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## Prenatal Learning – What Is It and When Does It Begin?

By Lisa Jarrett, President, BabyPlus Prenatal, LLC

(HealthNewsDigest.com) - Educators and health professionals alike have long stressed the importance of cognitive development for children ages zero to three. While this period of development is undeniably crucial, it is important to note that a baby's brain actually begins to form cells during the third week of pregnancy – a time when the brain is also open to stimulation and learning and a time when such an enriched environment is absolutely necessary in every regard.

During weeks 13-16, a child's first brain waves become detectable, a connection-building process that persists at breakneck speed through the first few years of life. Most moms-to-be who read about baby's development will know that the baby can also begin to hear sounds in the second trimester – predominantly the constant beat of the mother's heart, but also muffled noises that are heard outside the womb.

Learning, or cognitive development, is simply the construction of thought processes, including perception, remembering, language abilities, problem solving and decision-making. Traditionally, society has accepted the theory of cognitive development advanced by Swiss psychologist Jean Piaget in the 20th century. Piaget held that cognitive development consists of four stages throughout a person's lifetime. The first, the sensorimotor stage, begins at birth and lasts until age two. Now there is yet another recent study that confirms cognitive stimulation actually begins in the womb.

Researchers at the Institute for Psychology of the Hungarian Academy of Sciences and the Institute for Logic, Language and Computation of the University of Amsterdam found that the auditory system is at least partly functional approximately three months before birth, and that produced beats can be distinguished and perceived in the womb by the developing baby.

Because we cannot feasibly observe behavioral reactions in the womb, the researchers studied the brain activity of neonates - newborns two to three days old. Through electrodes, the researchers measured electrical brain signals. Several variants of a basic rock rhythm were delivered through adhesive ear-couplers worn by the newborns. When the rhythm was changed to miss the "down beat", the babies' brains produced an electrical response indicating that they had expected to hear that missing downbeat, but had not.

The study explains:

"So it appears that the capability of detecting beat in rhythmic sound sequences is already functional at birth."

"Our results show that although learning by movement is probably important, the newborn auditory system is apparently sensitive to periodicities and develops expectations about when a new cycle should start (i.e., when the downbeat should occur). Therefore, although auditory perceptual learning starts already in the womb, our results are fully compatible with the notion that the perception of beat is innate."



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According to this study, simple rhythmic sounds - like those similar to the maternal heartbeat - are easiest for the unborn child to understand, if not already innate.

What we can infer through this study is that a developing baby's brain is responsive to beats – a simple rhythm that is, developmentally, something a baby can comprehend. The maternal heartbeat, constantly heard pulsing through the placenta at 95 decibels, is a true language that a prenatal baby can understand and benefit from. Music would not strengthen a baby's cognitive development because the combined sounds, rhythms and beats are too complex, and, while the spoken word can create a bond between the parents and child before birth, speaking to an unborn child would not promote such cognitive development because the voice is soft and muffled by the amniotic fluid.

After birth, babies stimulated prenatally through simple rhythmic sounds can exhibit “a range of key differences from typical infant traits,” said Dr. Brent Logan, author of *Learning Before Birth* and developer of the BabyPlus curriculum– which utilizes such simple beats. Much like moms-to-be take prenatal vitamins to aid in physical development, parents report consistent benefits from using age-appropriate auditory stimulation to aid in baby's cognitive development.

So, next time you are deciding between Mozart or a bedtime story for daddy to read to your developing baby in the womb, keep in mind that simple, repetitive rhythms are best for development. There are prenatal learning systems available, and it can be anticipated that the demand for these systems will increase as more research becomes available.

About the Article's Author, Lisa Jarrett:

Lisa Jarrett, BabyPlus Company President, is a mother of four BabyPlus children. BabyPlus is a universal prenatal education system that introduces patterns of sound to prenatal children in their natural language—the maternal heartbeat. As a baby distinguishes the simple rhythmic sounds from those of the mother, learning begins. BabyPlus is available at [www.babyplus.com](http://www.babyplus.com), at national retailers, and in over 30 countries around the world.