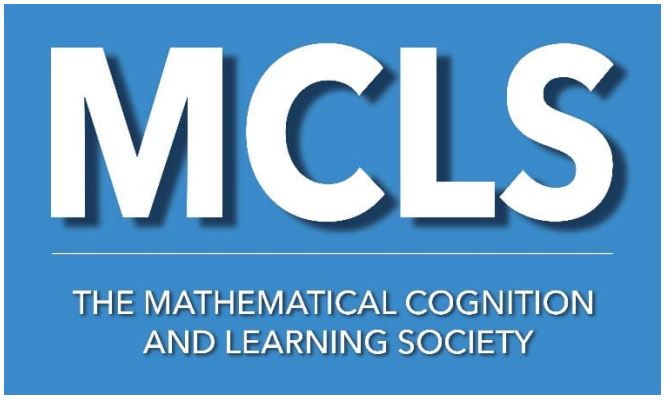

8th Annual Conference of The Mathematical Cognition and Learning Society (MCLS 2025)

June 9-11, 2025

Hong Kong

Preliminary Program

(as of May 16, 2025)

The Education University of Hong Kong,
10 Lo Ping Road, Tai Po, New Territories, Hong Kong S.A.R. China

Program Rundown

JUNE 8, 2025
17:00-Late Informal gathering at BACI Trattoria & Bar
[G/F, California Tower, 30-32 D'Aguilar Street, Lan Kwai Fong, Central]

DAY 1: JUNE 9, 2025
08:00-09:00 Registration [D1-LP-02]
09:00-09:15 Opening [D1-LP-02]
09:15-10:45 Plenary Symposium 1 [D1-LP-02]
10:45-11:15 Tea Break [Outside D1-LP-02]
11:15-12:30 Parallel Session 1 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
12:30-14:00 Lunch [Canteen]
14:00-15:00 Poster Session 1 [Outside C-LP-02 & C-LP-11]
15:00-16:15 Parallel Session 2 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
16:15-18:15 MCLS Social Reception [Conference Center, Block E]

DAY 2: JUNE 10, 2025
08:30-09:00 Registration [D1-LP-02]
09:00-10:15 Parallel Session 3 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
10:15-10:45 Tea Break [Outside D1-LP-02]
10:45-12:00 Parallel Session 4 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
12:00-01:30 Lunch [Canteen] / Mentor-Mentee Lunch [C-LP-02]
13:30-14:30 Poster Session 2 [Outside C-LP-02 & C-LP-11]
14:30-15:45 Parallel Session 5 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
15:45-16:15 Tea Break [Outside D1-LP-02]
16:15-17:30 Parallel Session 6 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
17:30-18:30 Board Meeting (for board members) [D1-LP-02] / Trainee Social [C-LP-02]

DAY 3: JUNE 11, 2025
08:30-09:00 Registration [D1-LP-02]
09:00-10:00 Business Meeting [D1-LP-02]
10:00-11:15 Parallel Session 7 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
11:15-12:15 Poster Session 3 [Outside C-LP-02 & C-LP-11]
12:15-13:45 Lunch [Canteen]
13:45-15:00 Parallel Session 8 [D1-LP-06, D1-LP-08, D2-LP-08, D2-LP-09]
15:00-15:30 Tea Break [Outside D1-LP-02]
15:30-17:00 Plenary Symposium 2 [D1-LP-02]
17:00-17:15 Closing [D1-LP-02]

Plenary Symposiums

Opening Plenary Symposium

Advancing insights into developmental dyscalculia - From brain mechanisms to educational applications
Date: June 9, 2025
Time: 0915-1045
Venue: D1-LP-02

Overview
This symposium explores the multifaceted nature of developmental dyscalculia (DD), presenting its neurocognitive, emotional, and educational dimensions. The studies in the current symposium highlight the complexity and diversity of developmental dyscalculia research and educational aspects. They provide a platform for discussing innovative methodologies, educational applications, and cognitive theories, and pave the way to tailored interventions and teaching strategies.

The first study by Santos and colleagues investigates the bidirectional relationship between DD and math anxiety (MA), emphasizing their distinct yet interconnected impacts on mathematical learning. The study explores evidence-based interventions targeting numerical cognition for DD and emotional regulation for MA, advocating for early identification and tailored approaches to support affected learners.

The second study by Bahnmueller and colleagues presents the Dyscalculia Knowledge and Awareness Scale. Their findings from an international survey reveal significant gaps in educators' understanding of DD and underscore the critical need for enhanced teacher education, professional development, and policy-driven support to improve identification and intervention.

The third study by Goldfarb and colleagues examines performance variability in mathematical learning difficulties (MLD), addressing both intra- and inter-subject variability. This perspective highlights the heterogeneity in cognitive performance and its implications for diagnosis and intervention strategies.

The fourth study by Saban and colleagues explores the cerebellum's role in cognitive mechanisms underlying numerical cognition among cerebellar ataxia patients, focusing on violations of expectations as a unifying principle across motor and cognitive domains.

