

Music as an evolutionary byproduct of prenatal audition and proprioception

Richard Parncutt, University of Graz, Austria

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Background. Strong emotions are generally associated with reflexes, instincts or drives that promote survival and reproduction, such as hunger, sex, fear, pain, disgust, jealousy, surprise and anger. Musical emotions can be equally strong (Gabrielsson & Lindström Wik, 2003). No current theory of music's origins convincingly explains why.

Interdisciplinary issues. A prenatal theory of music's origin may draw on evidence from musicology (historical, ethnological, theoretical, cultural), psychology (developmental, prenatal, evolutionary, cognitive, ecological, behavioural), neurosciences (developmental, cognitive), life sciences (biology, biochemistry, physiology), medicine (endocrinology, gynaecology, embryology, audiology, otology), psychotherapy (including psychoanalysis and psychiatry), zoology (including animal behaviour), anthropology (physical, cultural), archaeology, theology, sociology, linguistics and psychoacoustics.

The issue/hypothesis under investigation. Are associations between sound/movement patterns and emotions laid down before birth? If so, what are their musical relevance?

Findings/description. The following theory is consistent with music's emotional power and apparent lack of survival value. Human audition and proprioception emerge some four months before birth. Changes in maternal state are accompanied by perceptible changes in sound/movement patterns (vocalization, respiration, circulation, movement, footsteps, digestion) that are quickly followed by changes in blood hormone levels. This pattern classically conditions the fetus, giving sound/movement patterns strong emotional connotations. After birth, these associations feed into motherese, play and ritual via operant conditioning. Evidence for the theory converges from empirical work on prenatal learning, the biochemical conflict between mother and fetus, infant protomusical sensitivity, and mother-infant bonding, which includes infant sensitivity to maternal vocal emotion.

Conclusions/future directions. The thesis suggests that not only human but also non-human infants with extended prenatal hearing and sufficient cognitive skills may be sensitive to emotional connotations of sound/movement patterns, and that congenitally deaf humans with cochlear implants are musically insensitive. However, such experiments may confound nature with nurture.