

## **A computer mediated training program to reduce children's math anxiety**

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### **Abstract**

Mathematics anxiety is widespread among children, interfering with their ability to solve math problems in academic and every-day situations. This has detrimental, long term effects on academic achievement, engagement in STEM-related careers and employability. While a number of apps and programs have been created to improve children's mathematical competence, they were mostly created for commercial purposes, lacking scientific validity and being prone to inaccuracies. Therefore, we designed an evidence-based, adaptive training program (Math-trolls) in order to investigate how computer mediated tutoring might reduce math anxiety. Math-trolls is an interactive online computer game designed so that children successively discover 7 planets following an intense cognitive tutoring program. With the help of a tutor, the game helps children make meaning in math, improving number sense. The space exploration theme is engaging and child-friendly, employed to reduce children's anxiety. We conducted a pilot study on 60 primary-school children, who completed the Math-trolls game in 8 sessions. We also measured children's math anxiety and math performance pre- and post- computerized tutoring. Preliminary results of this pilot study suggest that Math-trolls, a computer mediated training program, is efficient in decreasing young children's math anxiety, also improving number sense and math performance. This offers valuable insights regarding the natural progression of the interrelationships between math anxiety and math performance. The program has the potential to become a valuable tool to be used within the classroom by educators, within the family by parents or by children themselves.

**Keywords:** anxiety; cognitive tutoring; mathematics anxiety; math performance; number sense.