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EDUCATION

- 2005-2006 Postdoctoral Research Associate in Psychology
Yale University
- 2005 Ph.D. in Psychology, Distributed Minor in Statistics and Computer Sciences
University of Wisconsin-Madison
- 1999 B.S. in Psychology, Minor in Chemistry
Carnegie Mellon University

PROFESSIONAL POSITIONS

- 2012- ACE Associate Professor of Psychology, University of Notre Dame
- 2012- Director, Education, Schooling, and Society (ESS) minor, University of Notre Dame
- 2010-2012 Mary Hesburgh Flaherty and James Flaherty Assistant Professor of Psychology,
University of Notre Dame
- 2006-2010 Assistant Professor, Department of Psychology, University of Notre Dame
- 2005-2006 Project Director, PACE Center, Yale University
- 2003-2005 Project Assistant, Wisconsin Center for Education Research, University of Wisconsin
- 1999-2003 Research Assistant, Department of Psychology, University of Wisconsin
- 1999 Research Assistant, Department of Psychology, Carnegie Mellon
- 1998 Undergraduate Intern, Western Psychiatric Institute and Clinic, Pittsburgh, PA

HONORS, AWARDS, FELLOWSHIPS, AND SCHOLARSHIPS

- 2013 Boyd McCandless Award, American Psychological Association
- 2007 Presidential Early Career Award for Scientists and Engineers (PECASE)
- 2004-2005 American Psychological Association (APA) Dissertation Award [\$3000]
- 2003-2004 American Psychological Foundation E. M. Koppitz Graduate Travel Stipend [\$4000]
- 2001-2004 Graduate Student Travel Awards, University of Wisconsin [6 totaling \$2200]
- 2001-2002 Marian Schwartz Fellowship in Experimental Psychology, University of Wisconsin
- 1999-2000 Henry Vilas Graduate Fellowship, University of Wisconsin [stipend, tuition, fees]
- 1999 Phi Beta Kappa Honors Society, Upsilon of Pennsylvania
- 1999 Phi Kappa Phi Honors Society, Carnegie Mellon Chapter
- 1999 Phi Kappa Phi Research Award, First Place, Carnegie Mellon [\$250]
- 1997-1999 Alumni Memorial Scholarship, Carnegie Mellon University
- 1998 Student Travel Award, Symposium for Research on Child Language Disorders [\$500]
- 1998 Sigma Xi Research Award, First Place, Carnegie Mellon [\$500]
- 1998 Mortar Board National Honors Society, Carnegie Mellon
- 1997-1998 National Institute of Mental Health (NIMH) Undergraduate Fellowship
- 1997 National Society of Collegiate Scholars, Carnegie Mellon

GRANTS AND SPONSORED PROGRAMS

- 2011-2016 National Science Foundation, CAREER, DRL-1054467 (role: PI) “Predictors and consequences of early understanding of mathematical equivalence.” [\$749,830]
- 2011-2014 Institute of Education Sciences, U.S. Department of Education, R305A110198 (role: PI) “Improving children’s understanding of mathematical equivalence.” [\$565,456]
- 2009-2012 National Science Foundation, REESE, #0910218 (role: Consultant/Advisory Board) “Transfer for perceptually grounded principles.” (PI: Goldstone, Indiana University)
- 2007-2011 Institute of Education Sciences, U.S. Department of Education, R305B070297 (role: PI) “Arithmetic practice that promotes conceptual understanding and computational fluency.” [\$761,425]
- 2002-2004 Graduate Student Research Grants, University of Wisconsin [4 totaling \$1700]
- 1997-1999 Small Undergraduate Research Grants, Carnegie Mellon [3 totaling \$1200]

BOOKS, MONOGRAPHS, AND BOOK CHAPTERS

Knuth, E. J., Alibali, M. W., **McNeil**, N. M., Weinberg, A., & Stephens, A. C. (2011). Middle school students’ understanding of core algebraic concepts: Equivalence and variable. In J. Cai & E. Knuth (Eds.), *Early Algebraization: A Global Dialogue from Multiple Perspectives* (pp. 259-275). New York, NY: Springer.

REFEREED JOURNAL ARTICLES

^P indicates postdoc author; ^G indicates graduate student author; ^U indicates undergraduate student author

^PChesney, D. L., **McNeil**, N. M., ^PMatthews, P. G., ^GByrd, C. E., ^GPetersen, L. A., ^UWheeler, M. C., ^UFyfe, E. R., & Dunwiddie, A. E. (2014). Organization matters: Individual differences in children’s mental organization of addition knowledge correlate with understanding of math equivalence in symbolic form. *Cognitive Development*, 30, 30-46.

McNeil, N. M. (2014). A “change-resistance” account of children’s difficulties understanding mathematical equivalence. *Child Development Perspectives*, 8, 42-47.

