

## **Using Eye-tracking Technology in Assessing Receptive Language Skills among Girls with Rett Syndrome**

Ahonniska-Assa, J., Silberg T., Pollak, O., Saraf, E., Wine, J., Nissenkorn, A., & Ben-Zeev, B.

Neuropsychology Unit, Pediatric Rehabilitation Department, Edmond and Lily Safra Children's Hospital, The Chaim Sheba Medical Center.

Pediatric Neurology Unit, Edmond and Lily Safra Children's Hospital, The Chaim Sheba Medical Center

Background: Most girls affected with Rett syndrome fail to develop speech and while a significant proportion of them learn to communicate effectively using alternative strategies, many demonstrate significant difficulties in using augmentative and alternative communication (AAC). Therefore, assessment of the cognitive abilities of girls with Rett syndrome is extremely challenging. Recent technological innovations, i.e., eye-tracking technology (ETT), might improve the transparency of the communication, and enable more valid cognitive assessment.

Objectives: To investigate whether evaluation using ETT could enable assessment of receptive language skills among girls with Rett syndrome.

Methods: Participants were 17 girls with Rett syndrome. Their receptive vocabulary was assessed using the Peabody Picture Vocabulary Test-4 (PPVT- 4). Target words were orally presented and participants responded by focusing their eyes on the preferred picture.

Results: Although the average verbal comprehension skills among were low, the results do not support the common notion regarding uniform and severe intellectual impairment among girls with Rett syndrome. The verbal comprehension abilities of 32% of the participants ranged from low average to mild cognitive impairment, and the other 68% showed moderate to severe impairment. Young age, infrequent epileptiform activity, and the use of monotherapy in epilepsy treatment positively correlated with higher scores.

Conclusions: Using ETT demonstrated that a significant number of girls with Rett syndrome show receptive language that is higher than presented in earlier studies. Early use of ETT may improve the quality of daily communication, and enable reliable conclusions in learning and assessment sessions.