hayes & Dunning, 1997), but when researchers specify a particular definition of a trait, people fail to

⁴We should note that Krueger and Mueller (2002) have disputed this analysis of self-perception among the incompetent, stating instead that the overestimates of poor performers are simply due to a statistical artifact (regression to the mean). Kruger and Dunning (2002) have responded by noting that this concern is minimized, if not eradicated, if one uses measures of performance that are of sufficient statistical reliability.

rate themselves so positively (Dunning et al., 1989), and their ratings begin to agree with those of others (Hayes & Dunning, 1997; Story, 2003).

Information Neglect

People also misjudge themselves relative to others because they ignore crucial information, and this neglect can produce the above-average effect and, on occasion, its direct opposite. It is clear that people often want to know how they stack up against others; in fact, they often prefer to find out how they compare with others than to find out how they stack up against objective standards (e.g., Festinger, 1954; Suls & Wheeler, 2000). Self-views derived from comparisons with others affect people's behavior more than comparisons with objective standards (W.M. Klein, 1997).

Exclusive Focus on the Self With Neglect of Others. Given these findings, it is surprising that people's comparative judgments often involve very little comparison. When evaluating their skill vis-à-vis their peers', people are egocentric, thinking primarily of their own behaviors and attributes and ignoring those of others (Kruger, 1999; Weinstein & Lachendro, 1982). Ask people how well they can ride a bicycle relative to others, and they say they do quite well—mostly dwelling on the fact that they have no trouble riding a bike, but forgetting that other people have no difficulty either. But ask them about their juggling ability, and they describe themselves as worse than average—neglecting again that others are also poor jugglers (Kruger, 1999).

This egocentrism carries important implications. College students, for example, prefer to compete with other college students in a trivia contest focusing on Adam Sandler movies (an easy topic for them) than to compete in one on 19th-century French painting (a hard topic), forgetting of course that what is easy or difficult for themselves would be equally easy or difficult for most competitors. People bet more in poker games as the number of wild cards in the deck increases because they are more likely to have a good-looking hand. But this behavior is irrational because wild cards do not play favorites, and other players are equally advantaged as the number of wild cards expands (Windschitl, Kruger, & Simms, 2003; see also Moore & Kim, 2003).

Controllability and Privacy of Traits. This egocentrism may be most apparent in two different realms. The first is the realm of controllable behavior. People think of themselves as superior to their peers when thinking about traits that are construed as controllable, but not so much when thinking about uncontrollable traits (Alicke, 1985). People consider themselves more cooperative and self-disciplined than others (all controllable qualities), but not necessarily more creative or lively. People believe they are less likely than others to be involved in auto accidents when they are the driver, but not when they are a passenger (McKenna, 1993). In the health domain, people believe they are more likely

than their peers to avoid risks associated with high-fat diets and alcohol (all conceptually under a person's control), but not risks related to pesticides or environmental contamination (Sparks & Shepherd, 1994).

The second realm in which this kind of egocentrism is particularly apparent is that of private traits and behaviors. People tend to believe that they possess traits more than their peers to the extent that those traits tend to be expressed internally. For example, people tend to think they are more self-conscious, self-critical, and choosy than their peers, but not that they are more aggressive, poised, or wordy, traits that are more external in their expression (Miller & McFarland, 1987). They tend to believe they feel emotions more intensely than their peers do (Sabini, Cosmas, Siepmann, & Stein, 1999). They also think they harbor more uncertainties and ambivalences than their contemporaries do. For example, college students believe they are more ambivalent than their peers in their stance toward casual sex (Lambert, Kahn, & Apple, 2003), smoking, and illegal drug use (Hines, Saris, & Throckmorton-Belzer, 2002). People also believe they are more inhibited than their peers (Vorauer & Ratner, 1996). In essence, what people do not seem to know, or at least what they seem to neglect, is the likelihood that the people around them have just as full an internal life of private thoughts, inhibitions, emotions, and uncertainties as they possess themselves.