Chair and Discussant: Yarden Gliksman, *Ruppin Academic Center*

1. Unravelling the Interplay of developmental Dyscalculia and maths anxiety: An overview of interventions
Flavia H. Santos, *University College London; University College Dublin*
Tom Hunt, *University of Derby*
Daniel Ansari, *Western University*

2. Measuring Dyscalculia knowledge and awareness in educators using the consensus-informed DKAS-scale
Alison Roulstone, *Loughborough University*
Kinga Morsanyi, *Loughborough University*
Mai Liên Thị Lê, *Vietnam National University*
Carlo Tomasetto, *University of Bologna*
Petro Erasmus, *North-West University*
Wandile Tsabedze, *University of South Africa*
Julia Bahnmueller, *Loughborough University*

3. Intra- and inter-subject variability in mathematical learning difficulties
Sharon Levy, *Haifa University*
Orly Rubinsten, *Haifa University*
Liat Goldfarb, *Haifa University*

4. Arithmetic and grammar violation of expectations is compromised in Cerebellar Ataxia
Leonardo A Daniel, *Tel Aviv University; Bar-Ilan University*
Eli Vakil, *Bar-Ilan University*
William Saban, *Tel Aviv University; Bar-Ilan University*

Closing Plenary Symposium

The other side of the door: Going beyond the main effects in randomized control trials to enhance learning
Date: June 11, 2025
Time: 1530-1700
Venue: D1-LP-02

Overview
Development of effective and feasible early mathematics interventions is critical towards advancing young children's success in mathematics. As a field, we often focus on the main effects of an intervention, but that leaves us with limited understanding of the more complex process of design, refinement, and scale-up—and how to leverage those processes to enhance impacts and sustainability of interventions. The three presentations in this symposium center on evaluation of early mathematics interventions using randomized control trials; however, each examines components of the design, refinement, and scale-up process that provides unique insights into the broader intervention process.

Presentation 1 focuses on the importance of the early design phase where they conduct co-production workshops with parents and early years educators to generate low cost and age-appropriate resources for parents to use at home that they then leverage for their intervention. Presentation 2 focuses on contrasting subgroup analyses with systematic post-intervention teacher feedback to understand how best to refine the intervention. Presentation 3 focuses on integrating both quantitative and qualitative evaluation feedback to best understand and sustain the intervention at scale. Across these three presentations, the presenters will emphasize not only effects of the intervention, but also critical process features and steps necessary to conduct high-impact intervention work that has the potential for long-term translational benefits.

Chair: David James Purpura, *Purdue University*

Discussant: Sarah Powell, *University of Texas*

1. Understanding the relation between the home mathematics environment and maths skills: A feasibility study
Victoria Simms, *Ulster University*
Benjamin W. Hunt, *Ulster University*
Abbie Cahoon, *Ulster University*
Danielle Matthews, *University of Sheffield*
Emma Blakey, *University of Sheffield*
Emma Smith, *University of Sheffield*
Ella James Brabham, *Loughborough University*

2. Reading and playing with math: Contrasting participant feedback and subgroup analyses to refine the intervention
David James Purpura, *Purdue University*
Sara A. Schmitt, *University of Oregon*
Jessica A. R. Logan, *Vanderbilt University*
Suzanne Varnell, *Purdue University*
Chanele Robinson-Rucker, *Purdue University*
Michael Eiland, *Purdue University*

3. Evaluating at scale requires sensitivity to differences: Lessons learnt from an early years mathematics and executive functions intervention
Holly Amos, *University of Sheffield*
Joanna Archibald, *University of Oxford*
Rosie O'Connor, *University of Oxford*
Hannah Palmer, *University of Oxford*
The ONE Team, *University of Oxford*
Steven Howard, *University of Wollongong*
Victoria Simms, *Ulster University*
Emma Blakey, *University of Sheffield*
Gaia Scerif, *University of Oxford*

Parallel Sessions

June 9: Symposiums/Lightning Talks

1115 – 1230: Parallel Session 1

Symposium 1.1 - Mathematics learning and teaching in the early years: Children, educators and families

Venue: D1-LP-08

Chairs:
Rachel Pollitt, *University of Melbourne (UniMelb)*
Katherine Canobi, *UniMelb*
Halina McNally, *UniMelb; Australian Education Research Organisation (AERO)*

Discussant: Jane Page, *University of Melbourne*

1. Mathematical experiences in early childhood settings: Links among educators' maths anxiety, professional wellbeing and attitudes to teaching and learning
Katherine Canobi, *University of Melbourne*
Halina McNally, *University of Melbourne; AERO*
Jane Page, *University of Melbourne*

2. Play-based approaches to mathematics: The role of family and educator partnerships
Halina McNally, *University of Melbourne; AERO*
Katherine Canobi, *University of Melbourne*
Jane Page, *University of Melbourne*

3. Pedagogical strategies to promote mathematics teaching and learning in early childhood settings
Rachel Pollitt, *University of Melbourne*
Jane Page, *University of Melbourne*
Halina McNally, *University of Melbourne; AERO*

Symposium 1.2 - Children with special educational needs: Understanding their cognitive and mathematical profiles

Venue: D1-LP-06

Chair: Stella Xu, *University College London*

Discussant: Victoria Simms, *Ulster University*

1. Individual differences and mathematical profiles in Williams Syndrome and Down Syndrome
Stella Xu, *University College London*
Michael S.C. Thomas, *Birkbeck, University of London*
Jo Van Herwegen, *University College London*

