Internal and external factors in relation to sensation

There are many internal and external factors in relation to sensation and perception. Sensation and perception blend together so completely that they are difficult to separate, for the stimulation we receive through our sense organs is instantaneously organized and transformed into the experiences that we refer to as perceptions (Passer & Smith, 2008). Sensation can be defined as the stimulus detection process by which our sense organs respond to and translate environmental stimuli into nerve impulses that are sent to the brain (Feldman, 2005). Perception is making " sense" of what our senses tell us this is the active process of organizing stimulus input and giving it meaning (Mather, 2006). The study of the relationship between the physical aspects of stimuli and our psychological experience of them is called psychophysics (Mather, 2006). In this essay it will be discussed how the sensory system is combined and used to influence how we behave in the world and how this is linked to perceptual decision making. In addition, this essay will discuss the differences in perceptual functioning that can be linked to gender. Furthermore, this essay will explore a set of perceptual abilities based upon the common views of life span development. Finally, it will be discussed in detail the perceptual differences that result form cultural differences . Having considered the evidence, this essay will conclude that there are many internal and external factors involved in sensation and perception.

The process by which information that is gathered from sensory systems is combined and used to influence how we behave in the world is referred to as perceptual decision making. Perceptual decision making is influenced not only by the sensory information at hand, but also by factors such as attention, task difficulty, the prior probability of the occurrence of an event and the outcome of the decision (Heekeren, Marrett & Ungerleider, 2008). Although traditional psychological theories conjecture that the decision-making process consists of components that act in a hierarchical manner, with serial progression from perception to action, more recent neuro-scientific findings indicate that some of the components of this process happen in parallel (Heekeren et al., 2008). The neural architecture for perceptual decision making can be viewed as a system that consists of four distinct but interacting processing modules (Heekeren et al., 2008). The first accumulates and compares sensory evidence; the second detects perceptual uncertainty or difficulty and signals when more intentional resources are required to process a task accurately; the third represents decision variables and includes motor and pre-motor structures; and the fourth is involved in performance monitoring, which detects when errors occur and when decision strategies need to be adjusted to maximize performance (Heekeren et al., 2008). Perceptual decision making effects all aspects of a person's sensation and perception, one of the factors is gender.

A huge number of experiments have been conducted to investigate differences in perceptual functions that can be linked to gender. Baker's (1987) extensive review found a female advantage in many functions, including tone sensitivity, taste sensitivity, odor recognition and touch acuity. Males performed better in tests of spatial vision (Mather, 2009). It is very important to note that scores varied from one individual to the next even within each sex. Although the scores of men and women may be different, this sex difference is usually small relative to the variability of scores within each sex. Female performance exceeded male performance in hearing, odour identification and touch. Although, mental rotation was the largest gender difference with males scoring the higher score (Mather, 2009). Sex differences have also been reported for many aspects of cognition. The largest female advantage occurs in tests of verbal ability, such as speed of articulation, fluency and accuracy of speech production. As in the case of the male advantage in spatial ability, the difference between the sexes is relatively small compared with variability within genders (Baker, 1987). There has been a great deal of debate concerning the origin of sex differences in performance, no doubt partly fuelled by socio-political issues. Some favour an explanation in terms of differences in experience and socialization between males and females (Giddens, 2001). Others favour an explanation based on biological differences between male and female brains. Both factors are likely to be important, though their relative weight may vary with different aspects of performance. At least in the case of sex differences in spatial ability, evidence favours a biological explanation (Mather, 2009). Evolutionary pressure may have led to a gender difference in spatial ability. According to this argument, ancestral males who were best at navigation would have been the most successful hunters, and would have encountered more potential mates (Mather, 2009). In addition to gender factors in sensation and perception, age is also a factor in relation to sensation and perception.