^UFyfe, E. R., **McNeil**, N. M., Son, J. Y., & Goldstone, R. L. (2014). Concreteness fading in mathematics and science instruction: A systematic review. *Educational Psychology Review*, 26, 9-25.

^PChesney, D. L., **McNeil**, N. M., Brockmole, J. R., & Kelley, K. (2013). An eye for relations: Eye-tracking indicates long-term negative effects of operational thinking on understanding of math equivalence. *Memory & Cognition*, 41, 1079-1095.

^GPetersen, L. A., & **McNeil**, N. M. (2013). Using perceptually rich objects to help children represent number: Established knowledge counts. *Child Development*, 84, 1020-1033.

- ^GFuhs, M. W., & **McNeil**, N. M. (2013). ANS acuity and mathematics ability in preschoolers from low-income homes: Contributions of inhibitory control. *Developmental Science*, *16*, 136-48.
- McNeil**, N. M., ^PChesney, D. L., ^PMatthews, P. G., ^UFyfe, E. R., ^GPetersen, L. A., & Dunwiddie, A. E. (2012). It pays to be organized: Organizing addition knowledge around equivalent values facilitates understanding of mathematical equivalence. *Journal of Educational Psychology*, *104*, 1109-1121.
- McNeil**, N. M., & ^UFyfe, E. R. (2012). “Concreteness fading” promotes transfer of mathematical knowledge. *Learning and Instruction*, *22*, 440-448.
- McNeil**, N. M., ^UFyfe, E. R., ^GPetersen, L. A., Dunwiddie, A. E., & Brletic-Shiple, H. (2011). Benefits of practicing $4 = 2 + 2$: Nontraditional problem formats facilitate children’s understanding of mathematical equivalence. *Child Development*, *82*, 1620-1633.
- McNeil**, N. M., ^GFuhs, M. W., ^GKeultjes, M. C., ^UGibson, M. H. (2011). Influences of problem format and SES on preschoolers’ understanding of approximate addition. *Cognitive Development*, *26*, 57-71.
- McNeil**, N. M., Rittle-Johnson, B., Hattikudur, S., & ^GPetersen, L. A. (2010). Continuity in representation between children and adults: Arithmetic knowledge hinders undergraduates’ algebraic problem solving. *Journal of Cognition and Development*, *11*, 437-457.
- McNeil**, N. M., Weinberg, A., Stephens, A. C., Hattikudur, S., Asquith, P., Knuth, E. J., & Alibali, M. W. (2010). A is for apple: Mnemonic symbols hinder students’ interpretation of algebraic expressions. *Journal of Educational Psychology*, *102*, 625-634.
- McNeil**, N. M., & Uttal, D. H. (2009). Rethinking the use of concrete materials in learning: Perspectives from development and education. *Child Development Perspectives*, *3*, 137-139.
- ^{1G}Brown, M. C., ¹**McNeil**, N. M., & Glenberg, A. M. (2009). Using concreteness in education: Real problems, potential solutions. *Child Development Perspectives*, *3*, 160-164.
¹contributed equally, so listed alphabetically
- Haefel, G. J., Thiessen, E. D., Campbell, M. W., Kaschak, M. P., & **McNeil**, N. M. (2009). Theory, not cultural context, will advance psychology. *American Psychologist*, *64*, 570-571.
- McNeil**, N. M., Uttal, D. H., Jarvin, L., & Sternberg, R. J. (2009). Should you show me the money? Concrete objects both hurt and help performance on mathematics problems. *Learning and Instruction*, *19*, 171-184.
- McNeil**, N. M. (2008). Limitations to teaching children $2 + 2 = 4$: Typical arithmetic problems can hinder learning of mathematical equivalence. *Child Development*, *79*, 1524-1537.
- Knuth, E. J., Alibali, M. W., Hattikudur, S., **McNeil**, N. M., & Stephens, A. C. (2008). The importance of equal sign understanding in the middle grades. *Mathematics Teaching in the Middle School*, *13*, 514-520.