Note, however, that this neglect does not uniformly lead to a self-aggrandizing above-average bias. To be sure, it often leads people to think they are superior to their peers (e.g., "I am more choosy than others"), but to an equal degree it can lead people to believe they are inferior (e.g., "I am more prone to be embarrassed than others"), as is evident from the examples we have mentioned. The failure to consider that others may share the same feeling as the self results in part from the inherent inaccessibility of others' private states (Miller & McFarland, 1987; for other explanations, see Miller & Nelson, 2002), whether that inaccessibility leads to a favorable or unfavorable self-attribution.

This neglect of the internal lives of others can result in a phenomenon known as *pluralistic ignorance*, in which people believe they uniquely possess a deviant opinion, whether desirable or not, when in reality most people in the community privately share the same opinion. This phenomenon is aptly illustrated by Schanck's (1932) study of a small rural community where virtually everyone publicly condemned alcohol and card playing because of church dogma. Private interviews, however, indicated that the community members did not hold such extreme views, although they mistakenly assumed that other community members' public denunciations of drinking and card games reflected their private sentiments. Thus, each person in the community paradoxically thought he or she was exceptional in thinking that cards and alcohol were not particularly bad. This pluralistic ignorance perpetuated the community status quo because "even if no one believes . . . everyone believes that everyone else believes" (Miller & McFarland, 1991, pp. 287–288).

Explanations for Overly Optimistic Prediction of Events

When predicting future events, people usually follow a natural and simple psychological strategy: consider some future action or outcome (e.g., “Will I lose 20 pounds on this diet?”) and spin possible scenarios that might produce that outcome. To the extent that these scenarios seem plausible, people will be more confident that the outcome will take place (Kahneman & Tversky, 1982). This procedure seems so simple that it might be difficult, at first, to see what complications it might create, but it does create several, once again wrapped around the themes of unknowable and neglected information (for an extended review, see Dunning, in press). The net effect is that people fall prey to two biases. The first is that the predictions they make tend to be too optimistic. The second is that, whether people make predictions that are optimistic or pessimistic, the confidence they place in those predictions tends to be too high, in that their predictions tend not to prove accurate at the rate they expect them to.

Information Deficits

Unknown Situational Details. People often make overly confident predictions, typically optimistic ones but not necessarily so, because they fail to correct for the fact that the details of future situations are often unknown or unpredictable, even though those details may matter. For example, consider those college students who optimistically predicted they would vote in an upcoming presidential election (Epley & Dunning, 2004). Voting depends, of course, on any number of personal qualities—such as the individual’s commitment to civic duty, as well as his or her interest in the campaign. But it also depends on a host of situational details that may be difficult to anticipate. For example, is the student behind on the paper that is due the next day, is the student sick, did the roommate who promised to drive the student to the polling place show up, or did the student’s parents call for a 2-hour chat?

By definition, such situational circumstances are not knowable until election day arrives. Thus, if the student makes a confident and optimistic prediction that he or she will vote and does not take into account that important situational details matter, the student will likely make confident predictions of desirable behavior that later turn out to be unwarranted (Griffin & Ross, 1991). Recent research suggests that people do indeed fail to consider the unpredictability of crucial situational details when they make predictions of future behavior. If anything, they tend to predict as though they can fully anticipate what those details will be. Asking people to fully describe the details of relevant situations, and then assume those details are accurate, does not increase the already high confidence with which they make predictions. However, asking them to describe alternative ways situations may play out, and noting that it is impossible to anticipate how situations will play out in the future, causes participants to hedge their predictions to a significant degree (Griffin, Dunning, & Ross, 1990).

Imperfect Understanding of Emotion, Visceral Drives, and Their Consequences. Situational features are inaccessible in other ways. People often have difficulty predicting how they will respond to situations that have significant emotional or visceral components—leading to predictions of self-behavior that are often too optimistic, but at times too pessimistic. For example, office workers approached just after eating a substantial lunch predict they would prefer a healthy snack, such as an apple, rather than an unhealthy but more filling snack (a candy bar) to be delivered to them at 4 p.m. a week later, even though they know (intellectually) that they tend to be hungry late in the afternoon. However, when the day of delivery arrives, they tend to prefer the unhealthy candy bar over the healthy fruit they predicted they would want (Read & van Leeuwen, 1998).

