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van Laarhoven, Thijs; Stekelenburg, J.J.; Vroomen, J.

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SUB-CLINICAL LEVELS OF AUTISTIC TRAITS IMPAIR MULTISENSORY INTEGRATION OF AUDIOVISUAL SPEECH

Thijs van Laarhoven a, Jeroen J. Stekelenburg a, Jean Vroomen a
a Department of Cognitive Neuropsychology, Tilburg University, The Netherlands
b Corresponding author. E-mail: t.j.t.m.vanlaarhoven@tilburguniversity.edu

INTRODUCTION

Autism Spectrum Disorder (ASD) is a pervasive neurodevelopmental disorder characterized by restricted interests, repetitive behavior, deficits in social communication and atypical multisensory perception. ASD symptoms are found to varying degrees in the general population. While impairments in multisensory speech processing are widely reported in clinical ASD populations, the impact of sub-clinical levels of autistic traits on multisensory speech perception is still unclear. The present study examined audiovisual (AV) speech processing in a large non-clinical adult population in relation to autistic traits measured by the Autism-Spectrum Quotient (AQ). AV speech processing was assessed using a McGurk paradigm, a simultaneity judgment task and a speech-in-noise task.

METHOD

Participants
N = 104
88 female
Mean age = 20.06 (SD = 2.43)

AQ questionnaire
1. Social skill (10 items)
2. Attention switching (10 items)
3. Attention to detail (10 items)
4. Communication (10 items)
5. Imagination (10 items)
AQ score = sum 1-5 (50 items)

Experiments
McGurk paradigm
• Visual /g/ Auditory /b/
• Susceptibility = prop. /d/ response

Simultaneity judgment task
• SOA range = -400 ms to +400 ms
• 40 ms intervals = 21 SOAs
• SOA range = -400 ms to +400 ms

Speech-in-noise task
• 112 words, SNRs 0, -4, -8, -12db
• 2 conditions: Auditory-only (A), Audio-visual (AV)
• AV gain = percentage correct AV-A across all SNRs (gain in % correct)

RESULTS

• Difficulty with Imagination was associated with lower susceptibility to the McGurk illusion (r = -.32, p = .001)
• Difficulty with Attention-switching was associated with a wider temporal binding window (r = .33, p = .002).
• Increased Attention to detail was associated with a narrower temporal binding window (r = -.31, p = .003).
• AQ score was associated with reduced AV gain from lip-read speech (r = -.21, p = .03).

CONCLUSIONS

Our results demonstrate that sub-clinical autistic symptomatology is related to reduced AV speech processing performance, and are consistent with the notion of a spectrum of ASD traits that extends into the general population.

REFERENCES