2. Assessing cross-domain contributors to numeracy in children with Down Syndrome, Fragile X Syndrome, and Williams Syndrome: Preliminary lessons learned from the MathMIND Project
Jennifer C. Bullen, *University of Oxford*
Zahra Siddiqui, *University College London*
Katie-Anne Costello, *University of Surrey*
Emily K. Farran, *University of Surrey*
Jo Van Herwegen, *University College London*
Gaia Scerif, *University of Oxford*

3. Building foundations for success: Addressing fraction difficulties with targeted interventions
Leanne R. Ketterlin-Geller, *Southern Methodist University*
Erica Lembke, *University of Missouri*
Sarah Powell, *University of Texas at Austin*

Symposium 1.3 - Pathways to numerical understanding: Longitudinal studies across diverse cultural and developmental contexts

Venue: D2-LP-09

Chair: Alexa Ellis, *University of Alabama*

Discussant: Jimena Cosso, *University of Maryland*

1. Tracking the home numeracy environment: A longitudinal study of three-year-olds
Alexa Ellis, *University of Alabama*
Jimena Cosso, *University of Maryland*
David J. Purpura, *Purdue University*

2. Evaluating the role of the home math environment in predicting math performance and variability in growth in Chilean children
María Inés Susperreguy, *Pontificia Universidad Católica de Chile; Millennium Nucleus for the Study of the Development of Early Math Skills (MEMAT)*
M. Francisca Morales, *MEMAT; Universidad Diego Portales (UDP)*
M. Francisca del Río, *MEMAT; UDP*

3. Longitudinal contributions of early numeracy subdomains to equation-solving fluency in Canadian students aged 6 to 9 years
Shuyuan Yu, *Carleton University*
Heather Douglas, *Carleton University*
Jo-Anne LeFevre, *Carleton University*

Lightning Talk 1.4 - Arithmetic and Beyond

Venue: D2-LP-08
Moderator: Jenny Yun-Chen Chan

1. Arithmetic skills scaffold the development of numbering and relational reasoning: A longitudinal study in Chinese preschool children
Zihan Yang, *Beijing Normal University*
Sophia W. Deng, *Xi'an Jiaotong-Liverpool University*
Jie Chen, *Beijing Normal University*
Xiujie Yang, *Beijing Normal University*

2. Contrasting types of manipulatives effects on arithmetic strategy use depends on children's initial propensity
Elida V. Laski, *Boston College*
Marina Vasilyeva, *Boston College*

3. Individual differences in arithmetic word problem solving
Jeanne Bagnoud, *University of Córdoba; University of Geneva*
Emmanuel Sander, *University of Geneva*

4. Comprehensive error analysis in word-problem solving: Insights into challenges faced by students with word problem difficulties
Haorui Cui, *University of Macau*
Xin Lin, *University of Macau*

5. The relative significance of the abilities to identify the semantic role of the unknown and problem schema in mathematical word problem solving
Eason Sai-Kit Yip, *University of Hong Kong*
Eleonora Doz, *University of Trieste (UniTS)*
Maria Chiara Passolunghi, *UniTS*

6. Unraveling pre-algebra challenges: Identifying subtypes of pre-algebra difficulties through cognitive diagnostic models
Xiang Yu Li, *University of Macau*
Xin Lin, *University of Macau*

7. Processing of error signals in higher cognition is compromised in cerebellar ataxia
Leonardo Daniel, *Tel Aviv University; Center for Accessible Neuropsychology (CAN)*
Eli Vakil, *Bar-Ilan University*
William Saban, *Tel Aviv University; CAN*

1500 - 1615: Parallel Session 2

Symposium 2.1- Building bridges in early math learning: Participatory design, parental language, and feedback strategies

Venue: D1-LP-08

Chairs:
Qianru Tiffany Yang, *Stanford University*
Valerie Yi Jie He, *The Education University of Hong Kong (EdUHK)*

Discussant: María Inés Susperreguy, *Pontificia Universidad Católica de Chile*

1. "A little shopper's journey": Participatory design of a math game with caregivers
Valerie Yi Jie He, *EdUHK*
Jolene Zi Lin Deng, *EdUHK*
Shirley Yuen Man Tsang, *EdUHK*
Jenny Yun-Chen Chan, *EdUHK*

2. The contribution of parents' mathematical language in parent-child games activities to young Chinese children's mathematical ability
Qi Huang, *Beijing Normal University*
Hanbin Wu, *Jinan No. 15 Middle School*
Jin Sun, *University of Macau*

3. Parents' responses to children's incorrect math communication and children's subsequent correction: A cross-cultural investigation
Qianru Tiffany Yang, *Stanford University*
Zhong Cao, *Harvard University*
Kathryn A. Leech, *University of North Carolina at Chapel Hill*
Meredith L. Rowe, *Harvard University*

Symposium 2.2 - Neural responses to numerosity and working memory load in the human brain

Venue: D1-LP-06

Chairs:
Ben Harvey, *Utrecht University*
Serge Dumoulin, *Spinoza Centre for Neuroimaging; Netherlands Institute for Neuroscience; Vrije University Amsterdam; Utrecht University*

1. Interaction between retinotopic and numerotopic field maps in parietal cortex with 7T fMRI
Jacob Paul, *University of Melbourne*
Gilles de Hollander, *University of Zurich*

