

# Individual Differences in Overconfidence

Don A. Moore and Amelia S. Dev  
University of California, Berkeley

Moore, D. A., & Dev, A. S. (2018). Individual differences in overconfidence. In V. Zeigler-Hill and T. K. Shackelford (Eds.), *Encyclopedia of Personality and Individual Differences*. New York: Springer.

## Definition

To display overconfidence is to be more confident than one deserves to be. Researchers have studied overconfidence in three basic ways (Moore & Healy, 2008): Overestimation is thinking you're better than you are; overplacement is the exaggerated belief that you are better than others; and overprecision is excessive faith that you know the truth.

## Introduction

Overconfidence is not the same as confidence. The key difference is that overconfidence assesses the degree to which confidence exceeds some normative benchmark. Overconfidence is also not synonymous with optimism. The most widely used measure of optimism is the Life Orientation Test (Scheier, Carver, & Bridges, 1994), which measures generalized beliefs that the future is bright with items like, "In uncertain times, I usually expect the best." Because the test leaves unspecified what "the best" is and lacks any measure of actual outcomes, the test itself does not measure overconfidence. Nor does it predict overconfidence on other measures (Tenney, Logg, & Moore, 2015). Overconfidence has been studied in three basic ways: Overestimation, overplacement, and overprecision.

## Overestimation

The most common measure of overestimation comes from item-confidence judgments. Typically, research participants answer general knowledge questions and then report how confident they are that they answered each item correctly. These tests reliably show that confidence exceeds accuracy (Harvey, 1997). However, overestimation is not universal. The "hard-easy" effect documents the tendency for people to overestimate performance on hard tasks but underestimate it on easy tasks (Erev, Wallsten, & Budescu, 1994).

There are some domains in which research has documented a consistent tendency for people to overestimate. For instance, the planning fallacy describes the tendency to overestimate one's rate of work (Buehler, Griffin, & Ross, 1994). The hard-easy effect can account for this evidence if researchers have selected hard tasks to measure the planning fallacy. Indeed, for simple tasks that are easy to accomplish, people tend to underestimate the rate at which they can complete them (Boltz, Kupperman, & Dunne, 1998).

Item-confidence judgments provide ambiguous evidence for overestimation because they also tap overprecision. At an item level, overestimating the accuracy of one's knowledge is the same as being too sure one is correct. One solution to disentangling overestimation from overprecision is to ask people to estimate performance across a set of items. This sort of measure makes it possible for a person to be excessively sure of an underestimate of performance, such as when a student is convinced he did worse on a test than he actually did.

## Overplacement

The "better-than-average" effect seeks to measure overplacement—the exaggerated belief that one is better than others. Typically, a majority of participants rate themselves as better than average, which tempts researchers to conclude that the group, overall, is overconfident (Beer & Hughes, 2010). However, few "better-than-average" studies measure participants' actual standing relative to others, rendering this evidence problematic, because it is impossible to assess the accuracy of individuals' beliefs. It is also problematic because it is entirely possible for the majority of the population to be above average in a skewed distribution (Harris & Hahn, 2011). (Most people have more legs than average.)

To measure overplacement, studies must measure both actual performance and beliefs about performance. Such studies do indeed find that people overplace their performances relative to those of others, but this is more prevalent on easy tasks or where success is common; on difficult tasks or where success is rare, underplacement is pervasive (Kruger, 1999; Moore & Kim, 2003). This result begs the question of how it could be that people overplace but underestimate on easy tasks, while they underplace and overestimate on hard ones.

The answer is that both effects can result from noisy estimates and statistical regression effects (Moore & Healy, 2008). People estimate their own performances imperfectly, and statistical regression assures that they are more likely to overestimate low performances and underestimate high performances. If people's estimates of others is even more noisy and imperfect (Krueger, Acevedo, & Robbins, 2005), then they will overestimate others even more on hard tasks and underestimate them even more on easy tasks, leading to the erroneous belief that they are better than others on easy tasks and worse than others on hard tasks (Moore & Small, 2007). Thus, the co-existence of overestimation and underplacement for hard tasks and the co-existence of underestimation and overplacement for easy tasks is amenable to a parsimonious explanation and does not require a deep psychological theory.

