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Overconfidence and underconfidence: When and why people underestimate (and overestimate) the competition ☆

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Abstract

It is commonly held that people believe themselves to be better than others, especially for outcomes under their control. However, such overconfidence is not universal. This paper presents evidence showing that people believe that they are *below* average on skill-based tasks that are difficult. A simple Bayesian explanation can account for these effects and for their robustness: On skill-based tasks, people generally have better information about themselves than about others, so their beliefs about others' performances tend to be more regressive (thus less extreme) than their beliefs about their own performances. This explanation is tested in two experiments that examine these effects' robustness to experience, feedback, and market forces. The discussion explores the implications for strategic planning in general and entrepreneurial entry in particular.

Keywords: Entrepreneurial entry; Overconfidence; Controllability; Skill; Competence; Entrepreneurship; Better-than-average; Reference group neglect; Egocentrism; Differential regression; Comparative judgment

One of the most popular social psychology textbooks states, "For nearly any subjective and socially desirable dimension...most people see themselves as better than average" (Myers, 1998, p. 440). For example, people report themselves to be above average in driving ability, their ability to get along with others, and their chances of obtaining jobs that they like (College Board, 1976–1977; Svenson, 1981; Weinstein, 1980). Some have argued that the most important business decisions, including the decision to found a new firm, enter an existing market, or introduce a new product are routinely biased by such overconfidence (Cooper, Woo, & Dunkelberg, 1988; Dunning, Heath, & Suls, 2004; Hayward & Hambrick, 1997; Malmendier & Tate, 2005; Odean, 1998; Zajac & Bazerman, 1991).

Recent evidence, however, has cast doubt on the generality of overconfidence. There are a number of different domains in which people are systematically underconfident. For example, people believe that they are *below* average in unicycle riding, computer programming, and their chances of living past 100 (Kruger, 1999; Kruger & Burrus, 2004). It turns out that people tend to predict that they will be better than others on easy tasks where absolute performance is high, but worse than

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others on difficult tasks where absolute performance is low (Hoelzl & Rustichini, 2005; Moore & Kim, 2003; Windschitl, Kruger, & Simms, 2003). A number of researchers have explained this effect as egocentrism: People focus on their own performances and neglect consideration of others' (Camerer & Lovallo, 1999; Kruger, 1999). In this paper, we present a new explanation for these better-than-average (BTA) and worse-than-average (WTA) effects.[2] Our explanation holds that BTA and WTA effects are a natural consequence of regressive estimates of others, which result from the fact that people have better information about themselves than they do about others. We test this explanation using two experiments that examine the robustness of BTA and WTA effects to experience, feedback, and market forces. The results are consistent with our hypotheses, and have some provocative implications.

For the sake of exposition, let us introduce our theory by considering beliefs about performance on a one-question test where the answer is either right or wrong. Before having seen the problem, and without any information regarding its ease or difficulty, how likely are you to solve it? One assumption might be that performance will be uniformly distributed across possible outcomes (Fischhoff & Bruine De Bruin, 1999; Fox & Rottenstreich, 2003), leaving a 50% chance that you will solve the problem. Such an "ignorance prior" might make sense in the absence of better information. Whatever it is, this prior is simply your baseline expectation for your performance.

After taking the test, let us say that you know whether you solved the problem. What are you to believe about others' performances? If your own performance is useless for predicting others' (e.g., if you think that your good performance was based entirely on luck), your estimation of others' performances ought to remain unchanged from your prior beliefs. Therefore, doing well should leave you thinking that you did better than others; and doing poorly should leave you thinking that you did worse than others. Even if your beliefs about your own performance are helpful for predicting others', so long as there remains uncertainty about others' performances, your predictions of them should depend on—and thus regress towards—the ignorance prior. The upshot is that, when your absolute performance is better (or worse) than your prior expectations, sensible Bayesian inference will lead you to make predictions of others' performances that are between these priors and your current beliefs about your performance.

[2] We use the terms better- and worse-than-average to be consistent with prior work. We acknowledge that with skewed distributions, it is indeed possible for the majority of people to be above (or below) average. This concern, while valid, does not represent a problem for the results of the experiments we present.

It is simple to extend this logic to a multi-item test: If one begins with the assumption that one is just as likely as others to get any given item correct, after having taken the test, one should estimate that others tend to score somewhere between one's own score and one's prior expectation. For example, suppose you initially expected everyone to score about 70%, but you think you scored about 90%. Depending on how indicative you feel your score is of others' scores, you might predict others to score, say, 80%. If you scored 50%, you might predict others to score, say, 60%. Notice that this perspective does not imply a belief in differences of overall ability between you and others—across both tests you would predict the same average score for everyone, namely 70%. But, on each test, you would be right to expect differences between you and others, given better information about your own score on that test. For a more formal development of this differential regression theory, see Appendix A.

Naturally, if the task includes no skill component whatsoever and performance is yet to be determined entirely by chance factors or factors outside one's control, then there would be little reason for people, on average, to predict that they would be above or below average. Consistent with this reasoning, a number of researchers studying BTA effects have found that they tend to be stronger on controllable tasks than on uncontrollable tasks (for a review, see Harris, 1996). For instance, Camerer and Lovallo (1999) found that potential market entrants were excessively confident about winning when competition was based on their skill but not when winners were selected randomly. The authors used this evidence to claim that high rates of entrepreneurial entry might be attributable to entrepreneurial overconfidence. However, because prior studies have employed *easy* tasks, the conclusion that people believe they are better than average on all skill-based tasks is unwarranted. Instead, our theory would predict WTA effects when the task is more difficult than expected. We test this prediction in our first experiment. The first experiment also tests our theory that BTA and WTA effects are attributable to the differential regressiveness in estimates of self vs. others. Experiment 2 addresses some shortcomings of Experiment 1 and provides further support for our theory that better information about self than others produces differential regressiveness.

Experiment 1: The market entry game

Our design builds on that of Camerer and Lovallo (1999). They devised an N-player coordination game in which, in each round, N players decide simultaneously and without communication whether to enter a market or not. Each market had a pre-announced capacity, c,