2. Numerosity adaptation suppresses early visual responses and biases numerosity-tuned responses
Liangyou Zhang, *Utrecht University*
Evi Hendrikx, *Utrecht University*
Yizhen Wang, *South China Normal University*
Surya Gayet, *Utrecht University*
Serge Dumoulin, *Spinoza Centre for Neuroimaging; Netherlands Institute for Neuroscience; Vrije University Amsterdam; Utrecht University*
Ben Harvey, *Utrecht University*

3. Numerosity selective neural populations tuned to perceived numerosity, not physical numerosity
Yuxuan Cai, *South China Normal University*
Guifen Su, *South China Normal University*
Sifang Yu, *South China Normal University*

4. Tuned responses to visual working memory load in a cortical topographic map hierarchy
Ben Harvey, *Utrecht University*
Martijn van Ackooij, *Utrecht University*
Joeri van Helden, *University of Birmingham*
Evi Hendrikx, *Utrecht University*
Nathan van der Stoep, *Utrecht University*
Surya Gayet, *Utrecht University*
Jacob Paul, *University of Melbourne*

Symposium 2.3 - Procedural flexibility in mathematical problem-solving

Venue: D2-LP-09

Chairs:
Haoyi Wang, *University of Pennsylvania*
Qiuyu Chen, *University of Michigan*

1. The role of inhibitory control in the development of mathematical flexibility
Ronghuan Jiang, *Shenzhen University*
Ru-De Liu, *Beijing Normal University*
Jon Star, *Harvard Graduate School of Education*

2. Exploring flexibility in proportional problem solving through cognitive and metacognitive lenses
Kunli Li, *East China Normal University*
Jon Star, *Harvard Graduate School of Education*
Lianghuo Fan, *University of Macau*

3. Does mind wandering mediate the effect of attentional control on students' flexibility in arithmetic problem-solving?
Shuyang Jiang, *Suzhou University of Science and Technology*
Ru-De Liu, *Beijing Normal University*
Jia Wang, *Beijing Union University*

4. Effects of comparing and discussing multiple strategies: The mediating role of dispositions
Haoyi Wang, *University of Pennsylvania*
Qiuyu Chen, *University of Michigan*
Jon Star, *Harvard Graduate School of Education*

Lightning Talk 2.4 - Numbers

Venue: D2-LP-08
Moderator: Pierina Cheung

1. The neural mechanism of the non-symbolic magnitude representation in bilingual Tibetan students
Fan Yang, *Beijing Normal University*
Zhanling Cui, *Hebei Normal University*

2. Reversing influences of counting on calculation with age - A path analysis in early childhood
Yushu Wang, *Capital Normal University; Loughborough University*
Jin Sun, *University of Macau*
Korbinian Moeller, *Loughborough University (Lboro); University of Tübingen*
Julia Bahnmueller, *Lboro; University of Tübingen*
Xiaohui Xu, *Capital Normal University*

3. Do non-verbal numerical systems predict early number word learning?
Xi Yao, *Sun Yat-sen University*
Yi Mou, *Sun Yat-sen University*

4. Assessing children's part-whole understanding on enactive, iconic and symbolic levels of representation
Caroline Marx, *University of Education Karlsruhe*
Korbinian Moeller, *Loughborough University; University of Tübingen*
Stephanie Roesch, *University of Tübingen*
Christiane Benz, *University of Education Karlsruhe*

5. Using number lines and analogies to support integrated rational number sense: A Digital Rational Number Intervention (DRUM)
Charles Fitzsimmons, *University of North Florida*
Daniel Scheibe, *Kent State University*
Pooja Sidney, *University of Kentucky*
Lauren Schiller, *Kean University*
Shuyuan Yu, *Carleton University*
Jessica Rodrigues, *University of Missouri*
John Opfer, *The Ohio State University*
Clarissa Thompson, *Kent State University*

6. Two-digit number processing in professional mathematicians reveals the same behavioural signatures as in control samples
Martyna Sroka, *Jagiellonian University*
Mateusz Hohol, *Jagiellonian University*
Krzysztof Cipora, *Loughborough University*

June 10: Symposiums/Lightning Talks

0900-1015: Parallel Session 3

Symposium 3.1 - How the interplay of socioeconomic and environmental contexts shapes early mathematics development

Venue: D1-LP-08

Chair: Ilse Coolen, *KULeuven*

1. Exploring socio-economic differences in early childhood education amid French Covid-19 school closures
Ilse Elise Johanna Ingrid Coolen, *KULeuven; Université de Paris Cité (UPCité)*
Melissa Ozkaynar, *UPCité*
Sixtine Omont-Lescieux, *UPCité*
Andre Knops, *UPCité*

2. A longitudinal study of mapping skills and maths attainment: How SES and Covid-19 influenced early maths skills
Dawn Short, *Abertay University*
Janet McLean, *Abertay University*

3. Family socioeconomic status and early math performance: Exploring the role of home math environment among Chinese families
Qi Zhou, *Xi'an Jiaotong-Liverpool University*
Jike Qin, *Xi'an Jiaotong-Liverpool University*
Lixin Ren, *Xi'an Jiaotong-Liverpool University*
Xinyun Lyu, *Xi'an Jiaotong-Liverpool University*

4. Exploring the relationship between the learning environment at preschool, socio-economic status and child outcomes in mathematics in 3- to 4-year-olds
Rosemary O'Connor, *University of Oxford*
The ONE team, *University of Oxford; University of Sheffield*
Emma Blakey, *University of Sheffield*
Gaia Scerif, *University of Oxford*

Symposium 3.2 - What do words have to do with math?

