

BRIEF RESPONSE QUESTIONS / Chapter 3

Question 1:

The textbook presented many teratogens and other maternal factors that affect brain development during the prenatal period. Please discuss a few of these and explain why the central nervous system is often affected when the prenatal environment is compromised.

Any damage during the prenatal period from any environmental cause is referred to as a teratogen. Tobacco is a teratogen and a good percentage of women use it during pregnancies. Even though the more known effect of smoking is a low birth rate, there are many other serious consequences during the prenatal development. There are physical abnormalities like prematurity, clef lip, impaired heart rate and childhood deficits of asthma and cancer. However, even if the child looks normal there are behavioral abnormalities that come from affected brain development. Newborns can be less focused on sounds, show more excitement when being touched and have colic. Radiation is also another teratogen and causes mutation in the meiosis process. This results in undeveloped brains leading to abnormal brain wave activity in early childhood. Lastly nutrition is a maternal factor that is very important throughout the prenatal period. Having a balanced diet with steady weight gain ensures that the mother and baby stays healthy, if not the consequences are prenatal malnutrition. Physical consequences are miscarriages, physical defects: smaller heads, and loss in birth weight. In the end, the poorer the diet the greater the loss in brain weight becomes for the newborn.

Therefore all of these teratogens and maternal factors do affect the development of the brain in the prenatal period. Nevertheless, it also affects the central nervous system because later on, tobacco makes children have short attention spans, bad memory, and disruptive/aggressive behavior. Radiation leads to lower intelligence and emotional disorders and malnutrition leads to diabetes and learning problems.

Question 3:

Name and describe the three periods of prenatal development. Discuss the major milestones of each.

The first milestone starts off when the zygote multiplies and turning into a blastocyst. The blastocyst cells become structures that protect and feed the organism and later form the amnion, yolk sac, placenta and the umbilical cord. In the third to fourth week, a brain and spinal cord appear as the embryo forms. The heart, muscles, ribs and backbone also begin to develop. Once the eighth week is in progress, the embryo is now as large as one inch and half an ounce. Body structures like the arms, legs, fingers and toes begin to form as well as the internal organs. Whilst the production of neurons increase the sense of touch is created and the embryo begins to move. At the end of three months, the fetus is now three inches but still less than an ounce. While the rapid size increase happens, the nervous system, organs and muscles form in an organized fashion and connect with behavioral activities such as kicking and sucking etc. During this time is also when the sex can be determined as the genitals are now well formed.

The second milestone, the end of the twenty-fourth week is when the mother can start to feel fetal movements. Their eyes become sensitive to light and the fetus now reacts to sounds.

Lastly, thirty-eighth week, the fetus is twenty inches and seven pounds. Their lungs mature, rapid brain development and behavioral capacities. The fetus rotates into position in preparation for birth.

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Work cited

Laura E. Berk (2013). Ninth edition Child Development.