

# Dunning–Kruger effect

In the field of [psychology](#), the **Dunning–Kruger effect** is a [cognitive bias](#) wherein persons of low ability suffer from [illusory superiority](#), mistakenly assessing their [cognitive ability](#) as greater than it is. The cognitive bias of illusory superiority derives from the [metacognitive](#) inability of low-ability persons to recognize their own ineptitude. Without the [self-awareness](#) of metacognition, low-ability people cannot objectively evaluate their actual competence or incompetence.

As described by [David Dunning](#) and [Justin Kruger](#), the cognitive bias of illusory superiority results from an internal illusion in people of low ability and from an external misperception in people of high ability; that is, "the miscalibration of the incompetent stems from an error about the self, whereas the miscalibration of the highly competent stems from an error about others." Hence, the [corollary](#) to the Dunning–Kruger effect indicates that persons of high ability tend to underestimate their relative competence, and erroneously presume that tasks that are easy for them to perform also are easy for other people to perform.

Although the Dunning–Kruger effect was formulated in 1999, the cognitive bias of illusory superiority has been referred to in literature throughout history.

## Original study

The psychological phenomenon of illusory superiority was identified as a form of cognitive bias in Kruger and Dunning's 1999 study "Unskilled and Unaware of It: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments". The identification derived from the cognitive bias evident in the criminal case of McArthur Wheeler, who robbed banks with his face covered with lemon juice, which he believed would make it invisible to the surveillance cameras. Wheeler's incompetence was based on

his misunderstanding the chemical properties of lemon juice as an [invisible ink](#).

Other investigations of the phenomenon, such as "Why People Fail to Recognize Their Own Incompetence" (2003), indicate that much incorrect self-assessment of competence derives from the person's ignorance of the standards of performance of a given activity. The pattern of overestimation of competence appeared in studies of [reading comprehension](#), of the practice of medicine, of motor-vehicle operation, and the playing of games such as [chess](#) and [tennis](#). However, Dunning and Kruger's research also indicates that training in a task, such as solving a logic puzzle, increases people's ability to accurately evaluate how good at that task they are.

In *Self-insight: Roadblocks and Detours on the Path to Knowing Thyself* (2005), Dunning described the Dunning–Kruger effect as "the [anosognosia](#) of everyday life", in reference to the condition in which a disabled person either denies or seems unaware of his or her physical incapacity. He stated: "If you're incompetent, you can't know you're incompetent. . . . The skills you need to produce a right answer are exactly the skills you need to recognize what a right answer is."

## **Popular recognition**

In 2000, Kruger and Dunning were awarded an [Ig Nobel Prize](#), in satirical recognition of the scientific work recorded in "their modest report" "Unskilled and Unaware of It: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments", about the cognitive bias of competence by way of illusory superiority.

## **Sequel studies**

Dunning and Kruger tested the hypotheses of the cognitive bias of illusory superiority on undergraduate students of introductory courses in psychology, by examining the students' self-assessments of their intellectual skills in

[logical reasoning](#) ([inductive](#), [deductive](#), [abductive](#)), English grammar, and personal sense of humor. After learning their self-assessment scores, the students were asked to estimate their ranks in the psychology class. The group of competent students underestimated their class ranks, while the group of incompetent students overestimated their ranks; yet the incompetent group did not estimate their class ranks as higher than the ranks estimated by the competent group. Across four studies, the research indicated that the study participants who scored in the bottom quartile on tests of their sense of humor, knowledge of grammar, and logical reasoning overestimated their test performance and their abilities; despite test scores that placed them in the 12th percentile, the participants estimated they ranked in the 62nd percentile.

Moreover, competent students tended to underestimate their own competence, because they erroneously presumed that tasks easy for them to perform also were easy for other people to perform. Incompetent students improved their ability to correctly estimate their class rank after receiving minimal tutoring in the skills they previously lacked, regardless of any objective improvement gained in said skills of perception. The study *Mind-Reading and Metacognition: Narcissism, not Actual Competence, Predicts Self-estimated Ability* (2004) extended the cognitive-bias premise of [illusory superiority](#) to test the subjects' emotional sensitivity toward other people and their perceptions of other people.

The study *How Chronic Self-Views Influence (and Potentially Mislead) Estimates of Performance* (2003) indicated a shift in the participants' view of themselves when influenced by external cues. The participants' knowledge of geography was tested; some tests were intended to positively affect the participant's self-view and some were intended to affect it negatively. The participants then were asked to rate their performances; the participants given tests with a positive intent reported better performance than did the participants given tests with a negative intent.

To test Dunning and Kruger's hypotheses, "that people, at all performance levels, are equally poor at estimating their relative performance", the study *Skilled or Unskilled, but Still Unaware of It: How Perceptions of Difficulty Drive Miscalibration in Relative Comparisons* (2006) investigated three studies that manipulated the "perceived difficulty of the tasks, and, hence, [the] participants' beliefs about their relative standing." The investigation indicated that when the experimental subjects were presented with moderately difficult tasks, there was little variation among the best performers and the worst performers in their ability to accurately predict their performance. With more difficult tasks, the best performers were less accurate in predicting their performance than were the worst performers. Therefore, judges at all levels of skill are subject to similar degrees of error in the performance of tasks.

In testing alternative explanations for the cognitive bias of illusory superiority, the study *Why the Unskilled are Unaware: Further Explorations of (Absent) Self-insight Among the Incompetent* (2008) reached the same conclusions as previous studies of the Dunning–Kruger effect: that, in contrast to high performers, "poor performers do not learn from feedback suggesting a need to improve."

## **Cultural differences in self-perception**

Most studies of the Dunning–Kruger effect have used North American subjects, but studies of Japanese subjects have suggested that cultural forces may play a role. One study indicated that Japanese people tend to underestimate their abilities, and see underachievement (failure) as an opportunity to improve their abilities at a given task, thereby increasing their value to the social group.

## **Historical antecedents**

Although the Dunning–Kruger effect was formulated in 1999, the cognitive bias of illusory superiority has been known throughout history and identified

by [intellectuals](#), such as the philosopher [Confucius](#) (551–479 BC), who said, “Real knowledge is to know the extent of one’s ignorance”; by the playwright [William Shakespeare](#) (1564–1616), who said, “The fool doth think he is wise, but the wise man knows himself to be a fool” (*As You Like It*, V. i.); by the naturalist [Charles Darwin](#) (1809–1882), who said, “Ignorance more frequently begets confidence than does knowledge”; and by the philosopher and mathematician [Bertrand Russell](#) (1872–1970), who said, “One of the painful things about our time is that those who feel certainty are stupid, and those with any imagination and understanding are filled with doubt and indecision.”

## See also

- [Curse of knowledge](#)
- [Four stages of competence](#)
- [Grandiose delusions](#)
- [Hanlon's razor](#)
- [Hubris](#)
- [Illusory superiority](#)
- [Impostor syndrome](#)
- [Narcissism](#)
- [Not even wrong](#)
- [Optimism bias](#)
- [Overconfidence effect](#)
- [Self-deception](#)
- [Self-efficacy](#)
- [Self-serving bias](#)
- [Superiority complex](#)
- [Ultracrepidarianism](#)
- [Law of triviality](#)

## References

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## **Further reading**

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