

## Discuss the claim that perception is largely an innate ability

Visual perception is a complex network of abilities that includes the perception of depth, shape and movement. Whether these abilities are present from birth (nature) or develop through experience (nurture) has been one of psychology's most enduring debates.

Nativists argue that we're born able to perceive the world in particular ways, with little or no learning necessary. These abilities may take time to appear, but they do so through the genetically determined process of maturation. Empiricists, however, believe that our perceptual abilities develop through learning and experience. For instance, Locke (1690) described a newborn baby as a blank state or *tabula rasa*, ready for experience to write itself in. Most psychologists reject these extreme viewpoints in favour of an interactionist position. They believe that while we may be born with certain capacities, environmental influences are crucial for determining how and even whether these capacities actually develop.

Investigating the perceptual abilities of neonates is the most straightforward way of investigating this nature–nurture debate. In general, the earlier a particular ability appears, the more likely it is to be under the influence of genetic factors. But the fact that it develops some time after birth doesn't necessarily mean it's been learnt: it could just take time to mature. There are several research methods that can be used to study neonate and infant perception. These methods include the spontaneous visual preference technique (or preferential looking), infant sucking rate, habituation, conditioned head rotation and physiological measures including the measure of electrical activity in the infant's brain in response to different stimuli.

The human face combines complexity, pattern and movement, all of which babies appear to innately prefer. This inborn attraction to faces makes the baby seem interested in its caregivers, thereby encouraging them to provide the care it needs. This could therefore be seen as evolutionarily determined attachment behaviour. This question, of whether there is innate perceptual knowledge of a face as a face, has been addressed by Fantz (1961) in an attempt to resolve this nature–nurture debate.

Fantz's experiment involved presenting babies aged between four days and six months with three stimuli, each a black stimulus the approximate shape and size of an adult's head, presented against a pink background. Fantz found that the babies preferred to look at the schematic representation of a face more than the scrambled face or control face. Fantz concluded that 'There is an unlearned, primitive meaning in the form perception of infants'. However, Hershenson *et al.* (1965) criticised Fantz's research suggesting that the complexity of the stimuli accounted for the baby's attention. When the experiment was repeated with the complexity of the stimuli controlled for, they found no preference for any of the three stimuli, so they concluded that a preference for real faces isn't innate and doesn't appear until about four months of age.

Furthermore, Meltzoff & Moore (1977) suggested that infants must have some kind of inbuilt map of their face, as infants as young as two and three weeks old could imitate facial expressions. Also babies as young as 12–36 hours old display a clear preference for their mother's face over a female stranger's when variables such as overall brightness and hair colour are controlled.

Another area of perception that has been consistently studied in connection with this debate is that of depth perception. By using their visual cliff apparatus, Gibson & Walk (1960) found that most babies aged between six and fourteen months wouldn't crawl onto the deep side when beckoned by their mothers. This was interpreted as indicating that neonates have the innate ability to perceive depth. However, the nature of the visual cliff apparatus requires that the baby should crawl, meaning that the babies used in this experiment were of six months old and above. The empiricist's explanation of Gibson and Walk's findings would therefore be that the babies had learned to perceive depth during their first six months. To counter these criticisms, Gibson and Walk subsequently tested a number of members of precocial species, such as chicks, goat kids and lambs. None would venture onto the deep side.

Depth perception has also been studied by looking at how neonates react when an object approaches their faces from a distance. For example, if a large box is moved towards a 20-day-old neonate's face, it shows an integrated avoidance response, by covering its face, even crying. This suggests that the infant understands the potential harm of the approaching box. Interestingly though, this response occurs even with one eye closed, but not when equivalent pictures are shown on a screen. This indicates that motion parallax is the critical cue for distance.

This integrated avoidance response shown by the neonates further suggests that as well as perceiving depth they see boxes as solid, 3-D objects. To explore this proposal, Bower (1979) devised a piece of apparatus that creates illusions of 3-D objects. The findings of Bower's experiment illustrate that none of the babies showed any surprise when they grasped a real and solid object. But when they reached for the apparent object and discovered there was nothing to get hold of, they all expressed surprise and some were even distressed. This indicates that they expected to be able to touch what they could see, an ability Bower believed to be innate.

As well as that conducted on infants and neonates, research into the nature-nurture debate on perceptual development comes from a series of cross-cultural studies. This follows the belief that if perception was indeed an innate trait, then performance on any perceptual task would be universal. However, if performance was found to vary from culture to culture, then the conclusion would be that perception is the result of our cultural environment or nurture.

Segall *et al.*'s (1963) carpentered world hypothesis suggests that people in Western culture interpret illusions, which are 2-D drawings, in terms of their past experience. This, in the case of Western cultures, is a world of the straight lines and right angles of our formal 'built' environment. Therefore in our Western carpentered world we add a third dimension (depth) which isn't actually present in our drawings. Jahoda (1966) compared the Lobi and Dagomba tribes of Ghana, who lived in open parkland in round huts, with the Ashanti, who lived in dense forest in roughly rectangular huts. However, the prediction that the Lobi and Dagomba would be significantly more susceptible to the horizontal-vertical illusion, while the Ashanti would be significantly more susceptible to the Müller-Lyer, wasn't supported.

The generally accepted conclusion in response to the nature-nurture argument of perception is that some of our perceptual abilities are present at birth, while others develop later. Our perceptual development after birth is the result of a complex interaction between genetic/maturational and environmental/experiential influences.