

Facial recognition is possible even if part of the face is covered

October 20 2014, by Carolyn Semmler



You don't need to see the whole face to identify someone. Flickr/craig, CC BY-ND

The need to accurately identify people is important for security (and for not embarrassing yourself by hugging strangers). It was cited as the main reason for excluding and restricting the movements of individuals wearing religious head and face coverings in <u>public spaces</u>.



A plan to make Muslim women wearing facial coverings sit in glassed enclosures at Parliament House has been <u>dropped</u> but the question remains: how good are we at identifying people from their facial features?

A large body of psychological research has shown that unfamiliar face matching is <u>error-prone</u>. But does it make a difference if the person we are trying to identify has some features covered?

Identification and facial features

It is obvious that coverings that obscure most of the face, such as the burqa, are likely to be a problem for identification. But coverings such as the headscarf or hijab tend only to hide external features, obscuring face shape, ears and the hair line.

<u>Studies</u> have compared people's ability to match two images of a face when only internal <u>facial features</u> are shown, such as in these <u>images</u>, to when all features are shown.

Results suggest that identification accuracy is increased when only internal features are available - that is, the presence of external features can actually hinder identification. Perhaps we should all wear headscarves to improve identification.

The external features of the face, particularly hair line, can be easily changed and so may not form a good basis for identification. Importantly, <u>recent research</u> shows that faces shown with a headscarf are rated as more similar looking than those without.

This suggests that the headscarf seems to affect perceptions of faces even when people are directed to focus only on the internal features of the face.



Cultural differences in facial recognition

Work by psychologists <u>Ahmed Megreya</u> and <u>Markus Bindemann</u> has also found differences in performance for Westerners (British University students in their studies) and people from Middle Eastern cultures (they looked at Egyptians).

People from cultures where head covering is common actually did better at identifying others both with and without the coverings in place.

This effect has been likened to the cross-race effect, where people are better at identifying individuals from their own racial group. Both effects suggest that our perceptions of identity are heavily determined by our experience.

The implications of this research are that we can improve our ability to identify others from their face. The hard part is working out how.

Other factors have bigger impact

The headscarf is one thing, but what about extreme appearance changes caused by ageing, <u>weight loss</u> or gain and <u>plastic surgery</u>?

Age-related changes in facial appearance are particularly problematic for identification.

Children who are the subject of custody orders or who may be reported as missing can easily go undetected by authorities, because the images possessed by authorities rarely match their appearance.

Despite popular depictions of forensic artists producing accurate "aged" images for identification, there is very little scientific research into the



accuracy of these and other forms of image-based identification. At the moment, research into the impact of ageing on identification accuracy is a major priority.

On the issue of weight loss or gain and plastic surgery, passport officers are trained to pay attention to these factors as potential sources of identification errors. But we have no data to determine whether or not this training is effective.

Refocus from external to internal features

Some researchers have shown that when people focus on internal features during identification tasks they can improve accuracy.

Psychologist Kingsley Fletcher and his colleagues tracked the <u>eye</u> <u>movements</u> of people as they tried to match the identity of unfamiliar faces. They found that focusing on internal features was moderately correlated with identification performance.

But other research has shown that eye movements are highly idiosyncratic and bear no relationship with identification accuracy. To use a well-worn statement, more research is needed.

An even bigger improvement in face-matching accuracy comes from giving people immediate feedback about their decisions. To make an improvement, this feedback needs to point out when a correct decision has been made but also when an incorrect decision has been made and what the decision should have been.

This type of training can improve identification accuracy in people with low aptitude. But we have only a single study that has not been replicated. As yet we don't know how long the improvement lasts.



Given the lack of research, it is certainly not yet time to make recommendations about how we should change the procedures used by security staff.

So citing security as a reason for restricting the wearing of head coverings is not entirely supported by <u>psychological research</u> into face matching. In fact, the data tend to support the opposite conclusion!

But why let a bit of data get in the way of a political view?

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