

Prosopagnosia (Face Blindness)

By Professor Sarah Bate, Senior Lecturer in Psychology, Centre for Face Processing Disorders, Bournemouth University and reviewed by Dr Jessica Fish, School of Health & Wellbeing, University of Glasgow, Dr Flavia Cardini, Senior Lecturer in Psychology, Anglia Ruskin University, Cambridge

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Prosopagnosia and the brain

Prosopagnosia ('face blindness') is characterized by severe difficulties in face recognition. People with the condition cannot recognize the faces of their closest friends and family, and often even their own face. The 'pure' form of the condition means people do not have any other difficulties and they can access all their stored knowledge about a person once they know their name. They can also still recognize objects. However, the pure form of prosopagnosia is very rare. Most people who acquire face recognition difficulties experience other cognitive and visual difficulties alongside this condition. This is because brain injury tends to affect a number of brain regions, not just the specific areas responsible for face processing. When people have prosopagnosia, this is typically, following injury to the occipital and temporal lobes of the brain. A specific region within the temporal lobe (the fusiform gyrus) is known to be particularly involved in face processing.

Patterns of prosopagnosia

The particular pattern of face processing and other cognitive and visual difficulties varies greatly between individuals with prosopagnosia. Many people have problems extracting information other than identity from a face, and may struggle to interpret a person's gender, age or emotional expression. Some people are able to recognise that a face is familiar but not link the key contextual information known about that person to the face. Most people with prosopagnosia also have difficulties recognizing other classes of objects, such as cars, household utensils or garden tools. Many people also experience navigational difficulties alongside prosopagnosia. This can result from visual difficulties in processing angle or distance, or may be caused by poor memory for places and landmarks. Finally, more general visual impairments are frequently observed in people with prosopagnosia, such as the perception of luminance (i.e. brightness), colour, curvature, orientation or contrast.

How do people with prosopagnosia look at faces?

People with prosopagnosia do not see faces in a distorted manner – they still see two eyes above a nose that is above a mouth. However, they find it very difficult to use this information to recognize familiar faces. They lack the ability to put the main facial features (i.e. the eyes, nose and mouth) together in order to see a face as a whole, taking into account not only the shape of the features but also the spatial distances between them.

Research suggests that people with prosopagnosia look at faces in an unusual manner. While typical people look mostly at the inner features of the face (i.e. the eyes, nose and mouth) with a particular focus on the eyes, people with prosopagnosia spend more time looking at the external features of the face (e.g. the hair and ears) and specifically avoid the eye region. As the inner features provide essential information for face recognition, avoidance of these areas suggests that people with prosopagnosia adopt unusual visual strategies when processing faces.

Diagnosis

Prosopagnosia is typically confirmed by taking part in a cognitive assessment. People with face recognition difficulties may be referred to a clinical psychologist or clinical neuropsychologist working within the NHS or other clinical service setting. Alternatively, they may be referred to a researcher who specialises in the field and is based at a nearby university. Researchers often accept self-referrals where the person with prosopagnosia or a parent/guardian contacts them directly, but note that any input will be provided for the purposes of research rather than as part of clinical care.

A typical assessment session consists of a range of tests that assess a person's more general cognitive and visual skills, in addition to their face recognition ability. These more generalized tests are carried out to examine whether any accompanying difficulties in memory, attention or vision may be contributing to the face recognition difficulty or affecting performance on the face recognition tests.

An assessment of intellectual ability may also be carried out to ensure that a person's test scores can be compared against data from people of a similar level of ability.

The assessments are likely to include tests examining the ability to:

- memorise and later recognise a set of faces they have never been seen before
- recognise highly famous faces
- spot similarities and differences between faces that are presented side-by-side
- judge age, gender or emotional expression from a set of faces.

Some tests will be presented on a computer, whereas flip-charts, vision charts and other materials may be used in other assessments.

