CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0611

Project Title
The Relationship Between the Approximate Number System and Formal Mathematics

Abstract

Objectives/Goals
The objective of this experiment was to find if there is a relationship between the approximate number system (the ability to tell more from less without counting) and formal mathematics skills.

Methods/Materials
The participants were 80 8th graders. Each subject completed an arithmetic test, a geometry test, and the computerized dots test (a measure of the approximate number system). Half the subjects received the mathematics tests first and half received the dots test first.

Results
There was not a significant correlation between performance on the dots test and the arithmetic test or between the dots test and the geometry test. Performance on the dots test was not different between student who were in an Algebra class or the more advanced Geometry class. Students in a Geometry class performed significantly better on the arithmetic and geometry tests than the students enrolled in an Algebra class.

Conclusions/Discussion
Contrary to the hypothesis there was not a significant correlation between the results from the dots test and the two mathematics tests in the 8th grade students. This experiment still leaves open the question if helping young students with approximate number skills will have an impact on their ability to do better in math classes.

Summary Statement
The experiment tested to see if there is a relation between the approximate number system and formal mathematics.

Help Received
Dr. Halberda at Johns Hopkins provided the computer task and offered suggestions about how to analyze the data; my advisor, Mrs. Gillum, provided her computer lab and assistance with testing the subjects at school; my mother helped create the arithmetic and geometry tests.