Maret: Unit 5 Chapter 9 Teratogens
Chapter 10 Fetal Psychology

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Required Video: Dr. Andrew Meltzoff: Bodies, Brains & Emotions in Infant Development

Andrew Meltzoff is a psychologist and the Co- Director of the Institute for learning and brain sciences in the University of Washington, Seattle. He presents to the audience the importance of building a foundation of communication in the first three years of a baby's life. Dr. Meltzoff reveals the phenomenon of human development and the power of social learning in children. Parents are the role models for their children. During and before the preschool stage, children are driven to be like the parents, in doing what the parents do. Learning by imitating others is a fundamental mechanism regardless of the unspoken vernacular. Dr. Meltzoff stated, "We're born into a social environment and a brain is wired through social interactions, actually sculpted through the interactions we have." Research is presented where an infant is wearing an EEG cap. The adult presses a button on the box to make a sound. The baby imitates the adult as brain data are recorded, indicating the special ability of infants to learn nonverbally by simply watching others. In infant emotional development, it was explained that babies are exposed to numerous positive emotions, along with the exposure of negative emotions. The experiment consisted of a square black box and a wooden stick that was presented to a fifteen-month-old baby by the instructor. When the wooden stick is inserted into the black box, it creates a buzz sound. A woman named Nina, walked into the room, and expressed her negative emotion by verbally stating that the buzzy sound was irritating and annoying. The instructor then gives the black box and the stick to the baby. The baby grabs the stick, looking directly and immediately towards Nina, as she is reading a magazine. The baby is unsure to proceed, due to Nina's previous angry emotion. When Nina left the room, the baby inserted the stick into the black box. It was revealed that 15–18-month-old babies can retain track of a person's emotional history.

1.

Thalidomide was a popular sedative drug used in Germany in the year 1955 and was sold worldwide except to the United States. It was a medication prescribed to pregnant women who suffered with morning sickness. Thalidomide was used to treat pregnant women and relieve them from their symptoms of nausea during pregnancy. In the early 1960's, Germany witnessed the severe irreversible birth defects in thousands of fetuses and newborn babies caused by Thalidomide. Unfortunately, this late discovery brought horrific and tragic consequences. Babies were born with severe congenital malformations and defective organs, such as the heart and kidneys. The babies had developed limb deformities with the physical appearance of very short arms and legs. They had the absence of ears which created deafness. The impact on babies included the loss of their eyes which generated blindness. In addition, this drug generated mental retardation in babies and caused fetal demise with an increase rate of forty percent. Thalidomide is a medication that provokes physical and mental disabilities in newborns. It is a teratogen that causes dangerous and devasting effects in fetuses. The medicine was banned in Germany in the 1960's and in other countries such as Australia. Although the drug was not sold in the United States until the year 1998, the FDA of the United States has approved the use of this medication. In the United States, Thalidomide is used as a medical treatment to prevent skin disease cause by leprosy as well to treat tumors, autoimmune disorders, and cancers. Thalidomide is used in amalgamation with another drug to help patients who are diagnosed with multiple myeloma.

2. Another type of teratogen is the consumption of cocaine during pregnancy. Cocaine is a powerful addictive drug that stimulates the central nervous system. This drug is made from the coca leaves plants in South America. Other code or street names that relate to cocaine are crack, coke, coca, freebase, snow, and sugar. The drug looks like a white fine crystal powder. When a pregnant woman uses cocaine, the drug rests in her body for four days. It travels into the placenta barrier and is discovered in the baby's blood, urine, and even in the hair follicles while in the uterus. Unfortunately, the drug rests longer in the baby's body than in the mother's body. This occurs because the baby's size is less than normal, and the excretion system is not as productive as the mother's. For pregnant mothers who consume cocaine in an intensive way, they are at high risk of their baby developing microencephaly, a congenital condition with the abnormality of a small head and incomplete brain development. Miscarriages, birth defects of the brain, limbs, intestines, genitals, urinary tract, eyes, heart, skull, and premature labor are exposed to a higher level of danger with Cocaine use. Cocaine decreases the supply of oxygen and nourishments to the fetus. It is the reason why newborns weigh less than five pounds, eight ounces, a low birth weight for a baby. In addition, the newborns are exposed to a high risk of breathing problems, cerebrovascular accidents, and death. The continuous use of this drug can expose newborns to learning disabilities, developmental cognitive delays, and language problems. Cocaine can be detected in the mother's breast milk. If the mother continues to use the drug after the baby is born, it is detrimental to the baby. Newborns become addicts if their mothers are addicts. Newborns also suffer from abnormal sleep patterns, irritability, hyperactivity, tremulousness, and muscular rigidity. It is so unfortunate and heartbreaking that innocent babies experience the horrible and terrifying effects of cocaine use by their mother.

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3.

A viral infection is a type of teratogen that impacts both the mother and the fetus during pregnancy. Herpes, also called herpes simplex virus infection (HVS), is a virus that can develop contagious sores affecting the skin. The sores are painful blisters that can be commonly detected in the individual's external sexual organs or in an area of contact. Herpes has two types of viruses, type one (HSV1) and type two (HSV2). It is a sexually transmitted disease that can generate abnormally high body temperatures, body aches, extreme tiredness, and swollen glands. There is no cure for herpes simplex viruses. A pregnant women cannot have a normal vaginal delivery if herpes is detected. She would need a cesarean section to keep her newborn baby safe. Medication to alleviate herpes during pregnancy may be risky as it can harm the fetus with significant damage to the brain, blindness, intellectual disability, and can cause fetal demise.