- McNeil**, N. M. & Jarvin, L. (2007). When theories don't add up: Disentangling the manipulatives debate. *Theory Into Practice*, 46, 309-316.
- McNeil**, N. M. (2007). U-shaped development in math: Seven year olds outperform nine year olds on mathematical equivalence problems. *Developmental Psychology*, 43, 687-695.
- Alibali, M. W., Knuth, E. J., Hattikudur, S., **McNeil**, N. M., & Stephens, A. C. (2007). A longitudinal examination of middle school students' understanding of the equal sign and performance solving equivalent equations. *Mathematics Thinking and Learning*, 9, 221-247.
- McNeil**, N. M., Grandau, L., Knuth, E. J., Alibali, M. W., Stephens, A. S., Hattikudur, S., & Krill, D. E. (2006). Middle-school students' understanding of the equal sign: The books they read can't help. *Cognition and Instruction*, 24, 367-385.
- Knuth, E. J., Stephens, A. C., **McNeil**, N. M. & Alibali, M. W. (2006). Does understanding the equal sign matter? Evidence from solving equations. *Journal for Research in Mathematics Education*, 37, 297-312.
- McNeil**, N. M., & Alibali, M. W. (2005b). Why won't you change your mind? Knowledge of operational patterns hinders learning and performance on equations. *Child Development*, 76, 883-899.
- McNeil**, N. M., & Alibali, M. W. (2005a). Knowledge change as a function of mathematics experience: All contexts are not created equal. *Journal of Cognition and Development*, 6, 385-206.
- Knuth, E. J., Alibali, M. W., **McNeil**, N. M., Weinberg, A., Stephens, A. C. (2005). Middle school students' understanding of core algebraic concepts: Equality and variable. *Zentralblatt für Didaktik der Mathematik / International Reviews on Mathematical Education*, 37, 68-76.
- McNeil**, N. M., & Alibali, M. W. (2004). You'll see what you mean: Students encode equations based on their knowledge of arithmetic. *Cognitive Science*, 28, 451-466.
- Evans, J. L., Alibali, M. W., & **McNeil**, N. M. (2001). Divergence of verbal expression and embodied knowledge: Evidence from speech and gesture in children with Specific Language Impairments. *Language and Cognitive Processes*, 16, 309-331.
- McNeil**, N. M., & Alibali, M. W. (2000). Learning mathematics from procedural instruction: Goals influence learning from the outside in. *Journal of Educational Psychology*, 92, 734-744.
- McNeil**, N. M., Alibali, M. W., & Evans, J. L. (2000). Role of gesture in children's language comprehension: Now they need it, now they don't. *Journal of Nonverbal Behavior*, 24, 131-150.

REFEREED PUBLICATIONS IN PROCEEDINGS

- ^GPetersen, L. A., ^UHeil, J. K., **McNeil**, N. M., & Haeffel, G. J. (2010). Learning from errors in game-based versus formal mathematics contexts. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 2578-2582). Austin, TX: Cognitive Science Society.

^UCrooks, N. M., & **McNeil**, N. M. (2009). Increased practice with “set” problems hinders performance on the water jar task. In N. A. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 643-648). Austin, TX: Cognitive Science Society.

^GKeultjes, M. C., ^UGibson, M. H., & **McNeil**, N. M. (2009). Children’s understanding of approximate arithmetic depends on problem format. In N. A. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 329-334). Austin, TX: Cognitive Science Society.

^GPetersen, L. A., & **McNeil**, N. M. (2008). Using perceptually rich objects to help children represent number: Established knowledge counts. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 1567-1572). Austin, TX: Cognitive Science Society.

McNeil, N. M. (2004a). Don’t teach me $2 + 2 = 4$: Knowledge of arithmetic operations hinders equation learning. In K. D. Forbus, D. Gentner, & R. Regier (Eds.), *Proceedings of the 26th Annual Conference of the Cognitive Science Society* (pp. 938-943). Mahwah, NJ: Lawrence Erlbaum Associates.

McNeil, N. M., Grandau, L., Stephens, A. C., Krill, D. E., Alibali, M. W., & Knuth, E. J. (2004). Middle-school students’ experience with the equal sign: *Saxon Math ≠ Connected Mathematics*. In D. McDougall (Ed.), *Proceedings of the XXVI Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA)*, Toronto, Canada (Vol. 1, pp. 271-6). Columbus, OH: ERIC.

McNeil, N. M., & Alibali, M.W. (2002). A well-established schema can interfere with learning: The case of children’s typical addition schema. In C. D. Schunn & W. Gray (Eds.), *Proceedings of the 24th Annual Conference of the Cognitive Science Society* (pp. 661-6). Mahwah, NJ: Lawrence Erlbaum Associates.

McNeil, N. M., & Alibali, M. W. (2001). Gesture production is associated with task motivation. In C. Cavé, I. Guaitella, & S. Santi (Eds.), *Oralité et gestualité: Interactions et comportements multimodaux dans la communication* [Orality and gestuality: Multimodal interaction and behavior in communication]. *Actes du colloque* [Proceedings of the meeting of] *ORAGE 2001* (pp. 247-252) Paris, France: L’Harmattan.

Alibali, M. W., **McNeil**, N. M., & Perrott, M. A. (1998). What makes children change their minds? Changes in encoding lead to changes in strategy selection. In M. A. Gernsbacher & S. Derry (Eds.), *Proceedings of the 20th Annual Conference of the Cognitive Science Society* (pp. 36-41). Mahwah, NJ: Lawrence Erlbaum Associates.

UNREFEREED PUBLICATIONS

Gubbins, E. J., Housand, B., Oliver, M., Schader, R., de Wet C. F., Moon, T. R., Hertberg-Davis, H., Callahan, C. M., Brighton, C., Sternberg, R. J, Grigorenko, E., Jarvin, L., **McNeil**, N. M., Connolly, K. (2008). Unclogging the mathematics pipeline through access to algebraic understanding. Storrs, CT: National Research Center on the Gifted and Talented.

