World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:15, No:11, 2021

‘Groupitizing’ – A Key Factor in Math Learning Disabilities

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Abstract : Objective: The visuospatial perception system process that allows us to decompose and recompose small quantities into a whole is often called “groupitizing.” Previous studies have been found that adults use groupitizing processes in quantity estimation tasks and link this ability of subgroups recognition to arithmetic proficiency. This pilot study examined if adults with math difficulties benefit from visuospatial grouping cues when asked to estimate the quantity of a given set. It also compared the tipping point in which a significant improvement occurs in adults with typical development compared to adults with math difficulties. Method: In this pilot research, we recruited adults with low arithmetic abilities and matched controls. Participants were asked to estimate the quantity of a given set. Different grouping cues were displayed (space, color, or none) with different visual configurations (different quantities-different shapes, same quantities- different shapes, same quantities- same shapes). Results: Both groups showed significant performance improvement when grouping cues appeared. However, adults with low arithmetic abilities benefited from the grouping cues already in very small quantities as four. Conclusion: impaired perceptual groupitizing abilities may be a characteristic of low arithmetic abilities.

Keywords : groupitizing, math learning disability, quantity estimation, visual perception system
Conference Title : ICENP 2021 : International Conference on Educational Neuroscience and Psychology
Conference Location : Jerusalem, Israel
Conference Dates : November 29-30, 2021