TEACHING MULTIPLICATIVE WORD-PROBLEM SOLVING TO A STUDENT WITH AUTISM SPECTRUM DISORDER

Steven Van Vaerenbergh[1], Irene Polo-Blanco[1], and Alicia Bruno[2]

[1]Universidad de Cantabria, [2]Universidad de La Laguna

Recently, there has been a growing interest in teaching mathematical problem solving to students with learning difficulties. Several studies focus on students with autism spectrum disorder (ASD), who often exhibit deficits in key cognitive skills required for problem solving, such as working memory and executive functions. While most studies focus on simple arithmetic word problems involving addition and subtraction, little research has been conducted on teaching students with ASD to solve problems involving multiplication and division (Polo-Blanco et al., 2022).

In this work, we tested the conceptual model-based problem-solving (COMPS) methodology for its effectiveness in teaching a student with ASD and intellectual disability to solve multiplicative word problems. COMPS methodology employs equation-like, conceptual model diagrams that emphasize algebraic expressions of relations. In particular, we conducted a single-case, multiple-baseline across behaviors design. The intervention was carried out to help a 14-year old ASD-diagnosed student improve his ability to solve one-step equal groups, multiplicative comparison and Cartesian product problems, each of which was addressed as a separate behavior.

The results of the study show that, after a low initial baseline, performance both in identifying as well as in performing the correct operations rose quickly to 100% for the three problem types, and remained over 75% during follow-up and generalization stages. During problem-solving training, the student also showed higher levels of concentration and interest. Finally, an experiment was performed in which the acquired skills were generalized to real-life situations, in particular cooking. In conclusion, the findings of this study are promising in terms of the content that can be addressed with appropriate methodologies in students with these characteristics.

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References

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