

Annual report 2014 of ACLC research group: Amusia and language

Coordinator: Silke Hamann

Web page:

<http://aclc.uva.nl/research/groups/groups/groups/content/folder/amusia-and-language/amusia-and-language.html>

Current external funding:

NWO promotie in de gesteswetenschappen subsidie 322-75-004 to Paul Boersma for Jasmin Pfeifer's PhD project "Speech perception impairments in congenital amusia".

Participants in 2014:

dr. S. R. Hamann (ACLC), senior researcher, coordinator
prof. dr. P.P.G. Boersma (ACLC), senior researcher
prof. dr. H.J. Honing (ILLC), senior researcher
prof. dr. P. Indefrey (University of Düsseldorf, Germany)
J. Pfeifer (ACLC), PhD candidate, September 2013 – September 2017

Description of the research group (from the web page):

Congenital amusia is a neuro-developmental disorder that is neither caused by insufficient exposure to music, nor by a hearing deficiency, brain damage or intellectual impairment. People with congenital amusia (amusics) face lifelong impairments in the musical domain (music often causes discomfort to them). They cannot detect a pitch difference between two adjacent tones if this difference is one semitone or less.

Why look at the language of amusics?

- It has long been argued that congenital amusia is domain-specific to music and does not affect language, but recent studies (Patel et al. 2008, Liu et al. 2010) suggest that amusics show deficits in the perception of linguistic pitch (intonation and tone).
- It is still unknown which linguistic parameters are influenced by amusia.
- It is unclear whether speech production is affected by amusia: there are contrasting reports of whether amusics can accurately imitate sentences and pitch sequences (Hutchins and Peretz 2012) or not (Williamson et al. 2012)

The research group is

- employing EEG and perception experiments to test the perception of small pitch differences and of quantitative and qualitative vowel differences,
- comparing the sentence production of amusics with that of non-amusics (are there differences in intonation and vowel quality or quantity?),
- inferring from these findings the size of learnable phonetic differences and discuss the possible problems that amusics face when learning a language.

Research highlights in 2014:

Our studies in 2014 showed that:

- amusics performed worse than non-amusics in pitch detection tasks that involved linguistic and non-linguistic stimuli,
- the amusics had significantly longer reaction times than non-amusics for correctly identifying stimuli that differed in pitch (“hits”),
- both amusics and non-amusic were faster and provided more correct answers with stimuli that had statement intonation (compared to question intonation).

Based on the following publication & presentations:

- Pfeifer, Jasmin, Silke Hamann & Mats Exter (2014). “Congenital Amusia in linguistic and non-linguistic pitch perception: What behavior and reaction times reveal” in *Proceedings of Speech Prosody 7*, 2014, 438-442.
- “*The Diagnosis of Congenital Amusia with the Montreal Battery of Evaluation of Amusia: Current Applications and Limits*”. Poster presented at the Neurosciences and Music V, May 29 - June 1 2014, Dijon, France.
- “*Congenital Amusia in linguistic and non-linguistic pitch perception – What behavior and reaction times reveal*”. Poster presented at Speech Prosody 7 (SP7), May 20-23 2014, Trinity College, Dublin, Ireland.

Valorisation

- Providing accessible information for the general public about congenital amusia, its symptoms and diagnosis and promoting our research:
 - **TV documentary** about our research on congenital amusia, NDR (German TV-station), aired April 28th 2014
 - **Facebook page:** <https://www.facebook.com/kongenitaleamusie>
 - **Blog:** <http://blogfarm.phil-fak.uni-duesseldorf.de/amusie/>