Toxoplasmosis is an illness generated by the parasite toxoplasma gondii. It is also considered a teratogen that can affect the mother and the fetus. Pregnant women can be infected by consuming undercooked meats or having direct contact or exposure to cat excrement. The symptoms of toxoplasmosis can include abnormal high body temperatures, swollen lymph nodes, sore throat, and extreme tiredness. During pregnancy, congenital toxoplasmosis can be developed if the mother is infected and forty percent of the time, the baby can be infected. The parasite can make its way to the placental barrier and can create complications to the heart, kidneys, blood, liver, eyes, spleen, and brain of the fetus. This occurs when the infection is displayed between week ten and twenty-four during pregnancy. Early treatment with antibiotics is resourceful to avoid birth defects.

4. In connection with the sense of touch, fetuses are prone to move inside their womb environment due to pressure, temperature, and pain. Other stimulus motions are performed through experiencing Braxton Hicks contractions, maternal movements, and by external palpitation. At two months, if gently pushed against, the fetus may respond with a kick or with a sharp sudden movement. At fourth months, the caress of the eyelids may result the fetus in attempt to see more clearly, rather than to respond with a sudden sharp motion. By the fifth and sixth month, the fetus is sensitized to tactile stimulations. It is reported that fetuses recognize needle puncture by creating fetal force locomotion. J.R. Lange worthy's study in 1933, described myelination is insufficient in sensory tracts and therefore fetuses are not able to collect neural messages from the sense receptors. On the contrary, Larrouche's study in 1966, stated around the twenty second week after conception, the roots of the cranial nerves are myelinated prematurely before the development of myelination in the spinal cord. The author stated, "Well organized neural activity and sense receptivity, including pain, occurs long before the nerve fibers are completely myelinated." (Maret 141). Fetuses recognize the changes in temperature. If its mother is running a temperature so will the fetus. The vestibular sense is identified in fetuses at around 9.5 weeks. Fetuses are able to move smoothly and advance in progress by week fourteen. In the gustatory sense, the taste buds in fetuses are detectable by week eight. At week twelve, the taste buds have matured, enabling fetuses to swallow amniotic fluids. Investigations have been performed on newborns to identify the olfactory sense. The results show the approval odors of bananas, strawberries, and vanilla, while rejecting smells of fish and rotten eggs. Newborns can distinguish their mother's underarm smell, a used breast pad and their mother's unique aroma.

5.

A great deal of studies has been performed on newborns to discover their learning potential. It is reported that newborns have an extraordinary capacity for their distinctive reply, discrimination learning, and conditioning, which is frequently accomplished in a blink of an eye. The author stated, “Babies who have had as few as 10 heel punctures for blood sample in the first 72 hours after birth, for weeks and months afterwards will promptly cry if you thoughtlessly grasp their foot.” (Maret 148). Investigations on the extended verbal communication between a mother and its fetus had positive results. The outcome analysis revealed that newborns develop a high sensory awareness and control, premature speech, autonomy, and excellent concentration. Other investigations have demonstrated a baby’s correspondence in relation to voices, especially the mother’s voice. The newborn will modify its suckling by either augmenting or reducing its activity, to be able to distinguish the mother’s voice. Unfortunately, the newborn does not perform the same function to discern the father’s voice. The mother’s voice is the familiar voice that the fetus recognizes during the pregnancy. After birth, the newborn demonstrates its desired choice by the inclination towards the mother’s voice above the father’s. Another research was performed on newborns whose mothers viewed a specific soap opera during their pregnancy. It was noted that when the theme melody of the soap opera was displayed, the newborn became aware and ceased their tears.

6.

Several studies have been developed to learn about prenatal emotional capabilities. Whether it is a fetus is crying inside the womb or shedding tears after birth, their crying expresses their emotional state, such as pain, anger, or rage. The author stated, “More recent corroboration has presented three instances when fetal crying occurred in response to rupture of a membrane, manual displacement of the head or the attachment of electrodes for internal monitoring.” (Maret 154). It has been reported that babies whose weight is less than 650 grams (1.433 pounds), are distinctively weeping. In addition, Humphrey’s investigation shows that aborted fetuses during the week gestation of twenty-one and twenty-two, have a loud and recognizable cry. Investigators have concluded that fetuses and newborns have several different types of cries. It is their way to exchange information on their emotional state. Emotional states may consist of feeling pain, hunger, or chronic stress. For example, when a newborn is circumcised, the newborn will demonstrate a distinctive cry of pain. The difference can be heard in the weeping pitch, temporal rhythm and through the combination of crying tones. In addition, newborns have several different facial expressions. Facial expressions are to identify newborn’s sadness, fear, disgust, joy, anger or distress.

References

Maret, Stephen. *Introduction to Prenatal Psychology.* Second Edition. ISBN#9780578089980

Pps. 122-140. 141. 142-147. 148. 149-153. 154. 155-161.

https://www.youtube.com/watch?v=7HmRA6sxoeU&t=1131s