Psychologists defend the importance of general abilities

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"What makes a great violinist, physicist, or crossword puzzle solver? Are experts born or made? The question has intrigued psychologists since psychology was born—and the rest of us, too, who may secretly fantasize playing duets with Yo Yo Ma or winning a Nobel Prize in science. It's no wonder Malcolm Gladwell stayed atop the bestseller lists by popularizing the "10,000-hour rule" of Florida State University psychologist K. Anders Ericsson. Using Ericsson's pioneering work—but omitting equally prominent, contradictory, research—Gladwell's book Outliers argued that given a certain level of intelligence and a bit of luck, virtually anybody can get to Carnegie Hall—provided they practice, practice, practice.

In a new paper in *Current Directions in Psychological Science*, a journal published by the Association for Psychological Science, psychologists David Z. Hambrick of Michigan State University and Elizabeth J. Meinz of Southern Illinois University Edwardsville disagree strongly. "We don't deny the importance of the knowledge and skill that accrue through practice," says Hambrick. " But, we think that for certain types of tasks, basic abilities and capacities—ones that are general, stable across time, and substantially heritable—play an important role in skilled performance. " Such basic capacities are a component of talent, Hambrick and Meinz believe.

The authors' work involves a particular basic measure of cognitive ability: working memory capacity, the ability to store and process information at the same time, which correlates with success in many

cognitive tasks, from abstract reasoning to language learning. In one experiment Hambrick and Meinz tested 57 pianists with a wide range of deliberate practice under their belts, from 260 to more than 31,000 hours, to see how well they did on sight-reading—playing a piece from a score they'd never seen before. Those who had practiced more did better. In fact, practice—even specific sight-reading practice—predicted nearly half of the differences in performance across the subjects. But working memory capacity still had a statistically significant impact on performance. In other words, regardless of amount of deliberate practice, working memory capacity still mattered for success in the task. The psychologists surmised that the capacity influences how many notes a player can look ahead as she plays, an important factor in sight-reading.

Challenging another "experts-are-made" contention—that beyond a certain threshold, intelligence makes less and less of a difference in accomplishment—the authors cite a study by Vanderbilt University researchers that looked at the math SAT scores of people with PhDs in science, technology, engineering, or math. Those who scored in the 99.9th percentile at age 13 were 18 times more likely to go on to earn a PhD than those who scored better than only 99.1 percent of their teenage peers. "Even at the highest end, the higher the intellectual ability—and by extension, the higher the working memory capacity—the better," says Hambrick.

"Some would consider this bad news. We'd all like to think that basic capacities and abilities are irrelevant—it's the egalitarian view of expertise," Hambrick says. "We're not saying that limitations can't be overcome." Still, no matter how hard you work, it may be what you're born with or develop very early in life that "distinguishes the best from the rest."

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