Similarly, studies of behavior in social situations show that people fail to appreciate the power of fear, anxiety, and embarrassment to shape their future behavior. In one illustrative study, students were asked, hypothetically, whether they would come up to the front of the class to dance to Rick James’s funk classic “Superfreak” if they were paid \$5. Roughly 30% said they would, but when a real opportunity was presented, only 8% volunteered (Van Boven, Loewenstein, & Dunning, in press). Participants more accurately predicted how they would respond to similar opportunities when they were first emotionally aroused, regardless of which specific emotion was involved (Van Boven, Loewenstein, Welch, & Dunning, 2004), suggesting that once put “in touch” with the level of arousal they would feel in an actual situation, people are better able to provide accurate forecasts about how they would behave.

Being asked to dance in front of a class may not be common, but similar losses of courage have been observed in more socially relevant circumstances that entail a good deal of emotion. For example, women often report that they will respond to sexual harassment with anger and assertiveness. But the dominant emotion of people placed in harassing situations turns out to be fear (Woodzicka & LaFrance, 2001), and victims end up responding to harassing behaviors with silence or diversionary talk rather than confrontation (Swim & Hyers, 1999).

People also fail to appreciate how much they act to minimize or mitigate the impact of negative emotional events, believing that the sting of undesirable events will last longer than it does. Assistant professors who are denied tenure believe that the psychic devastation of that event will last far longer than does in reality; voters whose candidate loses the election overestimate how long that outcome will dampen their happiness (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). People overestimate how anxious being told they are HIV positive will make them and also how relieved being informed that they are HIV negative will leave them (Sieff, Dawes, & Loewenstein, 1999).

In essence, people underestimate how quickly they adapt to emotional events, particularly ones that are negative. People possess emotional “immune systems” that dispel the negative impact of aversive events. They are adept at discounting bad

news, creative in finding the silver lining buried among the clouds, facile at finding distractions that lighten their affect. However, they also seem to be quite unaware of their resourcefulness in protecting themselves from the psychic harm caused by negative events (Gilbert et al., 1998).

Information Neglect

Neglect of Alternative Scenarios. People also mispredict future events because they neglect important information that they have in hand. When they spin scenarios about how they will behave in the future, they tend to dwell on positive scenarios and fail to take into account worst-case scenarios that they could easily generate. The scenarios that people report as the “most realistic” scenarios tend to resemble more the scenarios they report as the “best case” than those they report as the “worst case.” Asking people explicitly to write down a worst-case scenario fails to influence their sanguine predictions about future events, although exposure to another person’s worst case causes them to be more pessimistic about that other person’s prospects (Newby-Clark, Ross, Buehler, Koehler, & Griffin, 2000).

Neglect of Concrete Detail. People also base their predictions about events in the distant future on abstract, higher-level features of a situation and give short shrift to more concrete, low-level features that can have a significant impact on behavior (Trope & Liberman, 2003). Often, whether or not a behavior is desirable is a high-level feature, and concrete details about the feasibility of the behavior are lower level. For example, when college students were asked which of two class assignments they would rather complete 9 weeks later, they tended to prefer the assignment on the topic of romantic love (a desirable, high-level feature), even though the readings for this assignment were written in a foreign language (a concrete, low-level feature). However, just before the due date, students preferred the second assignment, which had an undesirable topic, the attitude concept, but had required readings written in their native language (Liberman & Trope, 1998).

