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Presentation Title: Auditory and cognitive processes in children with word reading difficulty.

Previous literature has reported auditory processing deficits in children with word reading problems. Research using behavioral tasks have revealed deficits of speech perception in noise, frequency discrimination, attention, and working memory in children with reading disorders (Moore, Ferguson, Halliday, & Riley, 2008 ;Sharma, Purdy, & Kelly, 2009;)(Halliday & Bishop, 2006). Similarly, using electrophysiological tasks such as MMN, CAEPs, ASSR have also shown differences in children with reading disorders (Gilley, Sharma, & Purdy, 2016[1])(Sharma, Purdy, Newall, Wheldall, & Beaman, 2007). In the current study, we looked at the behavioural and electrophysiological responses of children on several auditory processing skills. The cognitive skills of the children such as selective attention, working memory and statistical learning were also assessed. This presentation aims to report the differences across auditory skills such as pitch percept, amplitude modulation percept, among other auditory processing skills in the children with specific word and nonwords reading deficits.

Data was collected from 27 children in the control group and 28 children with word reading difficulties. The children in the two groups were not significantly different in age, [f (1.53, 53) = 0.60, p = 0.44]. Children in the experimental group were significantly different from the controls in their performance on frequency discrimination. perception of sinusoidal amplitude modulation at 4Hz, and for percept of pitch tested electrophysiologically. Attention was significantly different between the groups: sustained attention [f (1, 53) = 10.15, p = 0.002], and attention switching [f (1, 53) = 36.34, p = 0.000]. With statistical learning, children with reading problems showed to have difficulties with learning of auditory stimuli (Mann-Whitney U = 86, Z = -2.775, p<0.000), and visual stimuli (Mann-Whitney U = 85.5, Z = -3.504, p<0.000). Thus the conclusion of the study is that children with word reading disorders should be assessed across both auditory and cognitive measures. The implication of these findings are that when planning the intervention for children with reading disorders, management must include specific auditory training for better outcomes.

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