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General domain and specific domain cognitive processes in children with different mathematical performance

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Several investigations on the neuropsychological processes that influence the mathematical performance (MP), have not yet determined whether the General Domain Processes (GDP) (e.g. intelligence, language) or Specific Domain Processes (SDP) (e.g. mathematical facts, calculation) are the most important in the acquisition and consolidation of the MP. The objective of the present project was to describe and compare the GDP and SDP of children with different MP, and to explore what type of processes would be related to the MP in each group.

Thirty two children in 3rd grade were evaluated; they were classified into 3 groups: high MP (n=7), average MP (n=18), and low MP (n=7) according to their academic record and to a questionnaire for teachers that assesses the occurrence of signs that correspond to learning disorders according to DSM-5 criteria. A battery of tests was applied for both types of processes. Results: a discriminant analysis was performed, which correctly classified 81.8% of the total sample. Qualitatively, on average, the group with high DM presented a better score on the Vocabulary subtest ($z = .52$), while the group with low DM performed worse on the Oral Arithmetic Operations subtest ($z = -1.59$). Results allow to identify a trend in which GDP influence more to belong to high MP, while the SDP do to belong to a low MP.