OTHER PUBLICATIONS

McNeil, N. M. (2004b). Test item file to accompany *Children's Thinking* 4th edition by R. S. Siegler & M. W. Alibali. Upper Saddle River, NJ: Prentice Hall.

MANUSCRIPTS UNDER REVIEW OR IN PREPARATION

^GFuhs, M. W., **McNeil**, N. M., Kelley, K., & Villano, M. (under review). Testing the malleability of children's non-symbolic approximate number system acuity through adaptive computerized training.

Alibali, M. W., ^UCrooks, N. M., & **McNeil**, N. M. (under review). Changes in problem encoding lead to strategy generation.

^GByrd, C. E., **McNeil**, N. M., ^PChesney, D. L., & ^PMatthews, P. G. (under review). Children's "arithmetic-specific" interpretation of the equal sign confers specific risk for poor learning of early algebra.

McNeil, N. M., ^UFyfe, E. R., & Dunwiddie, A. E. (under review). Arithmetic practice can be modified to promote understanding of math equivalence.

^PChesney, D. L., **McNeil**, N. M., Petersen, L. A., & Dunwiddie, A. E. (under review). Arithmetic practice that includes relational words promotes conceptual understanding and computational fluency.

^UFyfe, E. R., **McNeil**, N. M., & Rittle-Johnson, B. (under review). Easy as ABC: Abstract language facilitates performance on a concrete patterning task.

^UFyfe, E. R., **McNeil**, N. M., & Hall, C. J. (in preparation). Benefits of "concreteness fading" for teaching children mathematics.

^PMatthews, P. G., ^PChesney, D. L., & **McNeil**, N. M. (in preparation). Are fractions natural numbers, too? Exploring cross-format distance effects for fractional magnitudes.

^GByrd, C. E., **McNeil**, N. M. (in preparation). Improving children's understanding of mathematical equivalence.

^GFuhs, M. W., ^GByrd, C. E., & **McNeil**, N. M. (in preparation). Specific number sense skills mediate the association between inhibitory control and mathematics achievement.

INVITED LECTURES AND ADDRESSES

2014 University of Illinois, Department of Psychology, Developmental Brown Bag Series

2014 Carnegie Mellon University, Department of Psychology, PIER Speaker Series

2013 Wesleyan University, Department of Psychology

2013 American Psychological Association Annual Convention, Division 7 Program

2012 University of Delaware, School of Education Conference on Improving Teaching and Learning

2009 University of Wisconsin-Madison, IES Interdisciplinary Training Program Seminar Series

- 2009 Indiana University, Symposium on Transfer of Learning
- 2009 Indiana University, Dept. of Psychological and Brain Sciences, Cognitive Colloquium Series
- 2009 Institute of Education Sciences, Fourth Annual IES Research Conference
- 2009 Institute of Education Sciences, Meeting of the National Board of Education Sciences
- 2008 Institute of Education Sciences, PECASE Colloquium
- 2008 University of Chicago, Department of Psychology, Developmental Seminar Series
- 2008 University of Portland, Symposium on Education
- 2006 Michigan State University, School of Education
- 2006 University of Notre Dame, Department of Psychology
- 2006 University of Oregon, Department of Psychology
- 2006 University of Colorado, Institute of Cognitive Science
- 2006 Colgate University, Department of Psychology
- 2006 Boston College, Lynch School of Education
- 2006 Oklahoma State University, Department of Psychology
- 2006 University of Miami, Department of Psychology
- 2006 Emory University, Department of Psychology
- 2006 Florida State University, Department of Psychology
- 2006 Wake Forest University, Department of Psychology
- 2006 Syracuse University, Department of Psychology
- 2006 University of Pittsburgh, Department of Psychology and LRDC
- 2006 University of Illinois—Chicago, Department of Psychology
- 2005 Yale University, Center for the Psychology of Abilities, Competencies, & Expertise
- 2005 Texas Tech University, Human Development & Family Studies
- 2005 Indiana University, School of Education
- 2005 University of North Carolina—Chapel Hill, School of Education
- 2005 University at Buffalo (SUNY), Department of Psychology
- 2005 Northwestern University, School of Education and Social Policy
- 2005 University of Missouri, Department of Psychology
- 2005 Northwestern University, Department of Psychology
- 2004 University of Iowa, Department of Psychology

CONFERENCE PRESENTATIONS

- Brockmole, J. R., Davoli, C. C., Ehrman, E. K., & **McNeil**, N. M. (2013, November). Getting a grip on concepts: Hand position affects access to mathematical knowledge. Talk presented at the 54th Annual Meeting of the Psychonomic Society. Toronto, ON, Canada.
- ^GPetersen, L. A., & **McNeil**, N. M. (2013, October). Counting practice with pictures but not objects improves children's understanding of cardinality. In K. H. Herold (Organizer), *Concrete symbols and instruction: Do they facilitate or hinder learning?* Symposium presented at the Biennial Meeting of the Cognitive Development Society (CDS). Memphis, TN.
- ^GFuhs, M. W., ^GByrd, C. E., & **McNeil**, N. M. (2013, October). Specific number sense skills mediate the association between inhibitory control and mathematics achievement. Poster presented at the Biennial Meeting of the Cognitive Development Society (CDS). Memphis, TN.
- ^GByrd, C. E., & **McNeil**, N. M., Brletic-Shiple, H., & Matthews, J. M. (2013, September).

