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## The Superstar Effect

*From the playing field to the boardroom, when one competitor is clearly the best, the others don't step up their game—they give up. As Tiger Woods returns to golf, Jonah Lehrer looks at the nature of competition.*

By JONAH LEHRER

Competitors playing a match against Bobby Fischer, perhaps the greatest chess player of all time, often came down with a mysterious affliction known as "Fischer-fear." Even fellow grandmasters were vulnerable to the effect, which could manifest itself as flu-like symptoms, migraines and spiking blood pressure. As Boris Spassky, Mr. Fischer's greatest rival, once said: "When you play Bobby, it is not a question of whether you win or lose. It is a question of whether you survive."

Recent research on what is known as the superstar effect demonstrates that such mental collapses aren't limited to chess. While challenging competitions are supposed to bring out our best, these studies demonstrate that when people are forced to compete against a peer who seems far superior, they often don't rise to the challenge. Instead, they give up.

The negative effect of superstars has been most clearly demonstrated in professional golf, which for the last decade has been dominated by Tiger Woods. Next week, Mr. Woods ends his self-imposed exile from the game and returns to the PGA Tour at the Masters Tournament, in Augusta, Ga. It will be his first competition since November, when he won the JBWere Masters in Australia.

According to a paper by Jennifer Brown, an applied macroeconomist at the Kellogg School of Management at Northwestern University, Mr. Woods is such a dominating golfer that his presence in a tournament can make everyone else play significantly worse. Because his competitors expect him to win, they end up losing; success becomes a self-fulfilling prophecy.

Ms. Brown argues that the superstar effect is not just relevant on the golf course. Instead, she suggests that the presence of superstars can be "de-motivating" in a wide variety of competitions, from the sales office to the law firm. "Most people assume that competing against an elite performer makes everyone else step up their game and perform better," Ms. Brown says. "But the Tiger Woods data demonstrate that the opposite can also occur. It doesn't matter if the superstar is an athlete or a corporate vice president. After all, why should we invest a lot of energy in a tournament that we're probably going to lose?"

Ms. Brown discovered the superstar effect by analyzing data from every player in every PGA Tour event from 1999 to 2006. She chose golf for several reasons, from the lack of "confounding team dynamics" to the immaculate statistics kept by the PGA. Most important, however, was the presence of Mr. Woods, who has dominated his sport in a way few others have.

The numbers back up the legend: When Mr. Woods's break from golf began, in November, he had a World Golf Ranking score of 16.169, which was nearly twice the total of the next two players. He has more career major wins than any other active golfer, and has been awarded PGA Player of the Year a record 10 times.

Such domination appears to be deeply intimidating. Whenever Mr. Woods entered a tournament, every other golfer took, on average, 0.8 more strokes. This effect was even observable in the first round, with the presence of Mr. Woods leading to an additional 0.3 strokes among all golfers over the initial 18 holes. While this might sound like an insignificant difference, the average margin between first and second place in PGA Tour events is frequently just a single stroke. Interestingly, the superstar effect also varied depending on the player's position on the leaderboard, with players closer to the lead showing a greater drop-off in performance. Based on this data, Ms. Brown calculated that the "superstar effect" boosted Mr. Woods's PGA earnings by nearly \$5 million.

The analysis is really an investigation into economic tournament theory, which looks at competitive situations in which success is based on relative performance, and not absolute metrics. (It's the difference between a sports game and a standardized test.) Modern management practice assumes that the best way to maximize employee performance is to institute sports-like tournaments, in which people compete directly against each other. Consider, for instance, the competitive structure put in place by former CEO Jack Welch at General Electric. He instituted what became known as the 20-70-10 rule: the top 20% of employees got generous financial bonuses, and the bottom 10% were "managed out."

There is little doubt that, in many situations, such incentive structures lead to motivated employees, working hard for the top spots. But the presence of a superstar can reverse this dynamic, so that instead of trying our best we accept the inevitability of defeat.

According to Ms. Brown, the superstar effect is especially pronounced when the rewards for the competition are "nonlinear," or there is an extra incentive to finish first. (We assume that the superstar will win, so why chase after meaningless scraps?) Just look at golf: Not only does the tournament winner get a disproportionate amount of prize money, but he or she also gets all the glory.

Ms. Brown cites the competition among newly hired associates at a law firm as another example of a nonlinear incentive structure. "The lawyers know that most of them won't be retained," she says. "They either win the competition, or they're let go." The problem with such competitions is that when a superstar is present—when one of the legal associates is perceived as the clear favorite—every other lawyer is less likely to exert maximum effort. Because we assume we're going to lose, we decide to cut our losses, which leads to an overall decrease in employee effort. The cutthroat competition made people less competitive.

