

PSYC4920 Senior Research II

Topic: Relationship between temporal processing and memory deficits of children with autism spectrum disorder

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Abstract: Memory-related impairments including working memory and episodic memory have been marked as one of the characteristics of Autism Spectrum Disorder (ASD), and temporal processing, a fundamental perceptual processing skill which establishes the temporal relations of stimuli, has been suggested to play a vital role in these impairments. The present study aims at the confirmation of correlation between temporal processing and memory performance in ASD children. 12 ASD children aged from 7-10 were tested over a Chinese language list-learning memory test --- The Hong Kong List Learning Test (HKLLT) – 2nd Edition and an online temporal processing assessment which was designed based on the Temporal-Order Judgement (TOJ) task paradigm. Relationship between temporal processing and memory performances were then examined with statistical correlation and regression analyses. Results show a statistically positive correlation between the TOJ scores in CV (phoneme) tasks of the ASD participants and their HKLLT scores in both immediate recall task and delay recall task, suggesting temporal processing ability is positively correlated with episodic memory and working memory in ASD children, yet more strongly with the former. Multiple regressions further reveal the predictive power of episodic memory performance for temporal processing performance; more, “age” is also positively correlated with and has significant predictive power for temporal processing: statistical data show that “age” together with memory tasks performance can account for 89.7% of the variance in temporal processing [$F(6,12)=17.026$, $p=0.003/p<0.01$] in the research sample---suggesting impairment of temporal processing in ASD children might entail developmental issues, the understanding of which requires more sophisticated and systematic studies across ages.