



## LEARNING TO WIN FROM LOSING

### Why is the learning–performance distinction important?

One day, Michelle Wie might be remembered as one of the greatest golfers of all time. At the age of 14 she was pounding out 300-yard (274 m) drives and not only competing in Ladies Professional (LPGA) Tour events, but also performing quite well in them. Her talent is undeniable. But controversy surrounded this exceptional athlete because of her desire to compete in PGA Tour events, which traditionally have included only male competitors. Wie has performed admirably in some of these events. For example, in the 2004 Sony Open, she shot rounds of 72 and 68 and missed the 36-hole cut by just a single stroke. Her two-round total of 140 placed her in a tie for 80th, which was better than 53 male professionals, including PGA stars Zach Johnson, Hunter Mahan, and Adam Scott. However, Wie has not performed well in most of the other PGA events she has entered, including a 139th-place finish (out of 141 players) at the 2007 Sony Open.

Many argued that Wie should stop competing in PGA Tour events and concentrate her efforts on the LPGA Tour. The typical argument was that her skill development as a golfer was being stalled by repeated failures in PGA Tour events, and that if she concentrated on LPGA events instead, the greater chance for success would escalate her skill development.

I argue that there is a fundamental flaw in this theory, because it falls into a trap known as the learning–performance distinction. The trap underlies one of the most misunderstood concepts in motor learning research, so let's start by defining the two terms. Motor skills researchers use the term *performance* to refer to a single observation. It could be a score or outcome that reflects the value of a single attempt at a motor skill, or perhaps an average score that statistically summarizes a number of attempts. An 18- or 36-hole score, or a final placement ranking in a tournament, might indicate a representative performance score in the case of a golfer. The term *learning* is used quite specifically to refer to a stable improvement in skill over time—an improvement that has specifically occurred as the result of practice. The problem illustrated by the criticisms leveled at Michelle Wie is that the critics fail to consider the difference between performance and learning; they mistakenly confuse her failures to improve her performance in men's PGA events as a failure to learn from these experiences. Let's use another example to illustrate this distinction between performance and learning.

Suppose you like to bowl, play regularly in a league, and also practice occasionally. Two years ago your average was 110, last year it was 120, and this year it is 130. Those averages probably indicate that you have become a better bowler as a result of learning: the scores indicate improvements that appear to be rather stable and that have resulted from practice.

So, does this mean that you will score a 130 the next time you bowl? Not necessarily, because there are many reasons for the fluctuations in scores that occur from game to game. Next time you may score well below your average because you are not feeling well, your shoes are too tight, or the crowd is very noisy that night. But this does not mean that you have suddenly lost some of your learned skill. You may score well above your average because you try extra hard to impress someone, or because everything just seems to be well focused (your *mojo* is working). As before, this does not mean that you have suddenly had a change in learned skill, because there is no indication that the sudden improvement in performance reflects a stable and permanent change in your capability to perform.

At any one time we have a theoretical capability for attaining a certain level of performance. When that theoretical capability changes to a higher level as a result of practice, we can say with confidence that we have learned. The confusion lies in the fact that individual performances may sometimes exceed or not live up to these theoretical capabilities. These fluctuations are expected and in no way diminish or detract from the performer's theoretical capability to perform at a certain skill level.

What I have described is the typical distinction between learning and performance. But, there is another side to this issue, the one that can be applied to Michelle Wie. The issue concerns the situation in which performances do not appear to change, or appear to be getting worse. Does that mean that learning is *not* occurring? Let's go back to the bowling example.

Suppose that this year your average was 120, which is the same as it was last year. You may take the absence of a stable improvement, despite all of your practice, as evidence that your learning has stalled. But, as it turns out, last year your league bowled Tuesday nights, which is your day off. This year you bowl on Wednesday nights, one hour after completing your 10-hour work shift. You are typically tired and hungry on league nights, and your bowling scores suffered this year as a result. What does all this suggest? What is your theoretical capability to bowl, and has this changed from last year, despite the change in your bowling night? Could it be that you actually *have* improved (i.e., learned), but the feeling of fatigue and other factors directly related to your work schedule prevented you from actually performing up to these expectations?

The point here is that making inferences about learning requires evidence that goes beyond a single performance or sometimes even a set of performances. Under what circumstances were these performances observed? Are there mitigating factors that might explain why the theoretical true score differs from the observed score? The absence of any observable

change in performance does not mean that the unobservable (that theoretical capability to perform at a certain level of skill) has not improved.

Michelle Wie took a very different route in the development of her golfing skill. Her decision to compete in PGA events placed enormous pressures on her to perform, and only an exceptional result would have convinced the public that she was benefiting from these extreme challenges. All we could observe were her scores in these events. The unobservable, however, what she has learned by playing in these events, can never be truly understood. I suspect that if she achieves the rank of one of the greatest players of all time, it will be due in no small measure to these experiences competing against the very best golfers in the world.

### **SELF-DIRECTED LEARNING ACTIVITIES**

1. In your own words, explain the distinction between performance and learning.
2. What is the difference between a theoretical true score and an observed score?
3. Suggest a reason a person's observed score might exceed the true score, and a reason the observed score might fail to achieve the level of the true score.
4. Identify another sport, athlete, or situation in which the failure to account for the learning–performance distinction has resulted in an inappropriate conclusion.

### **NOTES**

- Babe Zaharias (see “The Babe”) was the first woman to compete in a men's PGA event.
- Here is a sampling of some of the criticism of Michele Wie's decision to compete in PGA Tour events, from two sports commentary sites:  
[www.tinyurl.com/wiecriticism1](http://www.tinyurl.com/wiecriticism1)  
[www.tinyurl.com/wiecriticism2](http://www.tinyurl.com/wiecriticism2)
- Michelle Wie won her second LPGA Tour title in Winnipeg, Manitoba, at the 2010 CN Canadian Women's Open.

### **SUGGESTED READINGS**

- Schmidt, R.A. (1972). The case against learning and forgetting scores. *Journal of Motor Behavior*, 4, 79-88.
- Schmidt, R.A., & Lee, T.D. (2011). Motor learning concepts and research methods. In *Motor control and learning: A behavioral emphasis* (5th ed., pp. 327-346). Champaign, IL: Human Kinetics.