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Acknowledgments—This research was supported by Grant HD27714 from the National Institutes of Health and Research Scientist Award MH00332 from the National Institute of Mental Health to Rachel K. Clifton (now Rachel Keen). I am grateful to Neil Berthier, my collaborator in all of these studies, and to the other collaborators who contributed to various phases of this work.

Note

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Why People Fail to Recognize Their Own Incompetence

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Abstract

Successful negotiation of everyday life would seem to require people to possess insight about deficiencies in their intellectual and social skills. However, people tend to be blissfully unaware of their incompetence. This lack of awareness arises because poor performers are doubly cursed: Their lack of skill deprives them not only of the ability to produce correct responses, but also of the expertise necessary to surmise that they are not producing them. People base their perceptions of performance, in part, on their preconceived notions about their skills. Because these notions often do not correlate with objective performance, they can lead people to make judgments about their performance that have little to do with actual accomplishment.

Keywords

self-evaluation; metacognition; self-concept; overconfidence; performance evaluation

Real knowledge is to know the extent of one's ignorance.

—Confucius

Confucius' observation rings just as true today as it did 26 centuries ago. To achieve and maintain an adequate measure of the good life, people must have some insight into their limitations. To ace an exam, a college student must know when he needs to crack open his notebook one more time. To provide adequate care, a physician must know where her expertise ends and the need to call in a specialist begins.

Recent research we have conducted, however, suggests that people are not adept at spotting the limits of their knowledge and expertise. Indeed, in many social and intellectual domains, people are unaware of their incompetence, innocent of their ignorance. Where they lack skill or knowledge, they greatly overestimate their expertise and talent, thinking they are doing just fine when, in fact, they are doing quite poorly.

IGNORANCE OF INCOMPETENCE: AN EXAMPLE

Consider the following example. In a sophomore-level psychology

class, we asked 141 students to tell us how well they had done on an exam, just before they walked out of the classroom. We asked the respondents to estimate their performance and mastery of the course material relative to the other students taking the exam. We also asked them to estimate their raw score on the test.

Figure 1 presents the data from the comparison questions. In the figure, we have separated respondents into four groups based on their actual performance on the test, from the bottom 25% of performers to the top 25%. As the figure shows, students in the bottom quartile greatly overestimated their performance on the test. Whereas their performance actually put them in the 12th percentile, they estimated their mastery of the course material to fall in the 60th percentile and their test performance to fall in the 57th. Figure 2 reveals a similar pattern in estimates of raw scores, with bottom performers overestimating their performance by roughly 30%.

This example is not an isolated case. Participants taking tests in their ability to think logically, to write grammatically, and to spot funny jokes tend to overestimate their percentile ranking relative to their peers by some 40 to 50 points, thinking they are outperforming a majority of their peers when, in fact, they are the ones being outperformed (Kruger & Dunning, 1999). This pattern also emerges in more real-world settings: among debate teams taking part in a college tournament and hunters quizzed about their knowledge of firearms just before the start of hunting season (Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2003); among medical residents evaluating their patient-interviewing skills (Hodges, Regehr, & Martin, 2001); and among medical lab technicians assessing their knowledge of medical terminology and everyday problem-solving ability in the lab (Haun, Zeringue, Leach, & Foley, 2000). This pattern even appears, unchecked, after participants are promised up to $100 for accurate assessments of their performance (Ehrlinger et al., 2003).

