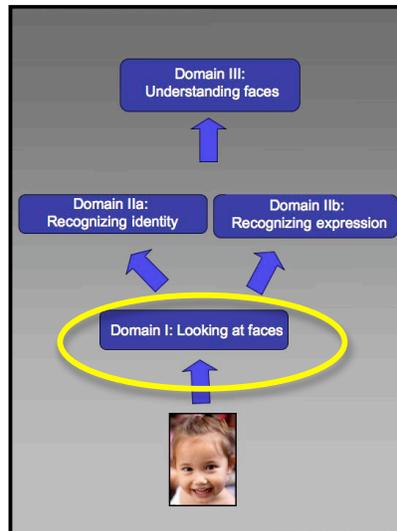


Domain I Attention to Faces



Before we can infer social cues, or even expression or emotion from a person's face, we of course need to initially look at their face. That is, in order to utilize someone's face for the dynamic social tool that it is, we first need to be paying attention! For the majority of us this first stage in facial processing is so basic and fundamental that it is easily overlooked. When viewing a photograph or painting, our eyes usually travel first and most frequently to the faces in the picture. Few people can recall from memory, for example, the landscape in the background behind the Mona Lisa or the cut of van Gogh's suit. However, individuals with autism tend to avoid faces, often preferentially attending to non-face objects instead⁽⁵⁶⁾. Because attention to faces is the groundwork in facial recognition, it serves as the foundation of the Hierarchical Face Processing Model.



Attention and Memory

From an early age humans regard faces as special and distinct from other objects in our environment. Fantz⁽¹⁵⁾ found that 3- and 6-month-old infants look longer at face-like stimuli than non-face stimuli. The results of this study cannot lead us to the conclusion that face preference is innate or biologically hardwired because a vast amount of learning takes place in these first months of life. However, when coupled with the findings of Morton and Johnson's (1991) study⁽⁴¹⁾, the biological position is strengthened. The results of this study found that newborns, a mere 30



minutes old, preferentially oriented to face stimuli over non-face stimuli. Given that 30 minutes is not enough time to for a significant amount of learning to occur, the results of this study suggest that humans are born with an innate preference for faces.

Children with autism do not show this preference for faces. While typically developing children seem to be automatically drawn to face stimuli, children with autism are comparatively uninterested in a person's face. A retrospective study reviewed videotapes depicting the first birthday



parties of children with autism and typically developing children⁽⁴⁴⁾. The experimenters blindly coded the child's interactions for social, affective, and communicative behaviors. The videotapes showed that children who were subsequently diagnosed with autism spent significantly less time looking at people's faces during the party than the control children. Thus, it appears that by the first year of life, children with autism are less engaged by faces than typically developing children.



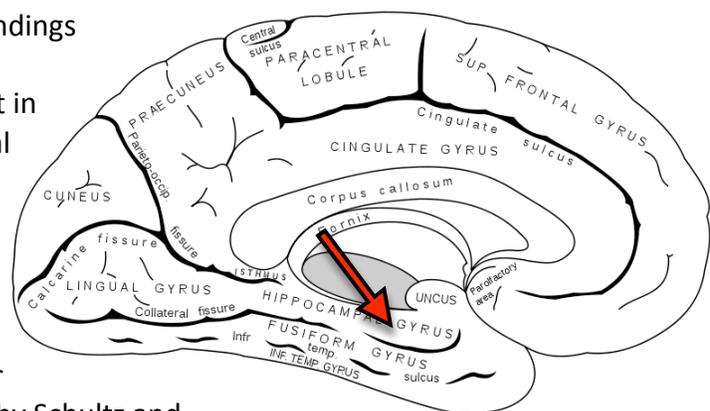
Did You Know?

A preference for attending to faces appears to be partially innate. Studies have shown that newborns, as early as 30 minutes old, prefer to look at faces instead of non-face objects. Children with autism do not show this same preference for faces.

When looking at memory for face and non-face objects, individuals with autism do not differ from IQ-matched control participants in their ability to remember animate (e.g., horses, motorcycles) or inanimate objects (e.g., buildings). ASD individuals do, however, perform below control participants in their ability to remember faces⁽⁵⁾. Thus, ASD children are specifically impaired in their memory for faces.

Neurological

In addition to the research findings outlined above, there is neurological evidence supporting a specific deficit in Domain I of face processing. A typical human brain shows significant activity in the fusiform gyrus when activated by face stimuli relative to stimuli of other common objects. Thus, the fusiform gyrus may be thought of as the 'face region' of our brain. Recently, a study undertaken by Schultz and



colleagues (2000) reported that when a group of adolescents with Asperger's Syndrome viewed pictures of faces, there was actually a *reduction* in activity in the face region of the brain relative to other non-face objects⁽⁵²⁾. Interestingly, when the Asperger's group viewed face stimuli, the inferior temporal gyrus was more activated than the face area. In normal populations, this brain region is associated with object recognition. Thus, when an individual with autism looks at a face, the 'object region' of the brain becomes more active than the 'face region'. This curious finding may suggest that faces are perceived by people with autism to be static non- social objects, instead of entities of social agency.

Quick Summary!



The Fusiform Gyrus is said to be the "face region" of the brain because it becomes activated when activated by face related stimuli (e.g. pictures of faces instead of pictures of objects). In a recent study, adolescents with Asperger's showed a reduction of activity in this area when viewing face stimuli. However, the Inferior Temporal Gyrus, which is normally associated with object recognition, became activated instead. This evidence suggests that individuals with autism may be using the "object recognition" area of the brain to process faces.

In conclusion, faces fail to achieve privileged status in the perceptions or memories of children with autism. There is evidence that this deficit begins at the neurological level, however the origin remains unknown. Do children with autism lack attention to faces because the face region of their brain is underdeveloped? Or is this region in an inactive state because they have no interest in faces and thus fail to exercise the face region of their brain? *LFI!* assumes the position that individuals with autism neurologically have the ability to attend to faces, but for unknown reasons fail to do so. Thus, the Domain I *Let's Face It!* computer and hands-on activities will attempt to 'exercise' the face region of the brain.

