

May 7, 2006**FREAKONOMICS****A Star Is Made****By STEPHEN J. DUBNER and STEVEN D. LEVITT****The Birth-Month Soccer Anomaly**

If you were to examine the birth certificates of every soccer player in next month's World Cup tournament, you would most likely find a noteworthy quirk: elite soccer players are more likely to have been born in the earlier months of the year than in the later months. If you then examined the European national youth teams that feed the World Cup and professional ranks, you would find this quirk to be even more pronounced. On recent English teams, for instance, half of the elite teenage soccer players were born in January, February or March, with the other half spread out over the remaining 9 months. In Germany, 52 elite youth players were born in the first three months of the year, with just 4 players born in the last three.

What might account for this anomaly? Here are a few guesses: a) certain astrological signs confer superior soccer skills; b) winter-born babies tend to have higher oxygen capacity, which increases soccer stamina; c) soccer-mad parents are more likely to conceive children in springtime, at the annual peak of soccer mania; d) none of the above.

Anders Ericsson, a 58-year-old psychology professor at Florida State University, says he believes strongly in "none of the above." He is the ringleader of what might be called the Expert Performance Movement, a loose coalition of scholars trying to answer an important and seemingly primordial question: When someone is very good at a given thing, what is it that actually makes him good?

Ericsson, who grew up in Sweden, studied nuclear engineering until he realized he would have more opportunity to conduct his own research if he switched to psychology. His first experiment, nearly 30 years ago, involved memory: training a person to hear and then repeat a random series of numbers. "With the first subject, after about 20 hours of training, his digit span had risen from 7 to 20," Ericsson recalls. "He kept improving, and after about 200 hours of training he had risen to over 80 numbers."

This success, coupled with later research showing that memory itself is not genetically determined, led Ericsson to conclude that the act of memorizing is more of a cognitive exercise than an intuitive one. In other words, whatever innate differences two people may exhibit in their abilities to memorize, those differences are swamped by how well each person "encodes" the information. And the best way to learn how to encode information meaningfully, Ericsson determined, was a process known as deliberate practice.

Deliberate practice entails more than simply repeating a task — playing a C-minor scale 100 times, for instance, or hitting tennis serves until your shoulder pops out of its socket. Rather, it involves setting specific goals, obtaining immediate feedback and concentrating as much on technique as on outcome.

Ericsson and his colleagues have thus taken to studying expert performers in a wide range of pursuits,

including soccer, golf, surgery, piano playing, Scrabble, writing, chess, software design, stock picking and darts. They gather all the data they can, not just performance statistics and biographical details but also the results of their own laboratory experiments with high achievers.

Their work, compiled in the "Cambridge Handbook of Expertise and Expert Performance," a 900-page academic book that will be published next month, makes a rather startling assertion: the trait we commonly call talent is highly overrated. Or, put another way, expert performers — whether in memory or surgery, ballet or computer programming — are nearly always made, not born. And yes, practice does make perfect. These may be the sort of clichés that parents are fond of whispering to their children. But these particular clichés just happen to be true.

Ericsson's research suggests a third cliché as well: when it comes to choosing a life path, you should do what you love — because if you don't love it, you are unlikely to work hard enough to get very good. Most people naturally don't like to do things they aren't "good" at. So they often give up, telling themselves they simply don't possess the talent for math or skiing or the violin. But what they really lack is the desire to be good and to undertake the deliberate practice that would make them better.

"I think the most general claim here," Ericsson says of his work, "is that a lot of people believe there are some inherent limits they were born with. But there is surprisingly little hard evidence that anyone could attain any kind of exceptional performance without spending a lot of time perfecting it." This is not to say that all people have equal potential. [Michael Jordan](#), even if he hadn't spent countless hours in the gym, would still have been a better basketball player than most of us. But without those hours in the gym, he would never have become the player he was.

Ericsson's conclusions, if accurate, would seem to have broad applications. Students should be taught to follow their interests earlier in their schooling, the better to build up their skills and acquire meaningful feedback. Senior citizens should be encouraged to acquire new skills, especially those thought to require "talents" they previously believed they didn't possess.

And it would probably pay to rethink a great deal of medical training. Ericsson has noted that most doctors actually perform worse the longer they are out of medical school. Surgeons, however, are an exception. That's because they are constantly exposed to two key elements of deliberate practice: immediate feedback and specific goal-setting.

The same is not true for, say, a mammographer. When a doctor reads a mammogram, she doesn't know for certain if there is breast cancer or not. She will be able to know only weeks later, from a biopsy, or years later, when no cancer develops. Without meaningful feedback, a doctor's ability actually deteriorates over time. Ericsson suggests a new mode of training. "Imagine a situation where a doctor could diagnose mammograms from old cases and immediately get feedback of the correct diagnosis for each case," he says. "Working in such a learning environment, a doctor might see more different cancers in one day than in a couple of years of normal practice."

If nothing else, the insights of Ericsson and his Expert Performance compatriots can explain the riddle of why so many elite soccer players are born early in the year.

Since youth sports are organized by age bracket, teams inevitably have a cutoff birth date. In the European

youth soccer leagues, the cutoff date is Dec. 31. So when a coach is assessing two players in the same age bracket, one who happened to have been born in January and the other in December, the player born in January is likely to be bigger, stronger, more mature. Guess which player the coach is more likely to pick? He may be mistaking maturity for ability, but he is making his selection nonetheless. And once chosen, those January-born players are the ones who, year after year, receive the training, the deliberate practice and the feedback — to say nothing of the accompanying self-esteem — that will turn them into elites.

This may be bad news if you are a rabid soccer mom or dad whose child was born in the wrong month. But keep practicing: a child conceived on this Sunday in early May would probably be born by next February, giving you a considerably better chance of watching the 2030 World Cup from the family section.

Stephen J. Dubner and Steven D. Levitt are the authors of "Freakonomics: A Rogue Economist Explores the Hidden Side of Everything." More information on the research behind this column is at www.freakonomics.com.

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