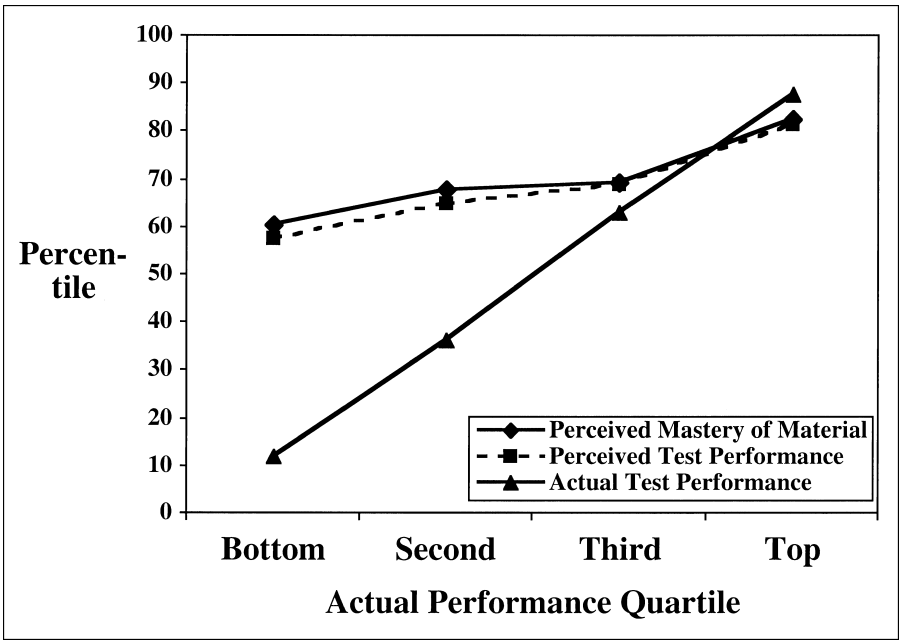

Fig. 1. Perceived percentile rankings for mastery of course material and test performance as a function of actual performance rank.

THE DOUBLE CURSE

People fail to recognize their own incompetence because that incompetence carries with it a double curse. In many intellectual and so-

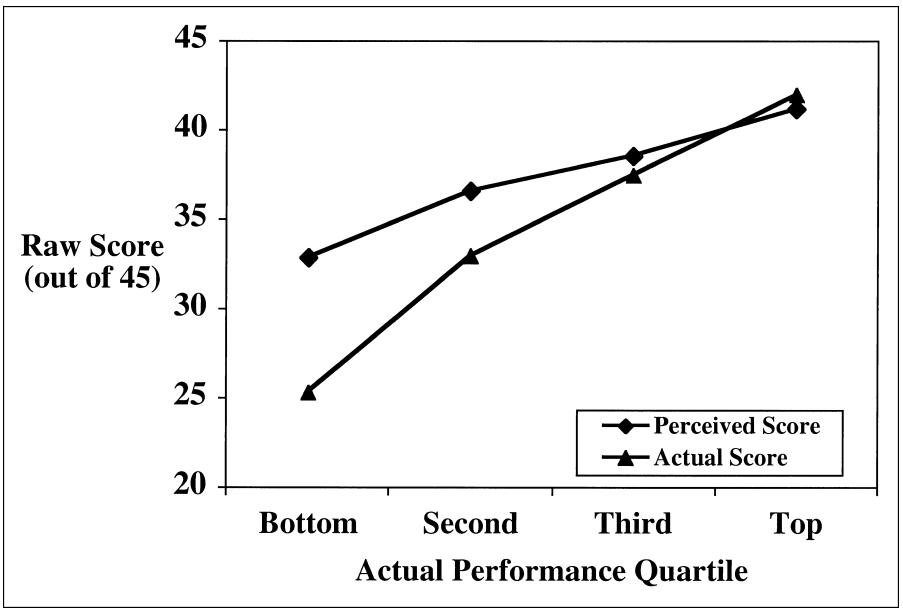

Fig. 2. Perceived versus actual test score as a function of actual test performance.

cial domains, the skills needed to produce correct responses are virtually identical to those needed to evaluate the accuracy of one's responses. The skills needed to produce logically sound arguments, for instance, are the same skills that are necessary to recognize when a logically sound argument has been made. Thus, if people lack the skills to produce correct answers, they are also cursed with an inability to know when their answers, or anyone else's, are right or wrong. They cannot recognize their responses as mistaken, or other people's responses as superior to their own. In short, incompetence means that people cannot successfully complete the task of metacognition, which, among its many meanings, refers to the ability to evaluate responses as correct or incorrect.

A good deal of research demonstrates that poor performers have more difficulty with metacognitive judgments than their more competent peers do. Relative to students who are doing well, students doing poorly on a college exam do not as successfully distinguish which individual questions they are getting right from which they are getting wrong (Sinkavich, 1995). Poor readers are less accurate than more able readers in judging what they comprehend from a passage of text (Maki & Berry, 1984). In our own research, students unskilled in grammar provided less accurate "grades" of the grammatical performances of others than did their more skilled counterparts (Kruger & Dunning, 1999, Study 3).