Venue: D1-LP-06

Chair: Sarah Powell, *The University of Texas at Austin (UT Austin)*

1. How does mathematics vocabulary instruction improve mathematics performance? A meta-analysis
Xin Lin, *University of Macau*
Haorui Cui, *University of Macau*
Yijie Li, *University of Macau*

2. A systematic review of mathematics vocabulary interventions for students with or at-risk for mathematics difficulty
Elizabeth Stevens, *University of Kansas*

3. An intervention designed to increase mathematics vocabulary related to decimals
Xiaochong Zeng, *University of Macau*
Xin Lin, *University of Macau*

4. An intervention designed to increase mathematics vocabulary within a word problem intervention
Sarah Powell, *UT Austin*
Danielle Lariviere, *UT Austin*
Kate Berry, *UT Austin*

Symposium 3.3 - Addressing mathematical learning challenges: Assessments, interventions, and strategies to support students with diverse needs

Venue: D2-LP-09

Chairs:
Leran Meng, *EdUHK*
Jenny Yun-Chen Chan, *EdUHK*

1. The development and validation of a standardized assessment battery for identifying junior primary school students with mathematics learning difficulties
Terry Tin-Yau Wong, *HKU*
Winnie Wai Lan Chan, *EdUHK*
Yuen Pui Tam, *University of Cambridge*
Eason Sai-Kit Yip, *HKU*
Christine Kong-Yan Tong, *HKU*

2. Do children's descriptions of fraction values predict their persistent difficulty with fractions?
Anna Poi, *University of Minnesota*
Michèle M Mazzocco, *University of Minnesota*

3. Improving children's foundational fraction skills through a multiplayer online game intervention
Jessica Amber Shapiro, *OISE/UT*
Larisa Lam, *OISE/UT*
Zachary Pedersen, *OISE/UT*
Zeyana Ayesha Musthafa, *OISE/UT*
Zachary Hawes, *OISE/UT*

4. Incorporating parent feedback in the iterative design of a home math intervention for children with developmental delays
Brianna Devlin, *University at Buffalo, SUNY*
Hannah Carter, *Boise State University*
Janice Fong, *University of Oregon*
Kevie Drake, *University of Oregon*
Marah Sutherland, *University of Oregon*
Sara Schmitt, *University of Oregon*
Bree Jimenez, *Baylor University*
Ben Clarke, *University of Oregon*
Gena Nelson, *University of Oregon*

Lightning Talk 3.4 - Atypical Development & Anxiety

Venue: D2-LP-08
Moderator: Sum Kwing Cheung

1. Psychometric properties of AMAS and math anxiety prevalence among Chinese and Russian schoolchildren: A comparative study
Du Linna, *Mudanjiang Normal University*
Wang Xinghua, *Mudanjiang Normal University*
Yu Haiying, *Mudanjiang Normal University*
Anna Pavlova, *Russian Academy of Education*
Victoria Ismatullina, *Psychological Institute of Russian Academy of Education*
Artem Malykh, *Ural Federal University*
Pavel Kolyasnikov, *Ural Federal University*
Sergey Malykh, *Russian Academy of Education*

2. Psychometric properties of AMAS on a sample of Russian university students
Artem Malykh, *Russian Academy of Education*
Anna Pavlova, *Russian Academy of Education*
Alexey Tikhoniyk, *Russian Academy of Education*
Tatiana Tikhomirova, *Russian Academy of Education*
Sergey Malykh, *Russian Academy of Education*

3. Exploring the link between mathematics anxiety and mathematical skills in late primary education
Carola Ruiz, *Catholic University of Uruguay (UCU)*
Ariel Cuadro, *UCU*
Daniel Costa, *UCU*
Micaela Pastorino, *UCU*
Dahiana Fitipalde, *UCU*

4. Domain-specific self-efficacy and mathematics vocabulary performance: Challenges for students with mathematics difficulties
Yijie Li, *University of Macau*
Xin Lin, *University of Macau*

5. Tracking the development of Mathematics anxiety and self-efficacy over time
Florence Gabriel, *University of South Australia (UniSA)*
Rebecca Marrone, *UniSA*
Abhinava Barthakur, *UniSA*
JohnPaul Kennedy, *UniSA*

6. College students' mathematics sense of belonging, academic motivation, and competency beliefs: Are relations similar across social identities?
Pooja Sidney, *University of Kentucky*
Benjamin Braun, *University of Kentucky*
Cindy Jong, *University of Kentucky*
Matthew Kim, *University of Kentucky*
Kaitlyn Brown, *University of Kentucky*

7. Beyond math anxiety: The role of personal beliefs and reappraisal in explaining math performance
Sara Caviola, *University of Padova*
Alice Masi, *University of Padova*
Enrico Toffalini, *University of Padova*

1045 -1200: Parallel Session 4

Symposium 4.1 - Nurturing math minds: Understanding children's home math environment

Venue: D1-LP-08

Chairs:
Yi Shen, *The Education University of Hong Kong (EdUHK)*
Jenny Yun-Chen Chan, *EdUHK*

1. Shifting the paradigm: Home mathematics environment as a moderator of SES disparities
David Muñez, *Nanyang Technological University (NTU)*
Jaslyn See, *NTU*
Amanda Aw, *NTU*
Pierina Cheung, *NTU*

2. "How important are data and statistics?": Examining relations between home math and graphicacy activities and parents' academic beliefs
Mary DePascale, *University at Albany, SUNY*

3. I want it that way: Promoting preschoolers' interest in informal math activities with choice
Nicole R. Scalise, *Washington State University*
Morgan Conway, *Washington State University*
Amya Dahl, *Washington State University*

4. Children's math interest: The role of school-home communication and the home mathematics environment
Yi Shen, *The Education University of Hong Kong (EdUHK)*
Jenny Yun-Chen Chan, *EdUHK*
Valerie Yi Jie He, *EdUHK*
Shirley Yuen Man Tsang, *EdUHK*

Symposium 4.2 - Neuroimaging and behavioural studies of the role of executive functions in mathematical skills over the course of development

Venue: D1-LP-06

Chairs:
Eric D. Wilkey, *Vanderbilt University*
Iroise Dumontheil, *University of Melbourne*
Dana Miller-Cotto, *University of California, Berkeley*

Discussant: Jacob Paul, *University of Melbourne*

1. Working with numbers: Exploring the domain-specificity of executive functions
Eric D. Wilkey, *Vanderbilt University*
Alexa D. Mogan, *Vanderbilt University*
Isabella Starling-Alves, *Vanderbilt University*

2. Comparison of the neural correlates of science and maths counterintuitive reasoning and inhibitory control in childhood, adolescence and adulthood
Lucy Palmer, *Birkbeck, University of London*
Denis Mareschal, *Birkbeck, University of London*
Iroise Dumontheil, *University of Melbourne; Birkbeck, University of London*

3. How does working memory “work” in math problem solving?: An aptitude by treatment interaction investigation
Dana Miller-Cotto, *University of California, Berkeley (UC Berkeley)*
Josh Medrano, *UC Berkeley*

Symposium 4.3 - Individual variation in mathematical skills and development from infancy to school age: Risk factors and early identification

Venue: D2-LP-09

Chair: Tuire Koponen, *University of Jyväskylä*

1. Differences in the perception of quantities among newborn infants with and without a familial risk for mathematical learning difficulties
Kaisa Lohvansuu, *University of Jyväskylä*
Jarmo Hämäläinen, *University of Jyväskylä*
Minna Torppa, *University of Jyväskylä*
Tuire Koponen, *University of Jyväskylä*

2. Understanding heterogeneity in preschoolers at risk of mathematical learning difficulties
Sara Peeters, *KU Leuven; University of Melbourne*
Lorraine Graham, *University of Melbourne*
Robert Reeve, *University of Melbourne*
Bert De Smedt, *KU Leuven*

3. Identifying preschool children at risk for mathematics disabilities: Early cognitive and numerical precursors
Xiangzi Ouyang, *Lingnan University*
Xiao Zhang, *The University of Hong Kong*

4. Atypical and typical development of arithmetic skills
Matilda Hamara, *University of Jyväskylä*
Minna Torppa, *University of Jyväskylä*
Riikka Heikkilä, *Niilo Mäki Institute*
Mikko Aro, *University of Jyväskylä*
Tuire Koponen, *University of Jyväskylä*

Lightning Talk 4.4 - Schooling and Intervention

Venue: D2-LP-08
Moderator: Alfredo Bautista

1. Measuring early numerical learning potential in Belgium and Australia
Nathalie Parry, *University of Melbourne; KU Leuven*
Robert Reeve, *University of Melbourne*
Lorraine Graham, *University of Melbourne*
Bert De Smedt, *KU Leuven*

2. Roles of cognitive and mathematics skills in predicting mathematics achievement levels in late elementary stages
Charles Chiu Hung Yip, *HKU*
Xiangzi Ouyang, *Lingnan University*
Terry Tin-Yau Wong, *HKU*

3. From pedagogical content knowledge to instructional pedagogy: Investigating the role of relational pedagogy in early childhood mathematics education
Haoran Luo, *University of Oxford*

4. Words count: Enhancing mathematics vocabulary instruction to improve learning
Natalie Rose Patton, *University of Kansas*
Mackenna Vander Tuin, *UT Austin*
Elizabeth A. Stevens, *University of Kansas*
Sarah R. Powell, *UT Austin*

5. From professional experiences and qualifications to professional practices: The case of early childhood mathematics education
Jin Sun, *Univeristy of Macau*
Jiajia Li, *Univeristy of Macau*
Yulu He, *Univeristy of Macau*

6. Longitudinal study of classroom peer effects on early math skills of young rural children: The moderation of teacher instructional support
Yue-Juan Pan, *Beijing Normal University*
Jing-Jing Huang, *Beijing Normal University*
Yu-Fan Lei, *Beijing Normal University*

7. Exploring long-term predictors of Math Achievement: A gender-sensitive perspective from a large-scale study
Valentina Tobia, *Vita-Salute San Raffaele University*
Gianluca Argentin, *University of Milano-Bicocca*

1430-1545: Parallel Session 5

Symposium 5.1 - Understanding the multifaceted nature of parent-child math interaction

Venue: D1-LP-08

Chair: Elida V. Laski, *Boston College*

1. The interplay of parental math anxiety, home math environment, and math expectations
Jimena Cosso, *University of Maryland*
David Purpura, *Purdue University*
Alexa Ellis, *The University of Alabama*

2. Navigating trade-offs in early math: How context influences parent-child interaction
Linxi Lu, *University of Chicago*
Marina Vasilyeva, *Boston College*
Elida V. Laski, *Boston College*

3. A month-long parent-led spatial intervention failed to improve children's spatial skills
Jing Tian, *Fordham University*
Grace Bennett-Pierre, *University of Colorado*
Nadia Tavassolie, *Temple University*
Xinhe Zhang, *Indiana University Bloomington*
Emily D'Antonio, *West Virginia University*
Lexi Sylverne, *Rutgers University-New Brunswick*
Nora S. Newcombe, *Temple University*
Marsha Weinraub, *Temple University*
Annemarie Hindman, *UNC-Chapel Hill*
Kristie Newton, *Temple University*
Elizabeth A. Gunderson, *IU Bloomington*

4. Joint developmental trajectories of home numeracy activities in China: The predictive role of parental beliefs of children's math skills
Xingbei Liu, *Northeast Normal University*
Bi Ying Hu, *University of Macau*
Mengdi Chen, *University of Macau*
Lixin Ren, *Xi'an Jiaotong-Liverpool*
Xiao Zhang, *University of Hong Kong*
Yuewen Chen, *Ningbo University*

Symposium 5.2 - Representations of ordinality in digits and letters: Effects of language, space, and familiarity

Venue: D1-LP-06

Chair: Maria Clara Brandao, *University of British Columbia*

1. From ordinality to cardinality: How children and adults rank letters and numbers
Maria Clara Brandao, *University of British Columbia*
Darko Odic, *University of British Columbia*

2. Spatial mental representations of ordinality based on long-term memory and working memory
Lilly Roth, *University of Tübingen*
Julia F. Huber, *University of Tübingen*
Sophia Kronenthaler, *University of Tübingen*
Jean-Philippe van Dijck, *Thomas More University; Ghent University*
Krzysztof Cipora, *Loughborough University*
Martin V. Butz, *University of Tübingen*
Hans-Christoph Nuerk, *University of Tübingen; German Center for Mental Health*

3. The presence of the reverse distance effect depends on the familiarity of the sequences being processed
Declan Devlin, *Loughborough University*
Korbinian Moeller, *Loughborough University; University of Tübingen*
Iro Xenidou-Dervou, *Loughborough University*
Bert Reynvoet, *KU Leuven*
Francesco Sella, *Loughborough University*

4. Perception of ordinality is driven by semantic content rather than language-specific metaphors - a preregistered study in arithmetic word problems
Ann Mary John, *Aix Marseille University; CY Cergy Paris University*
Mônica Macedo-Rouet, *CY Cergy Paris University*
Hippolyte Gros, *Aix Marseille University*

Symposium 5.3 - The malleability and utility of informal fraction knowledge from early years contexts through formal schooling

Venue: D2-LP-09

Chairs:
Ilyse Resnick, *University of Canberra*
Nancy C. Jordan, *University of Delaware*
Chelsea Cutting, *University of South Australia*
Margot Röell, *Evidence B*

1. The use of embedded, naturalistic contexts to engage in fraction concepts
Ilyse Resnick, *University of Canberra*
Kevin Larkin, *Griffith University*
Tom Lowrie, *University of Canberra*

2. Effects of playful learning activities on first graders' early fraction knowledge
Nancy C. Jordan, *University of Delaware*
Ilyse Resnick, *University of Canberra*
Alexandria Viegut, *University of Wisconsin, Eau Claire*
Nora S. Newcombe, *Temple University*
Christina Areizaga Barbieri, *University of Delaware*

3. Spatial reasoning's critical role in young children's rational number knowledge development
Chelsea Cutting, *University of South Australia*

4. From intuition to abstraction: Supporting the transition to formal fraction understanding with ai-powered tools
Margot Röell, *Evidence B*
Catherine de Vulpillières, *Evidence B*
André Knops, *Université Paris Cité*
Laurianne Vagharchakian, *Max Planck Institute for Human Development*

Lightning Talk 5.4 - Development

Venue: D2-LP-08
Moderator: Chen Cheng

1. The association between approximate number system and math abilities in preschoolers: The role of processing speed
Keyue Li, *Zhejiang University*
Shiqiao Shen, *Zhejiang University*
Jike Qin, *Xi'an Jiaotong-Liverpool University*
Wei Wei, *Zhejiang University*

2. From spatial construction to mathematics: Exploring the mediating role of visuospatial working memory
Yuxin Zhang, *Macquarie University*
Rebecca Bull, *Macquarie University*
Emma Burns, *Macquarie University*

3. Relationship between preschool phonological processing skills, Chinese reading and math ability: A cross-lagged analysis
Liushuang Zhang, *Beijing Normal University at Zhuhai*
Ruoyi Qiu, *Beijing Normal University at Zhuhai*
Kaichun Liu, *Wuxi Vocational Institute of Commerce*
Yiwei Zhao, *Beijing Normal University*
Xiujie Yang, *Beijing Normal University*
Xin Cui, *Beijing Normal University at Zhuhai*