Development of a comprehensive intervention to improve children's understanding of math equivalence. Poster presented at the Fall Conference of the Society for Research on Educational Effectiveness (SREE). Washington, DC.

^PChesney, D. L., ^PMatthews, P. G., & **McNeil**, N. M. (2013, May). Fraction format affects adults' performance on magnitude comparison problems. Poster presented at the Annual Meeting of the Association for Psychological Science (APS), Washington, D.C.

^UFyfe, E. R., & **McNeil**, N. M. (2013, May). The benefits of "concreteness fading" generalize across task, age, and prior knowledge level. In K. Mix (Organizer), *Learning from concrete models*. Symposium presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, WA.

^PChesney, D. L., **McNeil**, N. M., ^PMatthews, P. G., ^GByrd, C. E., ^GPetersen, L. A., ^UWheeler, M., ^UFyfe, E. R., & Dunwiddie, A. E. (2013, May). Organization matters: Children's mental organization of arithmetic knowledge correlates with understanding of math equivalence. Talk presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, WA.

^GByrd, C. E., **McNeil**, N. M., ^PChesney, D. L., & ^PMatthews, P. G. (2013, May). Children's "arithmetic-specific" interpretation of the equal sign constitutes risk for poor learning of early algebra. Poster presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, WA.

^PChesney, D. L., **McNeil**, N. M., ^GPetersen, L. A., & Dunwiddie, A. E. (2012, May). Arithmetic practice that includes relational words promotes conceptual understanding and computational fluency. Poster to be presented at the Annual Meeting of the Association for Psychological Science (APS). Chicago, IL.

^UWester, L. E., & **McNeil**, N. M. (2011, March). Familiar contexts can promote transfer of children's mathematical knowledge. Poster presented at the Biennial Meeting of the Society for Research in Child Development (SRCD). Montreal, Quebec, Canada.

^UCrooks, N. M., Alibali, M. W., & **McNeil**, N. M. (2011, March). Highlighting relevant problem features improves encoding of equivalence problems and leads to the generation of correct strategies. Poster presented at the Biennial Meeting of the Society for Research in Child Development (SRCD). Montreal, Quebec, Canada.

McNeil, N. M., Dunwiddie, A. E., ^GPetersen, L. A., ^UFyfe, E. R., & Brletic-Shiple, H. (2010, June). Arithmetic practice that promotes conceptual understanding and computational fluency: Year 3. Poster presented at the Annual Research Conference of the Institute of Education Sciences (IES), National Harbor, MD.

^UFyfe, E. R., & **McNeil**, N. M. (2009, October). Benefits of "concreteness fading" for children with low knowledge of mathematical equivalence. Poster presented at the Biennial Meeting of the Cognitive Development Society (CDS), San Antonio, TX.

McNeil, N. M., Dunwiddie, A. E., ^GPetersen, L. A., ^UFyfe, E. R., & Brletic-Shiple, H. (2009,

June). Arithmetic practice that promotes conceptual understanding and computational fluency: Year 2. Poster presented at the Annual Research Conference of the Institute of Education Sciences (IES), Washington, DC.

McNeil, N. M. (2009, May). Effect of arithmetic practice on mathematical thinking. In C. L. O'Donnell & E. R. Albros (Co-Chairs), *Developing preschool through middle school students' understandings of fundamental concepts in mathematics*. Symposium presented at the Annual Convention of the Association for Psychological Science, San Francisco, CA.

McNeil, N. M. (2009, April). Invited Discussion: Evaluating the role of input in children's (mis)understanding of mathematical equivalence. In M. M. Capraro (Chair), *An international perspective on sixth graders' interpretation of the equal sign*. Symposium presented at the Annual Meeting of the American Education Research Association, San Diego, CA.

^GPetersen, L. A., & **McNeil**, N. M. (2009, April). Effect of concrete objects on counting skill: An interaction between perceptual richness and established knowledge. In P. G. Matthews (Organizer), *Unpacking concreteness: Understanding how symbol choice impacts learning and transfer*. Symposium presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Denver, CO.

Alibali, M. W., Prather, R. W., & **McNeil**, N. M. (2009, April). Are abstract or concrete materials most beneficial for learning? It depends on problem difficulty and learners' skills. In M. J. Nathan (Organizer), *The role of concrete examples in learning math: Resolving some paradoxes*. Symposium presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Denver, CO.

McNeil, N. M., Dunwiddie, A. E., Brletic-ShIPLEY, H., ^GPetersen, L. A., & ^UGibson, M. H., (2008, June). Arithmetic practice that promotes conceptual understanding and computational fluency. Poster presented at the Annual Research Conference of the Institute of Education Sciences (IES), Washington, DC.

^GPetersen, L. A., & **McNeil**, N. M. (2007, October). How do different types of objects affect children's developing counting skill? Poster presented at the Biennial Meeting of the Cognitive Development Society (CDS), Santa Fe, NM.

McNeil, N. M., Jarvin, L., Sternberg, R. J., Uttal, D. H. (2007, March). Trade offs between more and less concrete manipulatives. In D. H. Uttal (Organizer), *Concreteness and cognitive development: New perspectives on a classic developmental issue*. Symposium presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Boston, MA.

McNeil, N. M. (2007, March). Tales of a fourth-grade misconception: U-shaped development in children's performance on mathematical equivalence problems. In J. H. Bisanz & J. L. Sherman (Organizers), *Overcoming misconceptions: Mechanisms of positive change for a common mathematical misunderstanding*. Symposium presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Boston, MA.

Jarvin, L., **McNeil**, N. M., & Sternberg, R. J. (2006, June). Understanding students' mathematical

competencies: An exploration of the impact of contextualizing math problems. Poster presented at the Institute of Education Sciences (IES) Research Conference, Washington, DC.

McNeil, N. M., Weinberg, A., Alibali, M. W., & Knuth, E. J. (2005, April). Children's prior knowledge of letters influences the interpretation of algebraic expressions. Poster presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Atlanta, GA.

Weinberg, A., Stephens, A. C., **McNeil**, N. M., Krill, D.E., Knuth, E. J., & Alibali, M. W. (2004, April). Students' initial and developing conceptions of variable. Paper presented at the 2004 meeting of the American Educational Research Association (AERA), San Diego, CA.

Evans, J. L., Alibali, M. W., Mainela-Arnold, E., **McNeil**, N. M., Ryan, K. E., & Simon, L. C. (2003, June). The role of gesture in comprehension of spoken language in children with E-SLI and ER-SLI. Poster presented at the Symposium for Research on Child Language Disorders (SRCLD), Madison, WI.

McNeil, N. M., & Alibali, M. W. (2002, June). A well-established schema can interfere with learning: Evidence from children's mathematical problem solving. Poster presented at the Fourteenth Annual Convention of the American Psychological Society (APS), New Orleans, LA.

McNeil, N. M., & Alibali, M. W. (2001, October). Don't be too sure about that: Certainty about an incorrect strategy hinders cognitive change. Poster presented at the Second Biennial Meeting of the Cognitive Development Society, Virginia Beach, VA.

McNeil, N. M. (2001, April). Mental sets and flexibility in the development of mathematical skill. Poster presented at the Biennial Meeting of the Society for Research in Child Development (SRCD), Minneapolis, MN.

McNeil, N. M., Alibali, M. W., & Evans, J. L. (1998, June). *Cognitive deficits in children with Specific Language Impairments: Do gestures reveal hidden knowledge?* Poster presented at the Symposium for Research on Child Language Disorders (SRCLD), Madison, WI.

MASTER'S THESES DIRECTED

Caroline Byrd (Passed April 2014). *Gesturing may not always make learning last.*

Lori Petersen (Passed April 2010). *The effects of concrete objects on counting skill: An interaction between perceptual features and established knowledge.*

M. Claire Keultjes (Passed April 2010). *Children's understanding of approximate addition depends on problem format.*

DOCTORAL DISSERTATIONS DIRECTED

Lori Petersen (Passed proposal, February 2012; Successfully defended, Summer 2013).

PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS

American Educational Research Association
Association for Psychological Science
Cognitive Development Society
Cognitive Science Society

Society for Research in Child Development

OTHER NOTABLE CONTRIBUTIONS

Teaching

Courses Taught/Designed

Using Research to Help Children Learn (Designed, Undergraduate), University of Notre Dame, 2013
Cognitive Development (Graduate), University of Notre Dame, 2008
Cognitive Development (Undergraduate), University of Notre Dame, 2007, 2008, 2010
Research Methods (Undergraduate), University of Notre Dame, 2006
Learning and Instruction (ACE Program), University of Notre Dame, spring semesters 2007-2012, 2014
Developmental Psychology and Moral Education for STEM Educators (ACE Program), University of Notre Dame, 2007, 2009-2012, 2014

Undergraduate Student Advising

Grace Bunsu (2013-present)

Research: Understanding of cardinality

Ellie Sato (2013-present)

Research: Understanding of mathematical equivalence

Erin Foley (2013-present)

Research: Understanding of mathematical equivalence

Molly Knapp (2013-present)

Research: Understanding of mathematical equivalence

Emily Geiger-Medina (2013-present)

Research: Understanding of mathematical equivalence

Alex Bohem (2013-present)

Research: Understanding of math equivalence; understanding of cardinality

Honors: CLAD Lab's NSF Summer Research Fellowship for Math Majors

Alice Tollaksen (2013-present)

Research: Understanding of cardinality

Marisa Rieber (2012-present)

Research: Effect of manipulating gesture and eye movements on learning and retention

Valerie Williams (2012-present)

Research: Understanding of mathematical equivalence

Erin Celeste (2012-present)

Research: Understanding of mathematical equivalence

Honors: CLAD Lab's NSF Summer Research Fellowship for Math Majors

Casey Hall (2012-2014)

Research: Understanding of cardinality; Use of concreteness fading in math instruction

Honors: Summer research internship in the Laboratory for Child Development at John's Hopkins;
UROP Undergraduate Research Grant; Honors Thesis

After ND: Graduate student in psychology at University of Chicago

Katelynn Kelly (2012-2013)

Research: Understanding of mathematical equivalence

Honors: CLAD Lab's NSF Summer Research Fellowship for Math Majors

After ND: AmeriCorps; currently applying to Ph.D. programs

Paul DiGaetano (2012-2013)

Research: Improving children's understanding of mathematical equivalence

After ND: Medical student at St. George's University

Rebecca Kibler (2011-2013)

Research: Arithmetic practice that promotes conceptual understanding and computational fluency

After ND: Teaching Assistant in the French Embassy's Teaching Assistant Program in France

Andrea Renfro (2010-2013)

Research: Arithmetic practice that promotes conceptual understanding and computational fluency

After Notre Dame: Graduate student in speech and language pathology at University of Washington

Serah Han (2010-2011)

Research: Use of the equal sign in 6th-8th grade textbooks in the U.S. and Japan

Honors: UROP Undergraduate Research Grant to conduct research in Japan

Anne Smrek (2011-2012)

Research: Sources of individual differences in susceptibility to mental sets

Honors: Glynn Family Honors Program Summer Award; UROP Undergraduate Research Grant;
Honors Thesis

After Notre Dame: Graduate student in school psychology at Ohio State University

Mary Wheeler (2010-2012)

Research: Sources of individual differences in understanding of mathematical equivalence

Honors: Honors Thesis

After Notre Dame: Research Assistant at University of Texas at Dallas

Stephanie Borjas (2010-2012)

Research: Advantages and disadvantages of concrete vs. abstract representations in mathematics

Honors: McGrath Award (Summer UROP)

After Notre Dame: Graduate student in school psychology at University of Wisconsin

Lauren Wester (2010-2011)

Research: Effects of contextualization of mathematics problems on learning and transfer

After Notre Dame: Graduate student in French at Notre Dame, Fulbright Fellow

Erica Pepitone (2009-2011)

Research: Arithmetic practice that promotes conceptual understanding and computational fluency
After Notre Dame: Graduate student in Irish writing at Trinity College Dublin

Joanna Thurnes (2009-2010)

Research: Arithmetic practice that promotes conceptual understanding and computational fluency
Honors: Senior Recognition Award in Psychology
After Notre Dame: Graduate student in physical therapy school

Jenny Heil (2008-2010)

Research: Early symbolic understanding; effects of games on children's mathematics learning
Honors: Honors Thesis; Senior Recognition Award in Psychology
After Notre Dame: Jesuit Volunteer Corps, Graduate student in psychological anthropology at Wash U

Emily Fyfe (formerly Conrad) (2007-2010)

Research: Advantages and disadvantages of concrete vs. abstract representations in mathematics
Honors: Loughrey Award (summer UROP), Honors Thesis, Santos Award for Distinction in Psychology, National Science Foundation (NSF) Graduate Fellowship
After Notre Dame: Graduate student in psychology at Vanderbilt University

Noelle Crooks (2008-2009)

Research: Effects of practice on problem solving
Honors: Honors Thesis, National Science Foundation (NSF) Graduate Fellowship Honorable Mention
After Notre Dame: Graduate student in psychology at University of Wisconsin-Madison

Krysten Williams (2007-2008)

Research: Arithmetic practice that promotes conceptual understanding and computational fluency
After Notre Dame: Graduate student in clinical psychology at Rutgers University

Matthew Gibson (2006-2008)

Research: Effects of problem format on young children's conceptual understanding of addition
Honors: McGrath Scholar (summer UROP), Honors Thesis, Santos Award for Distinction in Psychology
After Notre Dame: Teach for America

Christopher Howard (McNair/Notre Dame Scholars Program, summer 2007)

Research: Association between visual-spatial working memory and math performance

Graduate Student Advising

Caroline Byrd (2011-present)

Research: Factors that place children at risk for poor learning of mathematics concepts

Lori Petersen (2007-2013)