Neglect of Background Circumstances. People also mispredict because their imagined scenarios concentrate too much on the behavior in question and not about seemingly irrelevant swirls and eddies of everyday life that are not conceptually related to the behavior but that may still interfere with their capacity to perform that behavior. In a phrase, people suffer from focalism, basing their predictions on factors that are conceptually related to the behavior in question and acting as though common background circumstances—those swirls and eddies—are irrelevant, even though once people bring to mind those background circumstances, they may recognize how much those circumstances may influence whether they will behave in the manner they predict (Schkade & Kahneman, 1998; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000).

Consider, for example, the case of people predicting how quickly they will be able to get their holiday shopping done. They are likely to base their prediction on circumstances that are conceptually relevant to the act of shopping (e.g., how many gifts are needed, how many stores must be visited, what traffic will be like on the way to the stores, how many gifts can be bought over the Internet), spinning a scenario for their prediction that seemingly presumes that the act of shopping is somehow hermetically sealed off from the rest of life. However, it is a problem when people concentrate on the focal act of shopping and ignore the knowable fact that background circumstances from everyday life often sneak in to interfere with one’s plans. It is in ignoring these background influences—or at least ignoring the relevance of everyday background circumstances in general—that that prediction falls prey to error.

To be sure, whether or not one gets the shopping done depends on circumstances related to shopping, but it also depends on factors that, on the face of it, are not related to shopping, such as whether children get sick, the weather turns to snow, in-laws come to visit, or friends decide to throw holiday parties. By ignoring these usually knowable background circumstances, people fall prey to the consequences of focalism (Schkade & Kahneman, 1998; Wilson et al., 2000). And if they are not in a position to know which background circumstances will arise, they at least are in a position to know that some unspecified everyday circumstances will prove relevant to their plans, and so should adjust their predictions accordingly.

Consider one extant example from the psychological literature that serves as a simple and direct illustration of focalism. College students were asked to imagine the aftermath of a football game being played by their school’s team and were then specifically requested to predict how much their mood would be influenced in the days following the game if their team won or lost (Wilson et al., 2000). A few days after the game, their actual mood was measured. Participants tended to overestimate how much their mood would be affected by their football team’s fate. Of key note, however, were the predictions of a separate group of participants who first underwent a “defocusing” intervention, before they made their predictions, in which they were asked to consider all the other mundane activities (e.g., eating, going to classes, socializing with friends) in which they were likely to engage in the days following the game. Thereby reminded of the remainder of life lying outside football, these “defocused” participants made predictions about their mood that were less extreme and more accurate.

Neglect of the Lessons of Experience. Perhaps the most relevant information people have in hand is knowledge about their behaviors and outcomes in the past. The intriguing property of the planning fallacy is not that people prove too optimistic about how quickly they will complete projects, but that they prove too optimistic despite a lifetime of experience, to which that they will freely admit, that demonstrates they rarely complete projects

well before the deadline. People ignore this previous experience because they generally take an “inside view” rather than an “outside view” when predicting how quickly they will complete tasks (Buehler et al., 2002; Kahneman & Lovallo, 1993; Kahneman & Tversky, 1979). When people take the inside view, they consider the unique features of the task at hand and imagine a series of steps that will lead them from their starting point to a solution. As a consequence, they focus on their abilities and resources, perhaps envisioning obstacles and thinking about how they will overcome them.

In contrast, when people take an outside view, they dismiss this scenario building focusing on the situation at hand and instead pursue a more data-driven strategy in which they just tally the final outcomes from situations they know of that are similar to the one they now face. Some of these data can come from their own previous experience; some of the data can come from the experiences of other people. For example, to predict whether they would successfully lose 20 pounds on a diet, people taking the outside view would tally the successes and failures they have had with diets in the past, as well as the number of successes and failures their acquaintances have had. They would then make a prediction based on this count. But although the outside view is relevant for making a good decision, the inside view seems much more compelling and natural. “The inside view tells a colorful story; the outside view recites statistics” (Camerer & Lovallo, 1999, p. 315).