Throughout life our interactions with the environment rely on veridical information about the outside world. In the very beginning we possess only an elementary set of perceptual abilities (Feldman, 2005). In early life this rudimentary set becomes refined by maturation and by our interaction with the environment until our perceptual capacities reach its highest level of sophistication in early adulthood (Feldman, 2005). However, soon after the zenith human visual information processing starts to be affected by aging. This pattern of performance is in accord with common views of the life span development of basic information-processing mechanisms as an inverted U-shaped pattern of rise and fall (Feldman, 2005). In a study on perceptual identification across the lifespan: a dissociation of early gains and late losses done by Waszak, Schneider, Shu-Chen and Hommel, results showed that perceptual abilities increased during childhood and adolescence and decreased during early and late adulthood (Waszak, Schneider, Shu-Chen, & Hommel, 2009). The findings were consistent with the common finding that cognitive performance across a lifespan follows and inverted U-shaped function. On both ends of the lifespan, information processing approaches have related changes in performance in a number of tasks, from simple sensory-motor to more cognitive tasks, to a reduction /increase of neural noise in the sensory-motor system (Waszak et al., 2009). The change of the signal-to-noise ratio during childhood has been attributed to the progressive sheathing of nerve fibres in the central nervous system. Such an enhancement of the sheathing of nerve fibres is expected to influence all aspects of sensory-motor behaviour alike (Waszak., 2009). At the other end of the lifespan, there is evidence that the effect of anatomical neuronal loss is rather small during normal aging and that, accordingly, cognitive and sensory-motor deficits are more likely to be due to neuro-chemical shifts in relatively intact neural networks (Waszak et al., 2009). Even though life span development is an aspect, cultural experiences influence perceptual abilities.

As far as it’s known, humans come into the world with the same perceptual abilities regardless of where they are born. From that point on, however, the culture they grow up in helps determine the kinds of perceptual learning experiences they have (Posner & Rothbart, 2007). Cross-cultural research can help identify which aspects of perception occur in all people, regardless of their culture, as well as perceptual differences that result from cultural experiences (Posner & Rothbart, 2007). Although there are far more perceptual similarities than differences among the people of the world, the differences that do exist show us that perception can indeed be influenced by experience. Cultural learning affects perceptions of tastes, odours, and textures as strongly influenced by our cultural experiences. A taste that might produce nausea in one culture may be considered delicious in another (Posner & Rothbart, 2007). The taste and gritty texture experienced when chewing a large raw insect or the rubbery texture of a fish eye may appeal far less to you than it would to a person from a culture in which that food is a staple (Posner & Rothbart, 2007). Data from cross-cultural studies have claimed by some to support the conclusion that perception is influenced by culture. However, much of the evidence is either weak or subject to alternative interpretations (Werker & Desjardins, 1995). A rare piece of convincing evidence in favour of cultural effects comes from Werker and collegues, who studied phoneme discrimination (Werker & Desjardins, 1995). They and others have found that infants younger than twelve months old are able to discriminate phonemes from all of the world’s languages, whereas older infants and adults cannot discriminate some phonemes not used in their native language (Werker & Desjardins, 1995).

The ecological approach to perception focuses on how perception occurs in the environment by emphasising the moving observer, this is how perception occurs as a person is moving through the environment and identifying information in the environment that the moving observer uses for perception (Goldstein, 2010). One source of the information for perception that occurs as you move in optic flow, this is the movement of elements in a scene relative to the observer (Goldstein, 2010). Optic flow has two characteristics: the flow is more rapid near the moving observer and there is no flow. Optic flow provides information about where a moving object is heading. But do the observers actually use this information in everyday life? Research on whether people use flow information has asked observer’s to make judgements regarding their heading based on a computerised program with displays of moving dots that create an optic flow stimulus of flying a plane, where he or she would be heading relative to a reference point (Goldstein, 2010). Observers viewing stimuli such as this can judge where they are heading relative to the landing point to within about 0. 5 to 1 degree (Goldstein, 2010). Having good senses and perceptual thinking is important when navigating in the environment.

As discussed in this essay, there are many internal and external factors in relation to sensation and perception. Sensations and perceptions do blend together so completely that they are difficult to separate. Perceptual decision making is influenced not only by the sensory information at hand, but also by factors such as attention, task difficulty, the prior probability of the occurrence of an event and the outcome of the decision. Large numbers of experiments have been carried out to investigate differences in perceptual functions that can be linked to gender, these were conducted by M Baker, it was found although there were differences amongst males and females regarding differences in experience and socio-political issues. The basic information-processing mechanisms of life span development is in a inverted U-shaped pattern of rise and fall, this is refined by maturation and by our interaction with the environment until our perceptual capacities reach its highest level of sophistication in early adulthood. The environmental approach to perception focused on how perception occurs in the environment by emphasising the optic flow. Internal and external factors are a major aspect of sensation and perception and this helps everyone to evaluate what they see, hear, touch, smell and taste and also how they interpret these senses.