Free report on sensory perception accuracy and fallability

Religion, Bible

Sensory perception: Accuracy & fallability

Sensory perception in human beings is far from being perfect. Human eye cannot see beyond the rainbow spectrum of colours (VIBGYOR), even though they are capable of discerning a single colour from several millions of them arranged together. The ear is capable of picking up sounds at frequencies of twenty thousand cycles per second, but that doesn't mean there aren't sounds at higher frequencies. Unlike some animals, we cannot sense electric or magnetic fields in our surroundings, but in addition to the five traditional senses, we can also motion and balance, temperature and the relative position of the parts of our body. So before one can go into the reliability or the unreliability of sensory perception, it is important to understand how senses work in way we interact with the environment around us.

In sensorimotor studies, for example, senses are understood as tools to accommodate motion. When a human being is performing a certain task, say moving the pen, the brain issues a prediction about the pen's weight, its identity in form of colour and shape and even the distance between one point and other that you wish to move it. But when the actual task is occurring, the brain receives new sensory information which may or may not be the same as the prediction that had been made. The pen might turn out to be heavier or its colour might not be blue like your brain remembers. Immediately, the sensory information is passed to the brain, but the brain, instead of taking the information as it is, again makes a prediction about say, how it will feel when you put this heavier pen down. In effect the brain simulates sensory information based on prior experience, memory and beliefs as to the output of the task.

Fig 1: Sensory simulation process in the brain

Brains have a distinct way of understanding sensory information in that it is associated with the reason or purpose that the individual is trying to fulfil at any particular point of time. This is called ‘ conditioning’ and it could be social, behavioural or even cultural. For example, the senses of a death metal fan entering an old dilapidated church might see the colour black stand out among all other decorations and associate the musty smell with goth culture. The reason that his senses may not pick up the innate carvings on pillars or the residual smell of incense will be because his brain has already simulated the sensations he is going to receive, namely black and mustiness and that is what he will recognise. But a human’s sense of smell is indeed capable of recognising a single molecule of coffee or incense in thousand other molecules (Kirby & Goodpaster, 2007). But is it reliable in a conditioned social environment? Maybe not so much.

Below are three reasons why human sensory perception is fallible under occasion:

a. All sensory information is riddled with noise at the time brain receives it. This is because at any particular instance, the senses are picking up sound, sight, temperature or touch, smells, etc. that are not just related to the imminent task, but are in the overall environment one is located in. For example, when you are typing on computer, the eye is also seeing beyond the monitor at the flower pot on the desk.

b. Conditioning is universal to humans and animals. As Kirby and Goodpaster would put it, ‘ limited biologically, we see the superficial; corralled by custom, we see the habitual; and blinded by language, we see the general.’

c. As humans we are dependent on machines, whether it is to tell us what the temperature is or whether there is smoke in the building or even to figure out the distance between two points in our line of vision. We limit the use of our own senses to make judgements on an everyday basis.

But it is also important to note that the senses, by themselves are powerful and they can be sharpened to astounding levels by conscious practice. Interestingly, it has been noted that the Sensory Motor Rhythm (SMR) in the brain (electromagnetic brain waves) is more pronounced with stronger amplitudes when the body is idle, i. e. when there is no imminent task at hand. But when a task is being performed, the amplitude of SMR, namely brain activity corresponding to sensory input and motion actually falls (Niedermeyer & da Silva, 1993). The accuracy of sensory data is dependent on attentiveness (or awareness) - the more you concentrate, the more accurate is the data bound to be; expressing the new sensory information received - the more frequently you describe new feelings or senses, the more acute sensory information will be in the future; and the care given to sense organs or the body itself - when a person catches cold, for example, his sense of smell will diminish, straining the eyes by prolonged use of computer will diminish vision capacity.

In conclusion, sensory information must be taken as and when it comes and the predictions made by brain due to conditioning should be limited to practical applications. For eg. It is ok to be a tennis player who is trying to understand where the ball will strike based on the moments of the other player, but it is not ok to perceive only bad smell on a homeless person or taking arrangement and garnishing into account before tasting the food. The

human senses, if given a chance, can raise to levels more acute and accurate than one can imagine.

References

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