



CRAPS AND WEIGHTED BATS

What role do perceptual illusions play in sport performance?

In chapter 1 of this book, you read about various illusions that occur when our visual system predisposes us to certain expectations (see “The Magnetic Hill” in chapter 1). A visual illusion in the magnetic hill makes us feel as though our car is coasting uphill. The visual conflict between vision and audition in the McGurk effect makes us hear something that isn’t there. But visual perceptions and expectations are not the only ways we are misled. Illusions of performance are caused by many other factors too.

One of the more curious things you might see on TV occurs during professional golf events. Watch the golfer’s reaction after striking the ball off the tee box area. If the TV camera stays focused on the golfer rather than the ball, you will likely know the ball’s flight direction simply by watching how the golfer leans. If the ball is going to the right of the golfer’s intended target, she will likely lean to the left. If the ball is going left of the target, she will likely lean to the right. But, the golfer no longer has any control over where the ball will go after it has left the club face. So, why behave like that?

As it turns out, this type of behavior is not peculiar to golfers. James Henslin described a similar phenomenon many years ago regarding the behavior of taxi cab drivers, who often spent their free time playing craps. The game of craps is played with two dice, and the goal is simple. If the total of the two dice on the first roll is 7 or 11, then the player scores a “natural” and instantly wins the bet. If the total on the first roll is 2, 3, or 12, then the person has rolled a “craps” and instantly loses the bet. All other totals (4, 5, 6, 8, 9, 10) achieved on the first roll are considered to set the “point,” after which the player rolls the dice again and again until one of two totals occur—a repeat of the point or a 7. The player wins if the point is rolled again but loses if a 7 is rolled first.

It is in this latter situation, when the cab drivers were trying to achieve the point, that Henslin noted something similar to the behavior of professional golfers. He observed that the cab drivers tended to throw the dice harder when trying to achieve a point that was greater than 7 (an 8, 9, or 10) and to throw the dice more softly when trying to achieve a lower sum (4, 5, or 6). The cab drivers also performed ritualistic activities such as talking to the dice before rolling them or snapping their fingers after the roll, just before the dice settled. Although the outcome of rolled dice was entirely due to chance, these highly experienced craps players firmly believed that their behaviors before, during, and after the roll had an influence on the outcome

of the dice. Ellen Langer later called this type of behavior an illusion of control—the tendency to take credit for or apply reasoning to outcomes that are beyond the performer’s control.

Some baseball players use illusions in a very purposeful manner. The term *kinesthetic aftereffect* refers to the sensations that remain after an action has been completed—for example, after a heavy object has been lifted. Try holding a 10-pound (4.5 kg) bag of sugar in your outstretched hand for a period of time. After the weight has been removed, your arm will feel lighter for a short period of time. This phenomenon is why baseball batters waiting their turn to bat warm up with a weight added to their bat. Obviously, the extra mass makes the bat heavier and harder to swing. The batter’s strategy is to remove the weight just before stepping up to the plate so the bat will feel lighter and, presumably, can be swung faster.

To a small degree, the weighted bat strategy works. Research shows that batters perceive their bat speed to be faster after having swung a weighted bat rather than a regular bat or a lighter bat. However, the problem is that the perception is an illusion; the feeling of a faster bat swing is a misperception. In fact, research has found that bat swings are actually slower after swinging a weighted bat compared to regular or lighter bats (Southard & Groomer, 2003).

Are these illusions of performance necessarily a bad thing? Perhaps not. In fact, their true effect may be just the opposite. The golfer who believes she can coax the ball to move back into the fairway may feel as though she has greater control than she actually has. The batter who goes to the plate thinking he has a faster swing after warming up with a weighted bat might gain the mental edge needed for facing a tough pitcher. Maybe these illusions increase the person’s confidence. Another illusion seems to support that contention.

Baseball players sometimes report that when they are on a hot streak, they perceive pitched balls as larger than normal and, hence, easier to hit (see “The Hot Hand” in chapter 4 for more on streaks of performance). Golfers who are riding the effects of a “hot putter” often report that the hole looks larger than normal. Are these anecdotes merely a part of sport lore, or is there some truth to these perceptions? Jessica Witt and her colleagues investigated these questions and found some evidence to support the anecdotes. In one study, Witt and her colleagues asked softball players to pick out the correct size of the softball from a random grouping of ball sizes arranged on a sheet of paper. Her results revealed a positive correlation between recent batting success and the perceived size of the softball—the more successful the recent performance was, the larger the ball appeared to be. These findings were further explored with a group of golfers to see whether or not recent success correlated with the perceived size of the golf hole. Using similar research methods as before, Witt found once again that success was related to perceptions of size, this time in the form of a negative correlation: people who had attained lower scores (fewer strokes) tended to choose larger holes.

Unfortunately, it is not possible to know the answer to the chicken-versus-egg question from these studies. Is success caused by perceiving the ball or hole to be bigger, or is the inflated perception of size caused by recent success? It seems clear from all of the studies mentioned, however, that perceptual illusions, regardless of their origin, play a real and frequent role in sport performance, in terms of either actual performance outcome or the feeling of anticipated outcome.

SELF-DIRECTED LEARNING ACTIVITIES

1. Define *perceptual illusion* in your own words.
2. The behavior of the craps players has also been called superstitious, because there is no evidence that the behavior has any effect on the outcome. Describe two other types of superstitious behaviors that are typically observed in sport performance.
3. Suggest a hypothesis that would explain why a regular bat feels lighter after warming up with a heavier bat.
4. In his qualitative analysis of cab drivers, Henslin observed that craps players appeared to throw the dice harder or softer depending on the points they were trying to achieve. Describe a research methodology you could use to test Henslin's observations under controlled conditions.

NOTES

- Here is a wonderful video of an illusion of control. In the video (an advertisement for the Qantas Wallabies rugby team), the Australian rugby player attempts a penalty kick, which appears to be headed wide, to the left of the uprights. The player, fans, and people watching on TV all try to coax the ball to curve to go through the uprights by leaning to the right. (Thanks to Clare MacMahon for bringing this video to my attention.)

www.tinyurl.com/illusioncontrol

- Games of chance include lotteries, dice, and some card games in which the outcome of the game is entirely based on chance; the player has no influence over the odds of winning. Of course, the outcome of rolled dice can be other than chance if the dice are loaded.
- A faster bat swing gives the hitter more time to pick up information about the flight of the ball, making spatial and temporal predictions more accurate (see "Preventing Penalties and Batting Baseballs").
- Most of Jessica Witt's very interesting research papers are listed here:
www1.psych.purdue.edu/~jkwitt/

SUGGESTED READINGS

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