Research on the planning fallacy shows that people typically take an inside view of their situations even when outside-view information is available (Buehler et al., 2002). When experimental participants were asked to think aloud about a project, 74% of their thoughts were about the future, and the future they contemplated was a particularly rosy one. Only 3% of the participants spontaneously considered potential problems. Only 7% of them considered information relevant to the outside view of this particular project—their own past experiences with similar projects (Buehler et al., 2002).

No matter how colorless, the outside view contains useful information that might help people make better decisions (Buehler et al., 2002). To predict the future, people are better off recalling the past and assuming its straightforward relevance for the future, rather than focusing exclusively on how the future might unfold. When students in one study were asked to predict when they would complete an academic task, they predicted that they would do it about 4 days in advance of the deadline (a rate that only about 30% achieved). However, when asked when they normally accomplished such tasks, they admitted that they normally finished only 1 day before the deadline—and this held true for the project they were predicting. Similarly, a random sample of Canadian taxpayers thought that in the current year they would mail in their return about a week earlier than usual, but they generally completed their returns about when they did in previous years.

Thus, incorporating the outside perspective has been shown to enhance the accuracy of predictions about the future. For ex-

ample, college students make unbiased predictions about when they will complete an assignment when asked to list their completion times for previous assignments and then reminded that this past experience may prove relevant to the current assignment (Buehler et al., 1994). Lovallo and Kahneman (2003) described a group of academics working on revising the curriculum of a local school system. When they were asked to predict how long it would take the group to finish their job, the most pessimistic prediction was 30 months. One member of the group did concede upon questioning that in his extensive experience it usually took such groups 7 years at best to complete their task, if they completed it at all. The group completed its work 8 years later.

Summary

In sum, a wealth of evidence suggests that people make substantial errors when they evaluate their abilities, attributes, and future behavior. Several psychological mechanisms conspire to produce these faulty self-assessments, but many of them can be sorted into two general classes. First, erroneous self-assessments arise because people often do not have all the information necessary to provide accurate assessments, and they do not take into account what they do not know. Second, erroneous self-assessments arise because people neglect relevant and useful information that they do have in hand.

However, we should hasten to add that our review of the processes underlying flawed self-judgment is not exhaustive. We have highlighted two general themes that recur often in the literature, but there are other classes of psychological mechanisms that are also responsible for errors in self-assessment. To name just one example, people are often motivated to reach flattering conclusions about themselves and their place in the world. Thus, they mold, manage, and massage the feedback the world provides them so that they can construe themselves as lovable and capable people. The psychological literature is replete with demonstrations of all the tricks and techniques people use to construct and maintain desirable images of themselves while avoiding negative ones (for reviews, see Baumeister & Newman, 1994; Dunning, 2001; Kunda, 1990)—and some echoes of these demonstrations are apparent in the material we discuss in the following sections. Thus, it should be understood that there are other processes in play that might lead people to form incorrect impressions of themselves.

In the sections that follow, we turn to real-world domains to see if the patterns and themes we have described are repeated as one focuses more on real-world settings. We place the domains of health, education, and work under close scrutiny to see whether flaws in self-assessment arise not only in the laboratory, but also, for example, in the doctor’s office, the classroom, and the corporate boardroom. In each domain, we review pertinent literature and describe ways in which findings echo, contradict, or inform the basic research findings already described. To presage our conclusions somewhat, we find that the literature in each domain

reaffirms portions of the delineated themes. The literature in each domain also is informative about other forces that produce flawed self-judgment, demonstrates some of the consequences of these flaws, and suggests strategies that might improve the accuracy of self-assessment, or at least alleviate the costs of erroneous ones.

HEALTH

Among the three highly valued resources Ben Franklin referred to in his widely cited advice, healthy precedes wealthy and wise. Public opinion polls show that physical health is consistently rated as one of the most valued of personal resources. The United States spends more of its gross domestic product on health services than any other major industrialized country (Braden et al., 1998).