The same phenomenon seems to also affect students taking the SAT. In a paper released last year, researchers from the University of Michigan and the University of Haifa compared average SAT scores with the average number of students in test-taking venues in all 50 states, and found that students who took the SAT in larger groups did worse. They concluded that the mere knowledge of their competitors—the sight of all of those other students scratching in their answers in the same room—decreased motivation.

Ms. Brown argues that, unless firms with internal competitions take the superstar effect into account, they might actually end up with the worst possible outcome: Employees who are both unhappy and unmotivated. Sometimes, hiring the best job candidate might not be the best idea.

A little competition can be productive, of course. The relationship between rivals can take curious forms—Ernest Hemingway and F. Scott Fitzgerald were enemies as much as they were friends, but each helped the other's writing. "Rivalry adds so much to the charms of one's conquests," Louisa May Alcott has said.

When it comes to Tiger Woods's superstar effect, loss of motivation may not be the only factor. In fact, one alternative explanation is that golfers play worse against Mr. Woods because they are trying too hard. According to this theory, the mere sight of the superstar makes his competitors especially anxious, since they know that defeating Mr. Woods will require a perfect round. (They also don't want to look bad on national television.) And so they obsess over their swing, determined to not make any embarrassing errors. Unfortunately, such thoughts almost always backfire: We're so worried about hitting the ball straight that we send it careening into the weeds. In other words, we choke.

Sian Beilock, a professor of psychology at the University of Chicago, has helped illuminate the cascade of mental events that lead professional athletes to fall apart on the fairway. She uses golf as her experimental paradigm. When people are learning how to putt, it can seem like a daunting activity: There's just so much to think about. Novice golfers need to hold the putter properly and keep their shoulders square. Then, they have to make sure that they hit the little white ball with a smooth stroke, making contact at the center of the putter head and letting the club move to the inside after impact. For an inexperienced player, a golf putt can seem like an endless checklist of do's and don'ts.

But the mental exertion pays off, at least at first. Ms. Beilock has shown that novices hit better putts when they consciously reflect on their actions. The more time they spend thinking about the putt, the more likely they are to avoid beginner's mistakes and sink the ball in the hole.

A little experience, however, changes everything. After golfers have learned how to putt—once they have memorized the necessary movements—analyzing the stroke is a dangerous waste of time. Ms. Beilock has found, for instance, that when experienced golfers are forced to think about their putts, they hit significantly worse shots. All those conscious thoughts erase their years of practice; the grace of talent disappears. "We bring expert golfers into our lab, we tell them to pay attention to a particular part of their swing, and they just screw up," Ms. Beilock says. "When you are at a high level, your skills become somewhat automated. You don't need to pay attention to every step in what you're doing."

This is what happens when people "choke." Because the performers are nervous, they begin analyzing actions that are best performed on auto-pilot. When playing against Mr. Woods, for instance, golfers might start second-guessing their drive, a skill they've honed through years of practice. Instead of elevating their game to compete with the superstar, his intimidating talent makes them think like a beginner. They regress before the crowd.

And it's not just physical performers who are vulnerable to choking during competition. When students are placed in a high-pressure competition solving difficult math problems—Ms. Beilock offers them cash rewards for winning—they perform significantly worse than students who are told to simply try their best. (The effect is especially pronounced among top performers.) According to Ms. Beilock, the anxiety triggered by the tournament eats up precious mental resources, thus making it harder to come up with the answer. We try harder and do worse.

In the early 1960s, the psychologist Sam Glucksberg demonstrated that the same effect could also inhibit creativity. He gave subjects a standard test of creativity known as the Duncker candle problem. The "high drive" group was told that the person solving the task in the shortest amount of time would receive \$20. The "low drive" group, in contrast, was reassured that their speed didn't matter. Here's where the results get weird: The subjects with an incentive to think quickly took, on average, more than three minutes longer to find the answer. Experiments like this have led Ms. Beilock to conclude that people should be skeptical of evaluations based on a single high-stakes performance.

Competing against a superstar could make people even more likely to choke. "Anything that makes us more aware of superior performance will also make us more aware of our own performance, which can be a bad thing," Ms. Beilock says. "That's why it's always best to sit at the front of the class when taking a hard test. You don't want to start comparing yourself to anybody else."

Regardless of the precise explanation for the superstar effect—are golfers quitting on themselves or thinking too much?—it remains to be seen whether Mr. Woods's all-too-human errors will weaken the superstar effect.

Ms. Brown predicts that the long-term power of the superstar effect will ultimately depend on Tiger's golf performance, and not his marriage. "The effect all but disappears when Woods isn't playing well," Ms. Brown says. "And if he doesn't play well after returning, then it probably won't persist for very long." A superstar, after all, has to continually prove his superstar status. The pressure of that burden might even get to Tiger Woods.

—Jonah Lehrer is the author of "How We Decide" and "Proust Was a Neuroscientist."

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