

NAME OF PRESENTING AUTHOR: Janne Vermeulen

EMAIL ADDRESS OF PRESENTING AUTHOR: Janne.Vermeulen@mpi.nl

LOCATION OF PRESENTING AUTHOR: Europe

TIME ZONE OF PRESENTING AUTHOR: Central European Time, UTC/GMT +2

TYPE OF SUBMISSION: Talk/Poster

MEMBER STATUS: Non-member

ELIGIBLE FOR THOMPSON AWARD: No

ELIGIBLE FOR ROWEWARD: No

TITLE: Exploring genetic relationships between musicality and social behavior

FULL AUTHOR LIST: Janne R Vermeulen^{1,4}, Fenja Schlag¹, Ellen Verhoef¹, Celeste Figaroa¹, Jeffrey van der Ven^{1,4}, Simon E Fisher^{1,2}, Beate St Pourcain^{1,2,3}

AFFILIATIONS:

¹ Language and Genetics, MPI for Psycholinguistics, Nijmegen, The Netherlands

² Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands

³ Bristol Medical School, University of Bristol, Bristol, UK

⁴ Master Medical Biology, Radboud University, Nijmegen, The Netherlands

KEYWORDS: Genetic correlations, structural equation modelling, musicality, social behavior

ABSTRACT:

The ability to produce and perceive music (musicality) plays a significant role in all human societies and the participation in musical events promotes friendships, emotional sensitivity and social skills. Musicality and social behavior are complex heritable phenotypes, although their shared genetic aetiology is not well understood. Here, we investigate (i) evidence for genetic overlap between musicality and social behavior and (ii) whether genetic relationships remain stable during the course of development. Analyses were conducted in unrelated children from the ALSPAC-cohort. We examined two musicality-related parent reports (at 5 and 6 years, 51,3% males, N≤5881) where at least 1% of children reported problems (N=232(3.9%) and N=136(1.7%), respectively), two longitudinal social traits, low prosociality and peer problems (Rutter parent scale and Strengths and Difficulties Questionnaire, 4 to 17 years, 50.2% males, N≤6135), as well as genome-wide data. SNP-heritability and genetic correlations were assessed with genome-wide complex trait analysis (GCTA) and the genetic stability of social phenotypes during development explored using genetic-relationship-matrix structural equation modelling (GSEM). The multiple testing threshold was 0.0125; SNP-heritability estimates ranged from 3%(SE=0.06) to 37%(SE=0.09). Our results showed that problems in musical abilities (e.g. ‘Child cannot hum a tune’ at 5 years) were positively correlated with mother-reported peer problems across mid-childhood (at 7 years: GCTA- $r_g=1.00$ (SE=0.50), $p=0.004$; at 10 years: GCTA- $r_g=0.75$ (SE=0.34), $p=0.005$). Longitudinal GSEM analysis of peer problems identified evidence for a shared genetic factor that remains stable during development. Thus, children with more developed musical abilities in early childhood may have consistently better peer relationships in later life.

GRANT SUPPORT:

