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# Mirror, mirror on the wall – who’s the most successful of them all?

David Díaz, Assistant Professor at the University of Chile and Visitor at the Cambridge Service Alliance has been using machine learning to uncover bias in the way we respond to the shape of people’s faces. This has important implications for businesses when recruiting new employees and supporting their career progression.

Take a look at your face in the mirror. Does it look quite wide? If so – and if you are male – relax. You are destined for great things.

Can you really tell how successful someone is just from the shape of their face? According to a significant body of research going back decades, the answer is yes. In 2011 researchers Elaine Wong and Michael Haselhuhn at the University of Wisconsin-Milwaukee and Margaret Ormiston at London Business School analysed Fortune 500 company executives and found that firms led by men with wider faces (measured by what’s known as the facial width to height ratio or fWHR) had better financial results than firms led by men with lower fWHRs. As far back as 1968 a famous study, *Pygmalion in the Classroom*, by Robert Rosenthal and Lenore Jacobson found that teachers awarded higher grades to students with wider faces regardless of their academic performance.

There is also evidence to suggest that men with greater fWHRs are better negotiators. On the minus side they may also be less trustworthy, less cooperative and more prejudiced. Donald Trump, Bill Clinton and Richard Nixon all have high fWHRs. Just saying.

## What’s going on here?

Wider faces seem to be associated with social assertiveness which may be why we respond more positively to them. In other words, it may not be the features themselves but the fact that people with them behave in a particular, more socially dominant way. And that may be a result of a self-fulfilling prophecy: boys with these kinds of features may be treated as potential leaders from an early age, so that’s how they see themselves, and then so does everyone else.

The other side of the coin is that even if men with narrower faces behave in exactly the same way as their broader-faced counterparts, they are still perceived as being less assertive. In other words, we are biased towards people who look a certain way. Studies have shown that people respond to high fWHR individuals in the same way that they respond to dominant

individuals, regardless of their actual behaviours. In a 2015 paper in the *Annual Review of Psychology*, Princeton University’s Alexander Todorov and colleagues came to the conclusion that: “people tend to neglect other sources of information when they are presented with facial cues...”

## What can machine learning tell us?

fWHR has been a serious field of academic enquiry for many years but until relatively recently it has been limited by the fact that accurately measuring peoples’ faces was a laborious and time-consuming manual task. Enter machine learning and facial recognition software: they have made it possible to analyse the facial profiles of large groups of individuals – and compare that data with success criteria such as academic grades or organisational seniority – at the press of a button.

To test the approach, Díaz and his colleagues ran the facial recognition software across a group of students who were studying business and economics at his university. They found that for those subjects which were examined solely through written tests, the shape of the students’ faces played no part in the outcomes. However, when the course required the students to deliver presentations there was a definite correlation between looks and grades.

## Bad news for women

So far, so worrying. But it gets worse. What works in favour of men appears to work against women. In a further study (still under review) with students, Díaz and his colleagues looked at how students evaluated their lecturers. This wasn’t a small study: more than 4,500 courses were included over a six-year period. The preliminary results are troubling. While the men with shorter, wider faces got higher scores than those with narrower faces, the exact opposite was true for women.

Why might that be? Could it be possible, wondered the researchers, that the more dominant men were actually more effective in the classroom? They scored all the lecturers for



teaching productivity. Their findings rule out any gender differences.

There has been other work showing that the fWHR also predicts outcomes in speed dating. Another explanation they considered, therefore, is that people with a high fWHR might also be perceived as more physically attractive and it's this that's driving the difference in ratings. In order to see if this was the case, the researchers used a programme that scores beauty in men and women. The results again make depressing reading: having a higher score for beauty made no difference to the evaluations of the men's performance but it adversely affected the women's scores. It seems that women – and narrow-faced men – can't win.

But why would a woman with a high fWHR provoke a different response to man with a similar rating. According to Diaz and his colleagues, the results may have something to do with what's known as the 'backlash effect'. A whole host of studies have shown that when women behave in a dominant or assertive way they are not well received. So, if having a wider face is associated with dominance it could mean that those women are being judged negatively for not conforming to gender stereotypes.

This is important stuff. Student evaluations have a direct effect on career prospects and pay packages. We know women remain under represented at the senior level in both business and academia. In a 2019 survey by the American Economic

Association, 48% of women reported being discriminated against as a result of their sex. Course evaluations were a particular area of concern with 47% of women reporting discrimination or unfair treatment in contrast to just 8% of men.

Understanding that the shape of people's faces may determine our responses to them is an invaluable insight for employers and managers everywhere. If there is an unconscious bias in favour of men with high fWHR and against women with the same type of looks – regardless of their behaviours or merit – we need to be made aware of it. By using machine learning to measure large populations, Diaz and his colleagues are helping to expose this bias and, by doing so, make sure that organisations take the necessary steps to challenge it.

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### About the authors

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