



Seewiesen Colloquia

Speaker invited by: Department Gahr

Thursday, April 06, 2017, 13h, in House 4, Lecture Room

From Melody to Words: Vocal Development in Human Infants

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The human infant is the most proficient vocal learner, and differs from his primate relatives in that he is specifically pre-adapted to acquire oral language. Melody (fundamental frequency contour) is a key entity to understand early language development. Infants from all cultures seem to pass through the same early stages of melody development at the same phase of their life history, long before vocabulary and grammar are established. Vocal development starts with an increasing complexification of melody over the first few months of life. The presentation will demonstrate what we mean by complexification of cry melody, how complex melodies are composed and modified, and why melody development marks crucial stages of early language acquisition. Along with adolescence, the neonatal period is a time when hormones may contribute to long-lasting, sexually dimorphic patterns of behavioural performance. This postnatal period of elevated hormone levels in both sexes is known as ‘mini-puberty’. The transitory surge of sex steroids within the first months of life is associated with dramatic developing brain changes, as well as the start of language-relevant vocal development in human infants. Recently, a significant positive association between mini-pubertal estradiol surges and early vocal performances (cry melody pattern, articulatory skills in babbling) has been demonstrated. This could bridge infant research to research in song birds, whose song learning has been postulated as modelling babbling in human infants.

Who is Kathleen Wermke?

- 1987 PhD Department of Biology, Humboldt University of Berlin, Germany
- 1987 Research assistant University Clinics (Charité), Berlin, Germany
- 1999 Research Fellow, Gruter Institute for Law and Behavioral Research, Portola Valley, CA, US
- 2002 Habilitation, HU Berlin, *venia legendi* “Medical Anthropology”
- 2003-present University Professor, University Clinics Würzburg, Founding Director and Head of the Center for Pre-Speech Development & Developmental Disorders

Selected publications:

- Wermke, K., Ruan, Y., Feng, Y., Dobnig, D., Stephan, St., Wermke, P., Ma, L., Chang, H., Liu, Y., Hesse, V., and Shu, H. 2016. Fundamental frequency variation in crying of Mandarin and German neonates. *Journal of Voice*, in press Jul 7. doi: 10.1016/j.jvoice.2016.06.009. [Epub ahead of print]
- Quast, A., Hesse, V., Hain, J., Wermke, P. and Wermke, K. 2016. Baby babbling at five months linked to sex hormone levels in early infancy. *Infant Behavior and Development* May 18;44:1-10. [Epub ahead of print]
- Wermke, K., Hain, J., Oehler, K., Wermke, P. and Hesse, V. 2014. Sex hormone influence on human infants’ sound characteristics: melody in spontaneous crying. *Biology Letters* May 7;10(5):20140095. doi: 10.1098/rsbl.2014.0095.
- Wermke, K., Pachtner, S., Lamm, B., Voit, V., Hain, J., Kärtner, J. and Keller, H. 2013. Acoustic properties of comfort sounds of 3-months-old Cameroonian (Nso) and German infants. *Speech, Language and Hearing*, 16(3), 2013, 149-162.
- Mampe, B., Friederici, A.D., Christophe, A. and Wermke, K. 2009. Newborns’ melody is shaped by their native language. *Current Biology*, Dec 15;19(23):1994-7. Epub 2009 Nov 5.
- Wermke K., Mende W. From Emotion to Notion. The Importance of Melody. Eds. J. Decet & J. Cacioppo, *Handbook of Social Neuroscience*. Oxford University Press, 2011, pp.624 – 648.