Why we think the weather affects how a cricket ball swings ... when it doesn't

August 31 2015, by Nick Allum

Swing and a miss. Credit: Anthony Devlin/PA

Following the rollercoaster 2015 Ashes series, which saw England defeat Australia 3-2, the two teams are set to meet again in a series of one-day games – weather permitting, that is. It's been a cloudy and humid summer in much of the UK, and if you believe folklore, that might have

been affecting the games.

In the last Test Match at the Oval, England captain Alastair Cook, unusually for that ground, elected to field first after winning the toss. The Australians subsequently went on to amass nearly 500 runs in their first innings and England lost the game. That no commentator questioned the wisdom of Cook's decision, despite it backfiring in spectacular fashion, is because so many believe that cloudy, humid weather conditions favour swing bowling (where the ball curves in the air after being released by the bowler and before it hits the ground).

At the beginning of the Oval Test Match, television and press pundits were talking about the conditions favouring the bowlers. Cook himself explicitly mentioned the overcast conditions as being a factor in his decision to bowl first in an interview with Channel 5.

The power of the weather

Where does this almost unanimous belief in the power of the weather come from? In part, it comes from potent legends such as that of Australian bowler Bob Massie, who famously took 16 wickets on his Test Match debut at Lords on a day where conditions have been described as "Perfect … humid, the air was heavy and the clouds were oyster in hue." But is there any systematic evidence for the phenomenon beyond this type of compelling anecdote?

It turns out that there is actually rather a lot of scientific evidence that draws on aerodynamic experiments, often using wind tunnels with variable atmospheric conditions. The result? None of it finds support for the idea that humid overcast conditions affect how much the ball swings.

The first scientific study of cricket ball swing was published as long ago as 1955 and a growing body of research has periodically been reported in

mainstream media outlets. There is no reason to think that an increasingly data-driven, professional cricket community is unaware of the evidence. So what accounts for the limpet-like stickiness of this roundly debunked theory?

Perceptions are not what they seem

Part of the reason might simply be lack of information, understanding or the possession of outright misinformation. The idea that humid air is thicker than dry air seems to provide a plausible common-sense explanation for the swing effect. In fact – and counter-intuitively – humid air is less dense than dry air.

A growing body of evidence on "motivated cognition" explains why even when faced with clear scientific evidence, people may not alter their opinions to match the information. Motivated cognition essentially suggests that individuals unconsciously process information in order to derive conclusions that suit their goals or preferences.

Research on motivated cognition has shown how people with different ideologies do not come to the same conclusions on controversial scientific issues such as global warming or vaccination, given the same information. In my own work, I have shown this to be the case for attitudes to prenatal genetic testing.

Why would people want to believe that cloudy days are better for swing bowling? Simply, this is the accepted view of the entire cricket community. To believe otherwise would be to lose credibility with one's in-group.

Imagine the reaction if Alastair Cook had batted first at the Oval on a cloudy, humid day and England had gone on to lose the match. Motivated cognition would suggest that in such cases where the

predicted conditions are not accompanied by curving deliveries, cognitive work in the form of ad hoc explanations will be carried out to preserve the initial belief. Hence we saw commentators during the final Ashes test match suggesting that the bowlers didn't get it quite right on the first morning or that the Australians batted well enough to neutralise the swing.

Paradoxically, the more expert knowledge of cricket someone has, the more these ad hoc rationalisations will convince both themselves and others, based on their deep knowledge of other aspects of the game.

Alternative explanations

Psychological research on the persistence of misinformation suggests that false beliefs are difficult to correct without a plausible causal account to replace the erroneous one. There is little if anything written or discussed in this regard in the media that could capture the imagination of those currently in thrall to the accepted narrative. In reality, there are several hypotheses that appear eminently plausible and that could be advanced as alternative explanations.

The most obvious of these is that if a bowler believes that overcast conditions are conducive to swing, then they will make sure to bowl so as to impart maximum swing when those conditions prevail. In fact this is exactly what Bob Massie said in a radio interview after his spectacular 1972 performance at Lords:

Once I woke up and looked out of the window and saw the greyness there, I knew it was going to be a day that if I, you know, bowled fairly well, I should get wickets because it was one of those tailor-made days for swing bowling.

Another possibility is that, believing that the conditions will favour

swing bowling, swing bowlers in the squad are more likely to be picked in the final team by selectors on the morning of a match and then captains will deploy this type of bowler more often during the period of play when conditions appear to be favourable.

Is there even anything to explain?

But isn't this all jumping a little ahead? What systematic evidence do we have that shows that there is more swing on display under these conditions (irrespective of why it may be)? To the best of this writer's knowledge, there is none. There are only the powerful anecdotes previously mentioned and the firm conviction from those who play and watch the game that the phenomenon is real. Is it therefore possible that there really isn't any observable connection between weather and swing but that psychological illusions are at play?

Nobel prize-winning psychologist Daniel Kahneman and his colleague Amos Tversky showed that the way people think about probability and come to judgements based on evidence is subject to biases that make us rather poor intuitive scientists. Examples such as Massie's test match are vivid and memorable.

Confirmation bias means that we seek out, or retrieve from memory, examples of events that are consistent with our prior beliefs and ignore information that is inconsistent. These two well-documented cognitive biases mean that we are far more likely to recall the instances when the ball swung strongly under cloudy skies than when it behaved in the same way under the blazing sun. To see an illustration, click here.

How to win more often

What should we conclude from all this? If I were England's Director of

Cricket, Andrew Strauss, I would want to know at minimum whether there is any truth to the basic contention that weather affects swing, in order to maximise the advantage gained from the England captain winning the toss.

The English Cricket Board has access to the necessary data from TV and the Hawkeye technology to work this out. If data and science can make the next series an even greater triumph for England than the last, why not embrace it?

This story is published courtesy of The Conversation *(under Creative Commons-Attribution/No derivatives).*

Source: The Conversation