

COGNITIVE DEVELOPMENT NEWS

brought to you by the Cognition Learning And Development Lab at the University of Notre Dame

SUMMER 2011



What's new in the CLAD Lab?

Three undergraduate students have been hard at work in the lab this summer. Mary Wheeler is analyzing the workbooks from our Institute of Education Sciences study to examine how math problems presented in nontraditional formats can promote children's understanding of mathematical equivalence. Stephanie Borjas is investigating whether using an instructional method called "concreteness fading" can improve conceptual understanding when used to teach mathematical procedures. Anne Smrek,

whose honors thesis was featured in our Spring issue, is investigating "change resistance," the idea that prior knowledge affects one's ability to learn new things and solve novel problems.

Graduate student Lori Petersen hopes to begin her dissertation research this fall. She plans to meet with two- and three-year-olds several times, once a week, to teach them how to count. She will then compare different counting methods and objects to see which instructional techniques work best.

Featured CLAD lab study

In our Spring newsletter we shared the exciting news of being awarded a National Science Foundation (NSF) CAREER Grant. This five-year grant will enable us to examine factors that affect the development of children's understanding of mathematics over time.

We are specifically interested in determining which skills in kindergarten and second grade predict children's math achievement in subsequent years.

Results from this research will inform the development of a comprehensive math enrichment program that we are currently developing. The findings will also help educators determine which skills they should devote special attention to during class time.

If your child is entering kindergarten or second grade this fall, then he or she qualifies for participation. Children in the study will meet one-on-one with a trained

member of the CLAD Lab at the University of Notre Dame. During the sessions, children will solve problems and play games that provide information on their thinking and math skills.

Then, in the coming years we'll invite your child to return for additional math sessions. Those children who enter the study as kindergardeners will come a total of 3 times, and children who enter as second graders will come a total of 5 times. In the final session, children will receive a math lesson specifically tailored to their needs.

If you are interested in enrolling your child in our study, or if you just want more information, please contact us. We will then contact all interested parents in September or October to begin scheduling the sessions.

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Key findings from leaders in the field

Every parent knows that children notice and imitate behavioral cues from the environment around them. Boys and girls develop ideas of appropriate dress, toys, and activities, but a recent study at the University of Washington indicates that elementary school children may also be picking up on detrimental academic stereotypes.

Previous research shows that people in the United States believe that math is stereotypically a male domain. The authors of this study sought to confirm the association of math and gender in children in grades 1-5, and to determine just how early the stereotype exists.

The research team approached the concept of math-gender association by establishing children's "self concept," an idea often used in social psychology that captures how a child views him or herself. With both implicit and explicit measures, it was confirmed that boys associate math with their own gender more significantly than girls. Importantly, this pattern is evident as early as first grade.

What, then, are the implications of girls' lack of association with math? Studies suggest that children have reduced interest in future academic courses and occupations that are incompatible with what they see as their academic strengths. If a young girl lacks a self-concept that includes

strength in mathematics, regardless of her actual mathematical skills, she may avoid certain college majors or career choices simply because math is a requirement.

Awareness of the early influence of these stereotypes is important for parents of young children. Even as early as first grade, if a female student is struggling to identify with mathematical skills, parents should explore the idea of academic self-concept and encourage the potential for success in what are viewed in the U.S. as "gender atypical" intellectual pursuits.

Cvencek, D., Meltzoff, A.N., & Greenwald, A.G. (2011). Math-gender stereotypes in elementary school children. *Child Development*, 82(3), 766-779.



CLAD team updates

Mary McKeever, *research assistant*, joined the lab this summer. Mary graduated from Notre Dame in May with a degree in Psychology and English.

Stephanie Borjas, **Mary Wheeler**, and **Anne Smrek**, *seniors*, are enjoying working in the lab this summer.

Serah Han, *junior*, will be studying in London for the Fall semester.

Rebecca Kibler and **Andrea Renfro**, *juniors*, are looking forward to working with students for our NSF grant this fall.

Dana Chesney, *postdoctoral research associate*, is prepping for a study with undergrads in the fall that will test whether tasks that have been shown to help children understand equality may also improve adult's algebra skills.

Lori Petersen, *graduate student*, plans to work with local children for her dissertation project this upcoming year. She hopes to determine which methods are best for teaching children how to count.

Congratulations to **Percival Matthews**, *postdoctoral research associate*, and **Julia Michel**, *research assistant*! The two were married in July in Tennessee.

Congratulations to **April Dunwiddie**, *lab manager*, who had a baby boy, Jack Everett, in June!

Prof. Nicole McNeil, *director*, has been named to the editorial board of the *Journal of Experimental Psychology: General*, which is one of the top 3 journals in experimental psychology.

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