British Society of Audiology 3rd Annual Conference and Experimental & Clinical Short Papers Meeting;
5th-7th September 2012, Nottingham Trent University

Anxiogenic sounds for people with Autism Spectrum Disorder

M. Atherton[*], F. Jensen[*], R. Kent[§], S. Leekam[§], D. McGonigle[§], K. Rotter[*], L. White[§]. [*]Centre for Engineering Dynamics, School of Engineering and Design, Brunel University, London, UK. [§]Wales Autism Research Centre, School of Psychology, Cardiff University, UK

Sensory processing difficulties are a highly prevalent yet poorly understood aspect of the behavioural presentation of Autism Spectrum Disorder (ASD). Identifying a set of sounds that are anxiogenic to people with ASD is challenging as symptoms of autism vary from individual-to-individual. First-person accounts of ASD commonly report a variety of sensory symptoms, such as hypersensitivities to sound and touch (Williams 1998; Grandin & Scariano 1996) and parental-report studies record significantly higher levels of sensory symptoms in ASD populations (Baranek et al 2006) compared to controls. Evidence from clinical interview data also shows that atypical sensory reactions are found in more than 90% of all individuals with autism (Leekam et al 2007), and parents rate sensory problems as one of the top two areas of difficulty for family life.

The most debilitating sensory problems in autism result from environmental 'triggers', which can vary significantly between individuals. In the auditory domain, causes can range from: domestic appliances (fridge freezers/vacuum cleaners); to lighting sources (particularly fluorescent); or unexpected noise sources (such as dropped objects). Any combination of these, in a person with ASD, can seriously impact upon their quality of life, making even simple journeys outside fraught with difficulty. A typical response to these problems is the wearing of ear defenders or similar sound attenuation equipment – however, the broadband attenuation produced severely limits receptive speech intelligibility, and the high visibility of the equipment introduces a further social stigma to people with ASD. A 'sound battery' of anxiogenic sounds has been assembled for testing with ASD participants in conjunction with noise reducing devices. Apart from differences in level, the frequency profiles of these anxiogenic sounds have a few distinguishing features to target, in some cases key frequency peaks. However the cyclic nature of the selected sounds means that they are well-suited to attenuation by noise reduction devices.

Acknowledgements

The authors gratefully acknowledge the support of Autism Speaks (grant #7791), PI: Dr M Atherton.

References

Baranek, G. T., David, F. J., Poe, M. D., Stone, W. L., and Watson, L. R. (2006). Sensory experiences questionnaire: discriminating sensory features in young children with autism, developmental delays, and typical development. *J. Child Psychol. Psychiatry*, 47, 591–601.

Grandin, T., & Scariano, M. M. (1986). *Emergence labelled autistic.* Novato, CA: Arena Press.

Leekam, S., Nieto, C., Libby, S., Wing, L., & Gould, J. (2007). Describing the Sensory Abnormalities of Children and Adults with Autism. *Journal of Autism and Developmental Disorders*, 37(5), 894-910.

Williams, D. (1998) Autism and Sensing: *The Unlost Instinct.* Jessica Kingsley Publishers. London and Philadelphia.