### **Overprecision**

The most pervasive but least understood form of overconfidence is overprecision—the excessive confidence that one's beliefs are accurate (Moore, Tenney, & Haran, 2016). The typical study measures overprecision by asking people to specify a confidence interval around a best estimate of some quantity. For example, Alpert and Raiffa (1982) asked people to specify 98% confidence intervals around their guesses of general knowledge questions, such as annual egg production in the United States. These 98% confidence intervals included the right answer less than 50% of the time, suggesting that participants were inappropriately confident their estimates were accurate.

Overprecision is remarkably robust—it is rare to find reversals of overprecision in which people report being less sure than they ought to be (cf. Moore, Carter, & Yang, 2015). However, the size of the effect is sensitive to its mode of elicitation. Confidence intervals regularly elicit extreme overprecision. The size of the interval people report is shockingly insensitive to the confidence level specified; people report similarly-sized intervals for 98% and 50% confidence (Langnickel & Zeisberger, 2016; Teigen & Jorgensen, 2005). Consequently, people look much more overconfident for 98% confidence intervals than for 50% confidence intervals. These results invite the conclusion that ordinary people do not really understand confidence intervals particularly well (Soll & Klayman, 2004).

### **Individual differences in overconfidence**

A cursory examination may lead us to conjecture that some people are more overconfident than others. Particular politicians and celebrities stand out for their overweening bravado, their thirst for the limelight, and their unfailing self-assurance. We all know people who can be described as “often in error but never in doubt.” However, while intuitive understanding of personality differences can show real insight (Funder, 1995), it is also prone to illusory correlations and false stereotypes (Sanbonmatsu, Sherman, & Hamilton, 1987; Slusher & Anderson, 1987). What does the research tell us about which individuals display overconfidence?

The empirical evidence provides weak evidence of stable individual differences in overconfidence. There are scattered claims of particular individual differences that correlate with particular measures of overconfidence, but ample reason to worry about selective reporting and false-positive results. Moreover, there is little consistency between different measures of overconfidence, further undermining the possibility that there is some general individual difference that underlies overconfidence across domains and tasks.

Perhaps the most high-profile claim has been that men show more overplacement than women (Barber & Odean, 2001; Jonsson & Allwood, 2003; Niederle & Vesterlund, 2007; Pulford & Colman, 1997). However, male overplacement is far from universal (Nekby, Thoursie, & Vahtrik, 2008), and plenty of studies have failed to find gender differences (Acker & Duck, 2008; Deaves, Lüders, & Schröder, 2010; Mannes & Moore, 2013; Moore & Swift, 2010). If researchers routinely test for gender but are more likely to report it when it is statistically significant, then we ought to be concerned that these

selective reports may be false positives or may overestimate true effect sizes because some effects (such as significant results showing male overconfidence) are more likely to be published.

The literature has identified potentially relevant individual differences other than gender. Schaefer et al. (2004) report a correlation between extroversion and overprecision. Narcissism predicted overestimation in some studies (Ames & Kammrath, 2004; John & Robins, 1994) and overprecision in another (Campbell, Goodie, & Foster, 2004). Paulhus and colleagues' (2003) over-claiming questionnaire seems designed to assess excessive faith in one's own knowledge (Anderson, Brion, Moore, & Kennedy, 2012). And Paulhus and John (1998) identify desirable responding as a measure of trait self-enhancement. Yet both over-claiming and desirable responding turn out to be poor predictors of overconfidence.

Given the preponderance of potentially relevant individual difference measures and the preponderance of ways to measure overconfidence, the spotty nature of the empirical record is cause for concern. That is, there are no individual difference measures that have been shown to correlate with all three types of overconfidence, operationalized through a variety of different measures. Instead, the empirical record presents particular individual differences associated with particular measures of overconfidence in particular contexts and settings and studies.

