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Promoting numerical development in children with autism: a Brazilian inclusive educational program

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Statement of the Problem: Contrary to the popular misconception that people with autism (ASD) have extraordinary mathematics abilities, numerical knowledge of these individuals are heterogeneous. The rate of math learning difficulties in individuals with ASD varies between 15- 40%. “Treini na Escola” (TnE) is a curriculum supplementation program for teaching abilities, including numerical-arithmetic concepts for children with special needs. Math teaching in TnE was based on a trajectory model that describes the acquisition of crucial numerical concepts throughout six levels from counting to multiplicative reasoning.

Methodology & Theoretical Orientation: Two private schools of Ribeirão das Neves, Brazil are participating in the implementation study of the TnE Program. 194 children from kindergarten to 5th grade were screened. 54 children were selected for receiving support for consolidating the basic numerical concepts with the TnE. From these children, 6 had a previous diagnosis of ASD. Formative assessment based on the trajectory model was performed for identifying children’s numerical level and adapting the training to their individual needs.

Findings and next steps: Children selected for participating on the TnE have different levels of numerical development. Scrutinizing the results for the ASD children: two children were acquiring the initial knowledge of the number word sequence (level I), three children were acquiring the cardinal knowledge of numbers (level III) and one child had good basic skills (level IV) but difficulty with serialization. After six months of implementation, children will be reassessed for testing the general effectiveness of the program and specifically for ASD children.

Conclusion & Significance: Formative evaluation for understanding the current numerical level of children with ASD allows adaptation for individual educational needs using the TnE. Besides that, the program uses concrete materials, explicit teaching, and narrative pedagogy to develop new schemes and repertoires for promoting generalization and consolidation of mathematical skills.

Biography

Fernanda Rocha de Freitas , she is a Psychologist. Master and PhD student in Psychology, Cognition and Behavior at the Federal University of Minas Gerais (UFMG - Brazil). She is currently doing part of her PhD studies at the Department of Inclusive Education in University of Potsdam (UP - Germany). Fernanda is a researcher at the Developmental Neuropsychology Laboratory (LND-UFMG) and at INCEI-TREINITEC. She develops research for adapting and developing innovative tools supporting numerical-arithmetic acquisition and its difficulties in children with special needs education, such as students with hydrocephalus and autism.

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