

# Prenatal Stimulation: Experimental Results

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Parents who conceive by choice, happily embrace pregnancy, and who surround their unborn babies with loving attention are part of a tradition that stretches back thousands of years to many different countries and cultures. Posters in villages in modern China remind pregnant women that when an empress was pregnant centuries ago, she would not look at unpleasant things, nor listen to bad music, nor speak abusive words, lest she influence the quality of the royal child within.

Today, parents who want to begin nurturing and communicating with their babies in the womb have many helpful materials to guide them. These self-help books and group programs--which have become available only in the last 13 years--mark an exciting new frontier in prenatal psychology. Although experts often told the pioneers in this field that they were wasting their time and there was no evidence that prenatal education had any effect, current studies prove the critics wrong.

The first educational program to reach the general public was that of Leni Schwartz in 1980 (2nd. ed. 1991) entitled *The World of the Unborn: Nurturing Your Child Before Birth*. Beginning with two small groups of couples, a novel 16-week program included the unborn child in emotional preparations for birth. Next came Eve Marnie's *LoveStart: Prebirth Bonding* in 1983 (rev. 1988), and then, *Nurturing the Unborn Child* by Thomas Verny and Pamela Weintraub (1991). None of these creative programs for use by small groups or by individual couples, were organized to measure the effect upon babies or parents.

Serious measurement of the outcome of prenatal stimulation on babies and parents began in the private obstetrical practice of Rene Van de Carr of Hayward, California. Outcome results of this curriculum were published in 1986 comparing 50 full participants, 50 partial participants, and 50 non-participants (Van de Carr & Lehrer, 1986). Significant differences were found in early speech, physical growth, parent-infant bonding, and success in breastfeeding in favor of the children and parents involved in prenatal stimulation. In 1988, five obstetricians working in the same hospital provided 20 experimental and 20 control subjects for a comparative study (Van de Carr, Van de Carr & Lehrer, 1988). Again, similar trends were confirmed by superior Apgar scores for the stimulated babies, high ratings of the babies by their mothers, and births that were "easier than expected." The latest version of the Van de Carr curriculum is *While You're Expecting: Create Your Own Prenatal Classroom* (1997).

The work in California inspired ambitious research programs in Thailand and Venezuela, designed with experimental and control groups and including thorough tests and measurements. The program at the Hua Chiew Hospital in Bangkok created by obstetrician Chairat Panthuraamphorn begins at 12 weeks of gestation, seeks to maximize fetal potential, and create positive feelings toward the unknown baby. Test results show definite physical, mental, and emotional advantages to those in the stimulated groups (Panthuraamphorn, 1993). These babies showed significantly greater height and head circumference, fine and gross motor performance, and speech and language acquisition. They also smiled and laughed in the first week after birth--something rarely seen in the West.

In Caracas, Venezuela, prenatal enrichment has been tested on a grand scale by an ambitious longitudinal study of 684 families randomized into experimental and

control groups (Manrique et al., 1993). Extensive measurements were made at two days, one month, 18 months, three years and each year after this until age six. Led by psychologist Beatriz Manrique, the program aimed at complete and integrated bio-psycho-social development of children through adequate stimulation, training, and nutrition. Prenatal enrichment was taught in a 13-wk course of two hours per week, using the guidebook *Answer Your Baby*.

When measured, the stimulated babies showed consistently superior visual, auditory, language, memory, and motor skills. In addition, their mothers had greater confidence, were more active in labor, had greater success in breastfeeding, and showed more intense bonding and family cohesion. When measured at later ages, the experimental infants continued to outperform the control infants on a variety of tests (Manrique et al., 1998).

In Spain and Europe, the program "Firststart" organized by the musical couple Manuel Alonso and Rosa Plaza, features carefully graduated violin sounds broadcast to the fetus through a miniature tape player-speaker worn in a belt around the mother's waist. The tapes contain music but parents are also encouraged to record their voices talking and singing to the baby. A research program to measure the effects of this program was conducted by developmental psychologists at the University of Valencia. The first measurements were made at six months of age. Results from 71 women in the control group and 101 in the experimental group were published by Lafuente et al., in 1997. Mothers had exposed the unborn babies to an average of 70 hours of music from about 28 weeks to the end of pregnancy. After birth an "Observational Scale of Development" was used by mothers to chart the onset of behaviors from birth to six months. On 22 items of the scale, behaviors of the experimental group babies were significantly advanced compared to those in the control group. Prenatally stimulated children were found to be superior in gross and fine motor activities, in linguistic development, in some aspects of somato-sensory coordination, and in certain cognitive behaviors.

In a second report based on observations of these babies from six to twelve months of age (Lafuente, Grifol & Rios, 2001) infants of the experimental group continued to be more advanced in their development than those in the control group, although there was some narrowing of the gap between the two groups. Research found statistically significant differences in the average age of first performance for eleven behaviors among children who experienced the prenatal music and voice stimulations of the Firststart program. The majority of early behaviors in which the experimental babies excelled were in production and understanding of language—a fact presumably related to the primarily auditive stimulation provided by this program.

In contrast to the group experiments cited above, a unique case study published by psychologist William Sallenbach (1994) examined the learning behavior of his own prelate in reaction to an experimental curriculum. Systematic daily observations of fetal movement from week 34 to 36 in utero revealed an organized pattern of learning progressing from generality and abstraction to specificity and discernment. Dr. Sallenbach found evidence for the emergence of mental schema and regulations in mental operations previously unrecognized in prenates.

In Conclusion. The period from conception to birth is a critical period for the physical, emotional, and mental development of every baby. It is the period when the intimate relationship between parent and child is given form and quality, with long-lasting consequences. With greater knowledge and respect for the sentience

and intelligence of babies in the womb, I believe couples can reach new heights of fulfillment in parenthood. And their well-nurtured babies will be a blessing to them and to the larger society surrounding them.

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