Treatment

In most people, prosopagnosia is a permanent condition, although some people experience isolated episodes of the condition (e.g. following migraine), after which their face recognition skills return to normal. However, most people's face recognition skills do not spontaneously improve, and there is currently no known cure for the condition. Some researchers are developing training programmes that attempt to improve face recognition skills in prosopagnosia, and while these are unlikely to offer an actual cure for the condition, some published findings suggest regular training with faces may improve recognition to a degree. It may be possible for a person with prosopagnosia to directly contact a researcher to find out if they are eligible to take part in a research programme but be aware that this may not be as part of a clinical service and there will be no guarantees that the treatment will be of benefit.

Living with prosopagnosia

Prosopagnosia can have a significant effect on a person's everyday life, particularly when the condition is acquired after years of living with normal face recognition skills. People with prosopagnosia often worry that they appear rude, unfriendly or simply uninterested in others when they fail to recognize a person.

People who do not have prosopagnosia can also find the condition difficult to understand. Face recognition appears to be such an automatic process that many people cannot imagine that it is even *possible* to experience difficulties with this skill. Although many people with prosopagnosia cope well with the condition, others may actively avoid social situations and experience social anxiety and reduced self-confidence.

Many people with prosopagnosia report the use of compensatory strategies that help them either to identify people or to disguise their recognition difficulty, and some have found it useful to share their experiences with others. Often, people with prosopagnosia are able to identify familiar individuals when they are encountered within expected situations by putting together cues from a person's non-facial appearance with contextual information. For instance, they might be able to say that the person operating the till at the local shop is Penny, the woman with very long hair that works in the shop every Saturday. However, when they unexpectedly bump into Penny when walking in the park, it may be much more difficult to identify her, even when her hair is styled as normal. Indeed, compensatory strategies based on appearance and contextual cues do not always work and may break down when a familiar person is met in an unexpected location or changes something about their appearance.

Some people with prosopagnosia describe more elaborate compensatory strategies, and may recognize others using accessories such as shoes, jewellery or handbags. Others try to avoid embarrassing situations where they fail to recognize people by ensuring that they are always the first person to arrive for a meeting (so the other person has to find them and not vice versa), by never using anyone's name in case they have misidentified the person, and by saying 'hello' to everyone in case they are a familiar person.

Many people with prosopagnosia find that being upfront can help them overcome the initial social awkwardness that results from not recognising someone they know. They may, for example, develop a short explanation (e.g. 'I have a condition that means I can't recognise faces'), and use this alongside a specific request (e.g. 'could you please tell me your name?'). A phrase to pre-empt any offense that might be caused may also be useful for some (e.g. 'please don't be offended if I seem to ignore you'). If you have prosopagnosia and think this will feel difficult and/or awkward, you could practice initially with people or professionals you are close, as this will help their confidence grow. It will eventually feel more natural and will likely be a good tool to help you advocate for yourself and manage your condition effectively. Another simple but highly effective solution in regular group scenarios is for people to wear name badges.

Support for people with prosopagnosia

If you are struggling to cope or feeling socially isolated through prosopagnosia you may want to seek support and information.

- Some memory clinics and other groups for people with brain injuries may provide support and advice about living with this condition.
- Encephalitis International (www.encephalitis.info) runs a Connection scheme, putting people with similar experiences in touch so they can get mutual support and share coping strategies. You can access the Connection scheme at <https://www.encephalitis.info/connection-scheme> .
- You can read a personal account of what it is like to live with prosopagnosia in the following chapter: Wilson, B.A. and Claire, (2013), "A face is not a person" in B.A. Wilson, J. Winegardner & F. Ashworth (Eds). *Life after brain injury; Survivors' Stories*. Hove: Psychology Press.

Conclusion

While prosopagnosia can present as a 'pure' disorder where a person experiences difficulties with face recognition only, it occurs much more frequently alongside other cognitive and visual symptoms following brain injury. Some people with prosopagnosia may experience anxiety and withdraw from social situations, but can learn to cope well in everyday life by developing strategies to help them identify people, and by talking to people about the condition and its impact on social behaviour.

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Encephalitis International, 32 Castlegate, Malton, North Yorkshire, YO17 7DT, UK

Administration: +44 (0) 1653 692 583 Support: +44 (0) 1653 699599

Email: mail@encephalitis.info Website: www.encephalitis.info

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