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Award Abstract #1250359

The Development of Quantitative Competencies in Preschool Children

NSF Org: [DRL](#)
[Division of Research on Learning in Formal and Informal Settings \(DRL\)](#)

Initial Amendment Date: August 23, 2012

Latest Amendment Date: August 23, 2012

Award Number: 1250359

Award Instrument: Standard Grant

Program Manager: Finbarr Sloane
DRL Division of Research on Learning in Formal and Informal Settings (DRL)
EHR Directorate for Education & Human Resources

Start Date: September 15, 2012

Expires: August 31, 2017 (Estimated)

Awarded Amount to Date: \$1,910,980.00

Investigator(s): David Geary GearyD@missouri.edu (Principal Investigator)
Jeffrey Rouder (Co-Principal Investigator)
Kristy vanMarle (Co-Principal Investigator)

Sponsor: University of Missouri-Columbia
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NSF Program(s): REESE

Program Reference Code(s): 9177, SMET

Program Element Code(s): 7625

ABSTRACT

This project is a five-year longitudinal study designed to examine early foundations of formal mathematical learning. Approximately, 250 children in Missouri will be assessed twice per year from preschool through first grade. Specific competencies to be measured include number, number relations, and number operations as well as language, executive function, attention, IQ, and social behavior. Symbolic and non-symbolic quantitative skills are considered. Data collected on this project will link to the Missouri Longitudinal Study of Mathematical Development and Disability.

Competence in arithmetic and basic algebra has been shown to be strongly related to

employability, wages, and on-the-job productivity. Children who begin school behind their peers in mathematical competencies tend to stay behind throughout their schooling. The goal of this project is to conduct a longitudinal study with at-risk 3 year olds to improve the field's understanding of the development of early numeracy development in young children and its relation to school mathematics outcomes. The project hopes to shed light on how domain general executive functions, nonverbal intelligence, and verbal intelligence interact with quantitative knowledge to lead to math achievement at the end of kindergarten.

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