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## Winning SCRABBLE and the Nature of Expertise

Studying a game yields insights into what it takes to be great at something

April 21, 2015 | By [David Z. Hambrick](#) |

In case you didn't hear the news, there was a major shake-up in the competitive SCRABBLE world last summer in Buffalo. Conrad Bassett-Bouchard, a 24-year old graduate student from Portland, Oregon, [won](#) the \$10,000 first prize at the National SCRABBLE Championship, making him the youngest American to ever win the tournament. But the big news was that the win ended [Nigel Richards'](#) run of four titles. Richards, a reclusive New Zealander, is widely regarded as the best SCRABBLE player of all-time—the “Michael Jordan of the game,” as one co-competitor [put it](#). Along with five U.S. National titles, Richards has won the World SCRABBLE Championship three times, and the Thailand International—the largest SCRABBLE tournament in the world—eleven times.

SCRABBLE has been one of the most popular board games in the world for decades. And, now, as an increasingly popular domain for scientific research on expertise, it is giving psychologists a better understanding of the underpinnings of complex skill and a clearer picture of the origins of greatness. The overarching goal of this research is to better understand the interplay between “software” and “hardware” aspects of the cognitive system. Software factors include knowledge and skills that are acquired through experience, whereas hardware factors include genetically-influenced abilities and capacities. SCRABBLE is ideal for research on how these factors interact not only because it is relatively easy to find research participants from a wide range of skill, but because it can be imported into the lab.

The basic goal of SCRABBLE is to create intersecting words by placing lettered tiles on a board containing a 15 x 15 grid. Knowledge is, of course, critical for success in this task. If you want to become a great SCRABBLE player, first and foremost, you have to know a lot of words. A top player will know most of the two hundred thousand or so words in the SCRABBLE dictionary (not their definitions, just the words themselves). Among the plays in the final game at the National SCRABBLE Championship in Buffalo: WAB, TROOZE, HOURI, AA, KIBI, and QUA (all real words, apparently). You also need to be adept at identifying potential plays. Expert players can rattle off dozens of possible plays for any given rack—for, say, GINOPRS, words like SPORING, GIPONS, PIROG, PINGO, OS, and SORN. Many serious SCRABBLE players “cross-train” by playing anagramming games like Boggle, or by just solving anagrams, which Conrad Bassett-Bouchard compares to a basketball player practicing free throws. Finally, you have to know SCRABBLE strategy—or what aficionados call “rack management”—such as how to keep a good mix of consonant and vowels (the key, according to reigning World SCRABBLE Champion [Craig Beevers](#), is to “score and leave”—go for points but be mindful of what any play will leave you on your rack).

People aren't born with this type of specialized knowledge. Research indicates that we may come into the world equipped with the building blocks for complex skills such as math, but certainly nothing as specific as knowledge of words in a particular language. Thus,



Clearly, expert SCRABBLE players are to some degree “made.” But there is evidence that basic cognitive abilities play a role, too.

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experience is necessary to become an expert in SCRABBLE. And, in fact, SCRABBLE skill has been found to correlate positively with the amount of time people spend engaging in SCRABBLE-related activities. In one [study](#), using official SCRABBLE rating as an objective measure of skill, researchers found that groups of “elite” and “average” SCRABBLE players differed in the amount of time they had devoted to things like studying word lists, analyzing previous SCRABBLE games, and anagramming—and not by a little. Overall, the elite group had spent an average of over 5,000 hours on SCRABBLE study, compared to only about 1,300 hours for the average group. Another [study](#) found that competitive SCRABBLE players devoted an average of nearly 5 hours a week to memorizing words from the SCRABBLE dictionary.

Clearly, expert SCRABBLE players are to some degree “made.” But there is evidence that basic cognitive abilities play a role, too. In a [study](#) recently published in *Applied Cognitive Psychology*, Michael Toma and his colleagues found that elite SCRABBLE players outperformed college students from a highly selective university on tests of two cognitive abilities: working memory and visuospatial reasoning. Working memory is the ability to hold in mind information while using it to solve a problem, as when iterating through possible moves in a SCRABBLE game. Visuospatial reasoning is the ability to visualize things and to detect patterns, as when imagining how tiles on a SCRABBLE board would intersect after a certain play. Both abilities are influenced by genetic factors.

Further evidence pointing to a role of these abilities in SCRABBLE expertise comes from a recent brain imaging [study](#) by Andrea Protzner and her colleagues at the University of Calgary. Using functional magnetic resonance imaging (fMRI), these researchers recorded the brain activity of SCRABBLE players and control subjects as they performed a task in which they were shown groups of letters and judged whether they formed words. (fMRI measures brain activity by detecting changes in blood flow within different regions of the brain.) The major finding of this study was that competitive SCRABBLE players recruited brain regions associated with working memory and visual perception to perform this task to a greater degree than the control subjects did.

What might explain SCRABBLE experts’ superiority in working memory and visuospatial reasoning? One possibility is that playing SCRABBLE improves these cognitive abilities, like a work-out at the gym makes you stronger. However, this seems unlikely based on over a century of research on the issue of “transfer” of training. When people train on a task, they sometimes get better on similar tasks, but they usually do not get better on other tasks. They show “near” transfer, but not “far” transfer. (Practice SCRABBLE and you’ll get better at SCRABBLE, and maybe Boggle, but don’t count on it making you smarter.) For the same basic reason that basketball players tend to be tall, a more likely explanation is that people high in working memory and visuospatial reasoning abilities are people who tend to get into, and persist at, playing SCRABBLE: because it gives them an advantage in the game. This explanation fits with what behavioral geneticists call *gene-environment correlation*, which is the idea that our genetic makeup influences our experiences.

These findings challenge the dogma that anyone can become anything they want to become—like the best SCRABBLE player in the world—with enough hard work. At the same time, they add to an emerging understanding of complex skill that may ultimately bring expertise within reach of a larger number of people than is currently the case. For example, it may one day be possible to give people precise information about their abilities, and of the likelihood of achieving success in particular domains given those abilities. It may also be possible to design approaches to training complex skills that accelerate the acquisition of expertise.

## ABOUT THE AUTHOR(S)

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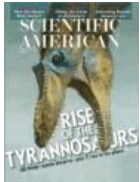
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