*Replicability and false positives.* Attempts to replicate these prior findings have not always met with success. Indeed, our systematic attempts have failed to replicate *any* prior findings of individual-difference correlates of overconfidence (Moore & Dev, 2016; Moore & Swift, 2010). We believe the spotty nature of the published record and the failure of replication attempts should call into question the robustness, durability, or replicability of published results claiming individual differences in overconfidence. It is possible that the empirical record includes false-positive results. In other words, some of the published reports of individual-difference correlates of overconfidence might not be robust to replication. In sum, there is reason to doubt that there exist stable and general individual differences in overestimation or overplacement.

## **Conclusion**

Situational effects on overconfidence are so powerful that most people will appear overconfident on some tasks and underconfident on others. These large situational effects appear to overwhelm what individual differences may exist in overconfidence. Indeed, individual differences have proven difficult to detect. There is little consistent evidence of robust individual differences in overestimation or overplacement. Nevertheless, overprecision does seem to demonstrate more intra-individual consistency (Moore & Swift, 2010), leaving open the possibility that there are meaningful individual differences in the degree to which people are sure that they know the truth. The fact that we have failed to identify a personality scale that correlates with overprecision does not mean there are no stable individual differences, only that we have not found a personality trait that consistently predicts it.

## References

- Acker, D., & Duck, N. W. (2008). Cross-cultural overconfidence and biased self-attribution. *Journal of Socio-Economics*, 37(5), 1815–1824.
- Alpert, M., & Raiffa, H. (1982). A progress report on the training of probability assessors. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases*. Cambridge: Cambridge University Press.
- Ames, D. R., & Kammrath, L. (2004). Mind-reading and metacognition: Narcissism, not actual competence, predicts self-estimated ability. *Journal of Nonverbal Behavior*, 28, 187–209.
- Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A social-functional account of overconfidence. *Journal of Personality and Social Psychology*, 103(4), 718–735.
- Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, 116(1), 261–293.
- Beer, J. S., & Hughes, B. L. (2010). Neural systems of social comparison and the “above-average” effect.

- Neuroimage*, 49(3), 2671–2679.
- Boltz, M. G., Kupperman, C., & Dunne, J. (1998). The role of learning in remembered duration. *Memory & Cognition*, 26(5), 903–921.
- Buehler, R., Griffin, D. W., & Ross, M. (1994). Exploring the “planning fallacy”: Why people underestimate their task completion times. *Journal of Personality and Social Psychology*, 67(3), 366–381.
- Campbell, W. K., Goodie, A. S., & Foster, J. D. (2004). Narcissism, confidence, and risk attitude. *Journal of Behavioral Decision Making*, 17(4), 481–502.
- Deaves, R., Lüders, E., & Schröder, M. (2010). The dynamics of overconfidence: Evidence from stock market forecasters. *Journal of Economic Behavior & Organization*, 75(3), 402–412. <http://doi.org/http://dx.doi.org/10.1016/j.jebo.2010.05.001>
- Erev, I., Wallsten, T. S., & Budescu, D. V. (1994). Simultaneous over- and underconfidence: The role of error in judgment processes. *Psychological Review*, 101(3), 519–527.
- Funder, D. C. (1995). On the accuracy of personality judgment: a realistic approach. *Psychological Review*, 102(4), 652.
- Harris, A. J. L., & Hahn, U. (2011). Unrealistic optimism about future life events: A cautionary note. *Psychological Review*, 118(1), 135–154.
- Harvey, N. (1997). Confidence in judgment. *Trends in Cognitive Sciences*, 1(2), 78–82.
- John, O. P., & Robins, R. W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology*, 66, 206–219.
- Jonsson, A.-C., & Allwood, C. M. (2003). Stability and variability in the realism of confidence judgments over time, content domain, and gender. *Personality and Individual Differences*, 34(4), 559–574.
- Krueger, J. I., Acevedo, M., & Robbins, J. M. (2005). Self as sample. In K. Fiedler & P. Juslin (Eds.), *Information sampling and adaptive cognition* (pp. 353–377). New York: Cambridge University Press.
- Kruger, J. (1999). Lake Wobegon be gone! The “below-average effect” and the egocentric nature of comparative ability judgments. *Journal of Personality and Social Psychology*, 77(2), 221–232.
- Langnickel, F., & Zeisberger, S. (2016). Do we measure overconfidence? A closer look at the interval production task. *Journal of Economic Behavior & Organization*, 128, 121–133.
- Mannes, A. E., & Moore, D. A. (2013). A Behavioral Demonstration of Overconfidence in Judgment. *Psychological Science*, 24(7), 1190–1197. <http://doi.org/10.1177/0956797612470700>
- Moore, D. A., Carter, A., & Yang, H. H. J. (2015). Wide of the mark: Evidence on the underlying causes of overprecision in judgment. *Organizational Behavior and Human Decision Processes*. Retrieved from <http://learnmoore.org/BDE/>
- Moore, D. A., & Dev, A. S. (2016). Individual Differences and situational effects on overconfidence. Retrieved from <http://osf.io/hzk6q>
- Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, 115(2), 502–517.
- Moore, D. A., & Kim, T. G. (2003). Myopic social prediction and the solo comparison effect. *Journal of Personality and Social Psychology*, 85(6), 1121–1135.
- Moore, D. A., & Small, D. A. (2007). Error and bias in comparative social judgment: On being both better and worse than we think we are. *Journal of Personality and Social Psychology*, 92(6), 972–989. <http://doi.org/10.1037/0022-3514.92.6.972>
- Moore, D. A., & Swift, S. A. (2010). The Three Faces of Overconfidence in Organizations. In R. Van Dick & J. K. Murnighan (Eds.), *Social Psychology of Organizations* (pp. 147–184). Oxford: Taylor & Francis.
- Moore, D. A., Tenney, E. R., & Haran, U. (2016). Overprecision in judgment. In G. Wu & G. Keren (Eds.), *Handbook of Judgment and Decision Making* (pp. 182–212). New York: Wiley.
- Nekby, L., Thoursie, P. S., & Vahtrik, L. (2008). Gender and self-selection into a competitive environment: Are women more overconfident than men? *Economics Letters*, 100(3), 405–407.

- Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *Quarterly Journal of Economics*, *122*(3), 1067–1101.
- Paulhus, D. L., Harms, P. D., Bruce, M. N., & Lysy, D. C. (2003). The over-claiming technique: Measuring self-enhancement independent of ability. *Journal of Personality and Social Psychology*, *84*(4), 890–904.
- Paulhus, D. L., & John, O. P. (1998). Egoistic and moralistic biases in self-perception: The interplay of self-deceptive styles with basic traits and motives. *Journal of Personality*, *66*(6), 1025–1060.
- Pulford, B. D., & Colman, A. M. (1997). Overconfidence: Feedback and item difficulty effects. *Personality and Individual Differences*, *23*(1), 125–133.
- Sanbonmatsu, D. M., Sherman, S. J., & Hamilton, D. L. (1987). Illusory correlation in the perception of individuals and groups. *Social Cognition*, *5*(1), 1–25.
- Schaefer, P. S., Williams, C. C., Goodie, A. S., & Campbell, W. K. (2004). Overconfidence and the big five. *Journal of Research in Personality*, *38*(5), 473–480.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, *67*(6), 1063–1078.
- Slusher, M. P., & Anderson, C. A. (1987). When reality monitoring fails: The role of imagination in stereotype maintenance. *Journal of Personality and Social Psychology*, *52*(4), 653.
- Soll, J. B., & Klayman, J. (2004). Overconfidence in interval estimates. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *30*(2), 299–314.
- Teigen, K. H., & Jorgensen, M. (2005). When 90% confidence intervals are 50% certain: On the credibility of credible intervals. *Applied Cognitive Psychology*, *19*(4), 455–475.
- Tenney, E. R., Logg, J. M., & Moore, D. A. (2015). (Too) optimistic about optimism: The belief that optimism improves performance. *Journal of Personality and Social Psychology*, *108*(3), 377–399. <http://doi.org/10.1037/pspa0000018>