

Does exposure of premature infants to repetitive recorded mother sounds improve neurodevelopmental outcome?

Although major auditory structures are anatomically in place by 25-wk gestation, neonates undergo active functional maturation. At term, infants have a low threshold for sounds in the speech frequency, respond differently to speech and nonspeech stimuli, and demonstrate preference to familiar sound even if they are exposed to it in utero (1, 2). Recent studies have demonstrated that exposure of premature infants to maternal sound is associated with more cardiovascular and behavioral stability (3, 4). We felt enthusiastic to read the paper recently published by Webb et al. studying the effect of mother's voice and heartbeat sounds on, what they described as, auditory plasticity (5).

Webb et al. (5) elegantly demonstrate neuroplasticity in the auditory cortex following exposure to the mother's recorded voice (speaking, reading, singing) mingled with her heartbeat, presented in 45-min blocks four times a day for 30 d. Considerable effort was directed at masking and filtering the recording to recreate the fetal auditory environment, given the biological fact that maternal sounds would ordinarily be available to the fetus. However, 120 repetitions of the exact same recording is not a biologically based fetal experience.

Demonstration of acceleration of fetal growth in one area of the brain using ultrasound is not necessarily a positive outcome, especially compared with control subjects in a "noisy" environment whose negative experience may have impeded growth. Thus, an important comparison might have been otherwise healthy newborn preterm infants 30-d older than each infant in the intervention group (thus matched for conceptional age). Webb et al. (5) do not adequately address their finding of a negative correlation between gestational age and effect size.

As expected, parents in the neonatal intensive care unit are already preparing voice recordings for their preterm infant. It would have been interesting to have observed whether the study groups had any difference in maternal or paternal visitation over the course of the study. There is no substitute for the unique and often contingent parental response to a fetus and a newborn.

Although this study (5) has presented intersecting findings, it raises important questions: Is this specific increase in one area a benefit for the infant? Does this redundant form of intervention improve neurodevelopmental outcome?

Mohamed El-Dib^{a,b,c,1} and Penny Glass^{a,c,d}

^aDepartment of Pediatrics, the George Washington University, Washington, DC 20037; ^bDepartment of Neurology, the George Washington University, Washington, DC 20037; ^cDepartment of Neonatology, Children's National Health System, Washington, DC 20010; and ^dDepartment of Infant Development, Children's National Health System, Washington, DC 20010

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¹To whom correspondence should be addressed. Email: mafeldib@gmail.com.