

A very warm welcome to you dear students for this module on child psychology, the subject is psychology and we are doing semester one. The course code is PSG 101. The title of the unit is Unit 2, infancy and toddlerhood, and in this module we're going to study sensory development. The module number is 8.

The outline of today's session is, visual perception, hearing, touch, and pain, smell, taste, intermodal perception.

By the end of this lecture, you should be able to differentiate between sensation and perception. Describe visual perception in infancy and toddlerhood. Examine the development of other senses that are hearing, touch, and pain, smell taste in infancy and toddlerhood, so let's start.

What is sensation? Sensation occurs when information interacts with sensory receptors. Now the sensory receptors are our eyes, ears, tongue, nostrils, skin etc. The sensation of hearing for example, occurs when waves of pulsating air are collected by the outer ear and transmitted through the bones of the inner ear through the auditory nerve.

The sensation of vision, on the other hand, occurs when rays of light contact the eyes and become focused on the retina and are transmitted by the optic nerve to the visual centers of the brain.

Now, perception is the interpretation of what is sensed. So the airwaves that contacted the ear might be interpreted as noise or as music. The physical energy transmitted to the retina of the eye becomes interpreted as a particular color, pattern, or shape depending on how it is perceived.

Now we will do visual perception. There are some very important changes that take place with age and can be traced to differences in how the eye itself functions overtime. For example, changes in the eye function influence how clearly we can see an object, whether we can differentiate colors, etc.

Visual acuity. A newborn perceives a world with some order. At birth, the nerves and muscles and the lenses of the eye are still developing. As a result, newborns cannot see small things that are far away.

The newborn's vision is estimated to be 20 by 240 on the wellknown Snellen chart that is used for eye examination, which means that a newborn can see at 20 feet only as much as an adult would see at 240 feet. By six months of age, on average, the vision improves to about 20 by 40.

Face perception. Infants show interest in human faces soon after birth. Infants spent more time looking at their mother's face than a stranger's face as early as 12 hours after being born. By three months of age, infants match voices to faces, they can distinguish between male and female faces, and discriminate between faces of their own ethnic group and those of other ethnic groups.

As infants develop, they change the way they gather information from the visual world, including human faces. From three to nine months of age, infants gradually begin focusing their attention more on the faces of the characters in the animated film and less on the background stimuli

Pattern perception. Young infants can perceive certain patterns. Now if you look at this picture, you can see the looking Chamber. This was developed by Robert Fantz in 1963. And through this he revealed that even two to three year old infants prefer to look at a patterned display rather than a non-pattern display. For example, they preferred to look at a human face rather than one with scrambled features. They prefer to look at a bullseye target or black and white stripes rather than a plain circle.

Color vision. The infant's color vision also improves overtime. By 8 weeks and possibly as early as four weeks, infants can discriminate between some colors. By four months of age they have color preference that mirrors those of adults in some cases, preferring saturated colors such as royal blue over pale blue, for example. That is why you find children's toys in colors like blue, yellow, green, etc.

A study also found that four to five month old infants looked longest at reddish hues and shortest at greenish hues. However, experience is also necessary for vision to develop normally.

Perceptual Constancy. Some perceptual accomplishments are especially intriguing because they indicate that an infant's perception goes beyond the information provided by the senses, and this is the case of perceptual constancy, in which sensory stimulation is changing, but perception of the physical world remains constant. If infants did not develop perceptual constancy, each time they saw an object at a different distance or in a different orientation, they would perceive it as a different object. Thus, the development of perceptual constancy allows infants to perceive their world as stable.

Now there are two types of perceptual constancy: size constancy and shape constancy.

Size constancy is the recognition that an object remains the same even though the retinal image of the object changes as you move from one object to the other. At three months of age, infants show size constancy. Size constancy continues to develop until 10 or 11 years of age.

Shape constancy, shape constancy is the recognition that an object remains the same shape even though its orientation to us changes. At three months of age, infants have shape constancy. But of irregularly shaped objects they do not have shape. Constancy of irregular shaped objects, like for example, a tiled roof, tilted plane where things are irregularly shaped, they will not be able to have shape constancy.

Perception of occluded objects, in the first two months of postnatal development infants don't perceive occluded objects as complete, instead only perceiving what is visible. Beginning at about two months of age, infants develop the ability to perceive that occluded objects as whole.

Infants develop the ability to track briefly occluded objects at about 3 to five months of age. One study explored 5 to 9 month old infants ability to track moving objects that disappeared gradually behind an

occluded partition, disappeared abruptly, or imploded, that is, they shrank quickly in size. In this study, the infants were more likely to accurately predict the path of the moving object when it disappeared gradually, than when it disappeared abruptly or imploded.

Depth perception. Now if you look at the picture depth

perception, that was created by Eleanor Gibson and Richard Walk in 1960. Now what they did is they constructed a miniature cliff with a drop off that's covered by glass. Now what did Eleanor Gibson and Richard Walk do? They placed infants on the edge of a visual cliff and had their mothers coax them to crawl onto the glass. Now you can see a hand which is of the mother coaxing the infant to crawl towards her. Most infants would not crawl onto the glass, choosing instead to remain on the shallow side, an indication that they could perceive depth.

However, a lot of critics have pointed out that the visual cliff is likely to be a better test of social referencing and fear of heights rather than depth perception.

Hearing during the last two months of pregnancy, fetuses can hear sounds of their mother's voice. They can hear music, they can hear voices talking. They are able to recognize voices.

An fMRI study that is a functional magnetic resonance image study assessed fetal brain responses to auditory stimuli. Confirming that fetuses can hear at 33 to 34 weeks of gestation.

Changes in hearing during infancy.

Loudness immediately after birth. Infants cannot hear soft sounds. That is, they cannot hear a whisper. Infants are less sensitive to a pitch of a sound as compared to that of an adult. Newborns can determine the gender location through which the sound is coming in.

Touch and pain. Newborns respond to touch. If you touch an infant's cheek, they turn to that side. So newborns can respond to touch right at birth.

Newborns can also feel pain. A lot of research was done initially, which indicated that newborns do not experience pain. For example, newborns a few days old were circumcised without anesthesia. Today, newborns are circumcised with some kind of anesthesia. Earlier anesthesia was not given to newborns because of the harmful effects of anesthesia on newborn

Smell, newborns can differentiate between odors, they like the way vanilla and strawberry smell, but do not like the way rotten eggs and fish smell. They make a face or scrunching face to indicate that they don't like the smell. Six days old infants who are breastfed showed a preference to the mothers breast pad as compared to a two day old infant who did not show, indicating that smell is learned over a period of time.

Taste, the sensitivity towards taste is present even before birth. At only two hours of age, infants made expressions, facial expressions when they tasted sweet, sour and bitter solutions. At about four months of age, infants begin to prefer salty taste.

Intermodal perception is the integration of information from two or more sensory modalities, such as vision and hearing. For example, newborns turn their eyes and their heads towards the sound of a rattle, towards the sound of their mother, if this sound persists.

At three months infants looked at their mother or of their father when they heard his voice. Six months old infants had difficulty connecting sensory input from different modes by seven months onwards, this increased.

These are the references that you can use, for this module. That is Laura Berk Child Development and Santrock, child development.