Research: Use of concrete objects and abstract symbols to represent mathematics concepts
After Notre Dame: Postdoctoral Research Associate at University of Chicago

M. Claire Keultjes (2008-2010)

Research: Effects of formal mathematics instruction on informal mathematics reasoning

Postdoctoral Fellow Advising

Dana Chesney (2010-2013)

Educational background: B.S. University of Virginia, Ph.D. Rutgers (under Rochel Gelman)

After Notre Dame: Postdoctoral Research Associate at Ohio State University

Percival Matthews (2010-2012)

Educational background: B.A. Harvard, Ph.D. Vanderbilt (under Bethany Rittle-Johnson)

After Notre Dame: Assistant Professor at University of Wisconsin-Madison

Masters, Preliminary Examination, and Dissertation Committees

Meg Trucano (Dissertation, 2012-2013)

Paul Stey (Masters, 2010-2011; Dissertation, 2013-2014)

Andrea Tamplin (Masters, 2007-2009)

Melissa Mitchell (Masters, 2008-2009)

M. Windy Mc Nerney (Preliminary Examination, 2008)

Andrea Christensen (Masters, 2008)

University and Departmental Service

2014-present Member, Advisory Grants Committee

2012-present Director, Interdisciplinary Minor in Education, Schooling, & Society, Notre Dame

2012-present Member, Institute for Educational Initiatives (IEI) Faculty Committee

2006-present Chair, E. M. Koppitz Child Psychology Graduate Fellowship Nomination Committee

2012 Member, National Math and Science Initiative (NMSI) Advisory Committee

2012 Member, Search Committee for the Lead Faculty Position for the IEI's Excellence in Science and Math Education Initiative

2012 Presenter, College of Arts & Letters Portion of Junior Parents Weekend

2010-2012 Member, Policy and Planning Committee

2009-2010 Member, Student Research Participation Committee

2009 Member, Search Committee for IEI Postdoc in Curriculum & Instruction

2008-2009 Member, Colloquium Committee

2008-2009 Member, Space, Parking, and Security Committee

2008-2009 Member, Ad-hoc Committee to Develop Protocol for Participant Payment

2008-2009 Member, Cognitive Search Committee

2008-2009 Member, Search Committee for the IEI Postdoc and Dissertation Award in Education

2007-2009 Faculty Mentor, Academic Honors Program for Student-Athletes at Notre Dame

2006-2009 Member, Committee for Change in Teaching Load

2007-2008 Member, Committee for Research Opportunities in the IEI

2007, 2009 Member, ACE Selection Committee

2007, 2008 Member, Developmental Area Preliminary Examination Committee

Professional Service

Editorial Board member

Journal of Experimental Psychology: General, 2011-present

Journal of Educational Psychology, 2012-present

Developmental Psychology, 2013-present

Manuscript reviewer (ad hoc)

Acta Psychologica

American Educational Research Journal: Teaching, Learning, and Human Development

Behavioral and Brain Sciences

Child Development

Child Development Research

Cognition

Cognition and Instruction

Cognitive Development

Cognitive Psychology

Cognitive Science

Contemporary Educational Psychology

Developmental Psychology

Developmental Science

Early Childhood Research Quarterly

Frontiers in Developmental Psychology

Journal of Cognition and Development

Journal of Educational Psychology

Journal of Experimental Child Psychology

Journal of Experimental Psychology: General

Journal of Experimental Psychology: Learning, Memory, & Cognition

Journal of Mathematical Behavior

Learning and Individual Differences

Learning and Instruction

Memory & Cognition

PLoS ONE

Psychological Science

WIREs: Cognitive Science

Grant reviewer

Institute of Education Sciences, Math and Science Education (grant panel member), 2014

Nuffield Foundation (ad hoc reviewer), 2013

Natural Sciences and Engineering Research Council of Canada, Discover Grant (ad hoc reviewer), 2013

National Science Foundation, REESE (ad hoc reviewer), 2012

National Science Foundation, Perception, Action & Cognition (ad hoc reviewer), 2012

National Science Foundation, Developmental and Learning Sciences (ad hoc reviewer), 2008, 2010

National Science Foundation, Division of Research on Learning (grant panel member), 2008

Conference program committee member or chair

Program chair, AERA Division C, Section 3 (Mathematics), 2011 Annual Meeting

Program committee member, Cognitive Science Society, 2010 Annual Meeting

Program committee member, APA Division 7, 2008 Convention

Conference submission reviewer

Society for Research on Educational Effectiveness Meeting, Fall 2011, Fall 2013

Annual Conference of the Cognitive Science Society, 2005-2011

SRCD, Education: Literacy, Math, Science, Curriculum, Teaching, & Learning, 2013 Biennial Meeting

Annual Meeting of the American Educational Research Association, 2007-2012

SRCD, Neurodevelopmental and Cognitive Processes, 2011 Biennial Meeting

Book reviewer

John Wiley & Sons, Inc.

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