This double-curse explanation also suggests a crucial hypothesis: If poor performers are given the skills necessary to distinguish correct from incorrect answers, then they would be in a position to recognize their own incompetence. Of course, this hypothesis comes with a paradox: If poor performers had the skills needed to distinguish accuracy from error, they would then have the skills needed to avoid poor performance in the first place. They would no longer be incompetent.

Despite this paradox, we decided to put this hypothesis to the test (Kruger & Dunning, 1999, Study 4). In a first phase of the study, participants were tested on their ability to solve a certain type of logic problem. Not surprisingly, poor performers grossly overestimated their performance on the test. Then, in a second phase, we gave roughly half of the participants a mini-lecture about how to solve this type of logic problem, giving them the skills needed to distinguish accurate from inaccurate answers. When given their original test to look over, the participants who received the lecture, and particularly those who were poor performers, provided much more accurate self-ratings than they had originally. They judged their performance quite harshly—and even lowered their confidence in their own general logical reasoning ability, even though, if anything, the mini-lecture had strengthened that ability, not weakened it.

THE UNDUE MODESTY OF TOP PERFORMERS

Top performers also suffer a burden, albeit one that differs from that of their less skilled counterparts in that they tend to underestimate their percentile rank relative to the people with whom they compare themselves. Their underestimation is usually statistically significant (Ehrlinger et al., 2003; Haun et al., 2000; Hodges et al., 2001; Kruger & Dunning, 1999), although in the case of Figure 1 it appears quite small.

This underestimation has a different source than the overestimation of poor performers. Top performers tend to have a relatively good sense of how well they perform in absolute terms, such as their raw score on a test (see Fig. 2). Where they err is in their estimates of other people—consistently overestimating how well other people are doing on the same test (Fussell & Krauss, 1992). As a result, they tend to underestimate how their performance compares with that of others. One can disabuse top performers of this misperception by showing them the responses of other people. They then tend to realize how unique and distinctive their performances are, providing more positive and accurate self-evaluations. For example, asking people who are particularly proficient in grammar to evaluate the grammar of others causes them to appropriately raise their perceptions of their own relative grammar skill. This exercise has no effect on the self-impressions of poor performers (Kruger & Dunning, 1999, Study 3; see also Hodges et al., 2001, for similar findings involving interviewing skills among medical residents).[2]

WHERE PERCEPTIONS OF COMPETENCE COME FROM

The work we have summarized leaves open an important mystery. It explains what does not happen (i.e., people recognizing their incompetence), but it does not explain what does. How do people arrive at the impressions, sometimes negative but usually positive, that they hold of their performances?

In recent research, we have identified one important source of people's performance evaluations, and shown that it can be a potential source of error in those evaluations. At first blush, one might think that people judge how well they are doing on a test by monitoring their experience with it. Are they taking a long time to provide

the answers? Are they sure there are no competitors to the answers they give? Such an approach would be termed bottom-up, as it refers to the specific experiences people have with the test.

However, we have found that people's estimates of their performance arise, at least in part, from a top-down approach. People start with their preconceived beliefs about their skill (e.g., "I am good at logical reasoning") and use those beliefs to estimate how well they are doing on any specific test. This strategy at first seems to be a good one—people who believe they have logical reasoning skill should have some basis for that claim—except for one fly in the ointment. People's impressions of their intellectual and social skills often correlate only modestly, and sometimes not at all, with measures of their actual performance (Falchikov & Boud, 1989). Indeed, and perhaps more important, people just tend to hold overinflated views of their skills that cannot be justified by their objective performance (Dunning, Meyerowitz, & Holzberg, 1989; Weinstein, 1980). Therefore, preconceived notions of skill can lead people to err in their performance estimates.

In several studies, we have shown that people tend to make top-down performance estimates that have little to do with objective performance. In one study, we measured participants' views of their "abstract reasoning ability" before they sat down and took a quiz on logic. Later, their estimates of how well they had done on the test (e.g., how many items they got right) correlated just as highly with their preexisting self-views as with their actual performance. In another study, we gave participants a test that was purported to assess abstract reasoning ability (on which participants rated themselves highly) or computer programming skills (on which participants rated themselves quite negatively). Although participants in the two conditions took the same test, and achieved on average essentially the same score, those who thought they had taken an abstract reasoning test estimated that they had achieved higher scores than did those who thought they had taken a computer programming test (Ehrlinger & Dunning, 2003).