In light of the value and importance of health, people should be highly motivated to understand their personal risk of developing a serious illness or injury. However, they succumb to numerous misperceptions and erroneous beliefs about personal health risks and the relationship between symptoms and illness. In this section, we first consider biases in perceiving health risk and then discuss how erroneous perceptions of social norms and individual uniqueness affect healthy and unhealthy practices. Then, we discuss how laypeople's potentially mistaken beliefs about health and illness prompt mistaken self-judgments that influence their efforts to obtain health care, as well as their adherence to medical regimens.

Several themes we discussed earlier are echoed in this summary of self-perceptions and health. In particular, people tend to be overly optimistic about their vulnerability to health risks. They also tend to exhibit pluralistic ignorance in ways that affect their health-related behavior. In addition, misjudging the emotion of situations, they tend to mispredict the preferences they would have if they faced certain medical decisions, and thus make decisions for other people that differ from what those other people want. Finally, people at times exhibit confidence in their ability to diagnose themselves, an example of the double curse of incompetence.

Unrealistic Optimism About Health Risks

A wide range of lifestyle behaviors, such as smoking, drinking too much alcohol, overeating, and avoiding physical exercise, are associated with premature death and disease (e.g., Belloc, 1973). To be motivated to relinquish these practices, people need to recognize their personal risk of disease and injury. However, they tend to be unrealistically optimistic about their health—as they are about other areas of life—perceiving themselves to be significantly less at risk than their peers for a wide range of physical diseases and negative health outcomes. For example, when a large sample of nominally healthy adults completed a questionnaire that listed a series of health problems and other hazards (e.g., food poisoning, lung cancer, drug addiction, ulcer, mug-

ging, stroke, serious auto injury, cancer, high blood pressure), they typically rated their personal risk between *average* and *less than average* (Weinstein, 1987).

Studies focused on specific health risks echo these findings. People tend to believe their personal risk of becoming ill from their food (e.g., salmonella poisoning) is lower than the risk for most other people (Sparks & Shepard, 1994). Chinese students and European Canadians in Toronto rated their personal risk of being infected with severe acute respiratory syndrome (SARS) as lower than their peers' risk, with the bias being stronger among the Chinese (Ji, Zhang, Usborne, & Guan, 2004). Almost 90% of gay men not infected with HIV rate themselves as having significantly lower risk of becoming infected than the average gay man (Gold & Aucote, 2003). In the United Kingdom, secondary school students who smoke express unrealistic optimism about their health risks, although they do concede that their risks are higher than nonsmokers' (Sutton & Bolling, 2003).

In sum, there is a pervasive tendency for people to perceive themselves as having significantly lower risk of a host of physical health problems than their peers. Logically, however, everyone cannot have a less-than-average risk. Some individuals, by virtue of their age, occupational level, and education, are at lower risk than others, but Weinstein (1987) found that unrealistic optimism about health risks was independent of these factors. He also found that the health risks people were likely to be unrealistically optimistic about were those associated with the incorrect belief that if the problem has not yet appeared, it is unlikely to occur in the future. This unrealistic optimism may make people feel overly comfortable and reduce their motivation to take preventive action.

Causes of Unrealistic Optimism and Unrealistic Pessimism

Many factors converge to produce unwarranted optimism. Weinstein (1983, 2003) proposed that unrealistic optimism is based on a need to defend self-esteem against possible threats. Several findings point to such a motivational explanation. Typically, if people are asked to generate reasons why a particular outcome might happen to them, or to think through a series of events that could lead to this outcome, their perceptions of the likelihood of this outcome increase (e.g., J. Sherman, Skov, Hervitz, & Stock, 1981). This tendency, however, can be biased by people's desire to think of themselves as healthy.

Weinstein and Klein (1995), for example, asked some experimental participants to list all their personal attributes that would tend to increase the likelihood that they would become 30% overweight or would develop a drinking problem. In another condition, different participants listed all their personal attributes that would decrease their likelihood of experiencing these outcomes. In both conditions, participants then estimated the likelihood that they would experience these problems in the future. The pattern of results was consistent with a motivational explanation of unrealistic optimism: Participants who focused on personal factors that should make a problem more likely did not