

DIFFERENCES IN CONCEPTIONS OF VARIABLES AMONG STUDENTS WITH
TYPICAL ACHIEVEMENT, LOW ACHIEVEMENT AND MATHEMATICS
LEARNING DISABILITIES

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ABSTRACT

This study investigated the differences in conceptions of variable among the groups of students identified as having a mathematics learning disability (MLD), other low mathematics achievement (LMA) students and typical mathematics achievement (TMA) students. This was done by analyzing the responses of these students on items involving the comparison of expressions involving generalized quantities. The theoretical framework for this study was based upon the learning trajectory (LT) of the levels of sophistication of students' conceptions of variable. Data analysis included descriptive and inferential statistics.

Results from the data analysis revealed little evidence of differences between MLD and LMA students. Differences between all students with mathematics difficulties (MD), including MLD and LMA students, and their TMA peers were primarily limited to items with higher procedural or operational complexity. The lack of significant differences between the MD and TMA students on other items suggests that most students' conceptions of variables are at a low level of sophistication. Furthermore, that students characterized by low-achievement and typical-achievement labels can have similarly low-levels of sophistication of conceptions of variables suggests that not only do the current measures of achievement provide an incomplete picture of students' understandings of algebra, but they also disproportionately disadvantage those labeled as low-achieving.