The top-down nature of performance estimates can have important behavioral consequences. Women, for example, tend to disproportionately leave science careers along every step of the educational and professional ladder (Seymour, 1992). We began to wonder if top-down influences on performance estimates might contribute to this pattern. Starting in adolescence, women tend to rate themselves as less scientifically talented than men rate themselves (Eccles, 1987). Because of this, women might start to think they are doing less well on specific scientific tasks than men tend to think, even when there is no gender difference in performance. Thinking they are doing less well, women might become less enthusiastic about participating in scientific activities.

We put these notions to a test by giving male and female college students a pop quiz on scientific reasoning. Before the quiz, the students were asked to rate themselves on their scientific skills, and the women rated themselves more negatively than the men did. The students' estimates of their performance on the quiz showed the same pattern, with the women thinking that they had done less well than the men thought, even though there was no gender difference in actual performance. Later, when asked if they would like to participate in a science competition for fun and prizes, the women were more likely than the men to decline the invitation. This reluctance correlated significantly with their perceptions of performance on the quiz, but not at all with actual performance (Ehrlinger & Dunning, 2003, Study 4). Perception of performance, not reality, influenced decisions about future activities.

CONCLUDING REMARKS

This research, combined with previous work (for a review, see Falchikov & Boud, 1989), calls into question the ability people have to form accurate views of their skills and expertise. But more than that, it calls into question whether people are, or ever can be, in a position to form accurate self-impressions. If incompetent individuals do not have the skills necessary to achieve insight into their plight, how can they be expected to achieve accurate self-views? How can anybody be sure that he or she is not in the same position?

This research also potentially explains, in part, a mystery that people regularly confront in their everyday dealings. Everyone knows people who just seem to accept their deficiencies, failing to work to improve upon them. Perhaps these individuals "accept" their deficiencies because they are unaware that they have them. As Alfred North Whitehead once observed, it is not ignorance, but ignorance of ignorance, that is the death of knowledge.

Our work suggests many different avenues of follow-up, but one particularly important future avenue would focus on how, or whether, people can become aware of their intellectual and social deficiencies. What are the domains in which people naturally intuit their deficits, and how do those domains differ from the ones we have studied? Are there rules of thumb that people can follow to ferret out their areas of incompetence? Can people ever be expected to uncover their pockets of incompetence on their own, or is outside intervention always necessary? Removing barriers to self-

improvement may rest on answers to these questions.

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Acknowledgments—The research described in this report was supported financially by National Institute of Mental Health Grant RO1 56072, awarded to David Dunning.

Notes

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2. In other analyses, we have ruled out another explanation for our findings. It is almost a given that our measures of objective performance were imperfect, and that any measurement flaw would lead perceptions of performance to correlate less than perfectly with objective performance. This imperfect correlation would then cause the perceptions of poor performers to be more positive than their objective performance (see Krueger & Mueller, 2002). However, across several studies, we have found that statistically estimating and then correcting for imperfections in our measures leaves our original pattern of misperception almost wholly intact (Ehrlinger et al., 2003; Kruger & Dunning, 2002).

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Cognitive Activity and Risk of Alzheimer's Disease

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Abstract

Recent research suggests that frequent participation in cognitively stimulating activities may reduce risk of Alzheimer's disease in old age. We review epidemiological evidence of such an association. We then consider whether cognitive activity can account for the association between higher educational and occupational attainment and reduced risk of Alzheimer's disease. Finally, we discuss the behavioral and neurobiological mechanisms that may underlie the association between cognitive activity and risk of Alzheimer's disease.

Keywords

Alzheimer's disease; cognitive activity; longitudinal studies

Recent scientific data suggest that people with higher educational and occupational attainment tend to have a lower risk of developing Alzheimer's disease than do people with lower educational and occupational attainment (Stern et al., 1994). The mechanism underlying this pattern is unknown. One hypothesis is that the effects of education and occupation are due to their association with frequency of participation in cognitively stimulating activities (Evans et al., 1997). Although the idea that frequent intellectual activity might help one's