4. Contrasting measures of ordinality and their relative contributions to early math development
Alina Sanina, *University of Winnipeg*
Hailey Suttorp, *Western University*
Michael Slipenkyj, *Georgetown University*
Elizabeth Brannon, *University of Pennsylvania*
Stephanie Bugden, *University of Winnipeg*

5. Understanding infinity-related concepts with limited formal schooling
Isabelle Boni, *Boston College*
Steven T. Piantadosi, *University of California, Berkeley*
Sara Cordes, *Boston College*

6. Math skills and microstructure metrics of the middle longitudinal fasciculus in children and adolescents
Asya Istomina, *Higher School of Economics University (HSE University)*
Irina Buianova, *HSE University; University of Otago*
Andrei Manzhurtsev, *Clinical and Research Institute of Emergency Pediatric Surgery and Trauma; Goethe University*
Maxim Ublinskiy, *Clinical and Research Institute of Emergency Pediatric Surgery and Trauma*
Viktor Karpychev, *HSE University*
Marie Arsalidou, *York University*

7. E/I Imbalance and its relationship to individual differences in math abilities: Converging evidence from neuroimaging and computational work
Lang Chen, *Santa Clara University*

1615-1730: Parallel Session 6

Symposium 6.1 - Why and how do parents talk about math with their preschoolers?

Venue: D1-LP-08

Chair: Rebecca McGregor Reiner, *University of Pittsburgh*

1. How do parents envision playful math interactions with their preschool child, and how does their vision compare to observed play?
Sarah E. Pan, *University of Minnesota*
Michèle M. M. Mazzocco, *University of Minnesota*

2. Examining relations between the complexity of parents' math talk and their beliefs
Siqi Zhang, *Purdue University*
Can Carkoglu, *Purdue University*
Kirsten L. Anderson, *Purdue University*
Salvador R. Vazquez, *Purdue University*
Sarah H. Eason, *Purdue University*

3. An interactional perspective on math talk
Pierina Cheung, *Nanyang Technological University (NTU)*
Nuraini Binte Aziz, *NTU*
Lit Wee Sim, *NTU*
Daniel Ansari, *Western University*
Rebecca Bull, *Macquarie University*
Kerry Lee, *Yew Chung College of Early Childhood Education*
Anne Rifkin-Graboi, *NTU*

4. Longitudinal changes in parent math talk styles during a family math intervention
Rebecca McGregor Reiner, *University of Pittsburgh*
Diana Leyva, *University of Pittsburgh*
Melissa E. Libertus, *University of Pittsburgh*

Symposium 6.2 - Visual-spatial aspects of numerical cognition

Venue: D1-LP-06

Chair: Yafit Oscar, *Ben Gurion University of the Negev*

1. The unit-decade compatibility effect in an analogue magnitude comparison task
Roman Janssen, *Université Paris Cité*
Arnaud Viarouge, *Université Paris Cité*
André Knops, *Université Paris Cité*
Elise Klein, *Université Paris Cité*

2. Do children's and adults' representations of negative numbers depend on context?
Nicholas A Vest, *University of Wisconsin-Madison (UW-Madison)*
Martha W Alibali, *UW-Madison*

3. LTM-based and WM based SNARC and SLARC effects in native Hebrew speakers
Yafit Oscar-Strom, *Ben-Gurion University of the Negev (BGU)*
Joseph Tzelgov, *BGU*
Avishay Henik, *BGU*

4. Hong Kong children's temperament and math performance: The mediating effect of working memory and self-regulation
Chun Wing Ng, *The Education University of Hong Kong (EdUHK)*
Jane Xiang, *EdUHK*
Yasmin Fong, *EdUHK*
Kerry Lee, *EdUHK*
Eva Yi Hung Lau, *EdUHK*

Symposium 6.3 - Leveraging cognitive principles in low-cost interventions to improve mathematics problem solving and learning

Venue: D2-LP-09

Chair: Caroline Byrd Hornburg, *Virginia Tech*

1. The effects of perceptual cues within online worked examples on elementary students' mathematics performance and learning
Avery Closser, *University of Florida*
Connor O'Rear, *University of Notre Dame*
Anthony Botelho, *University of Florida*
David Purpura, *Purdue University*

2. Understanding the effects of perceptual cues on middle schoolers' mathematical performance, learning, and retention
Caroline Byrd Hornburg, *Virginia Tech*
Puyuan Zhang, *Worcester Polytechnic Institute*
Avery Closser, *University of Florida*
Jeffrey K. Bye, *California State University-Dominguez Hills*
Ji-Eun Lee, *Worcester Polytechnic Institute*
Alena Egorova, *Worcester Polytechnic Institute*
Maegan A. Reinhardt, *Virginia Tech*
Shuqi Yu, *Virginia Tech*
Erin Ottmar, *Worcester Polytechnic Institute*

3. Does highlighting key conceptual features in worked examples improve the quality of students' self-explanations?
Melanie Prieto, *University of California, Santa Cruz (UCSC)*
Hannah Hausman, *UCSC*

4. Analysis of choice-making patterns in interactive algebra software with pedagogical agents
Tomohiro Nagashima, *Saarland University*
Man Su, *Saarland University*

Lightning Talk 6.4 - Mathematics and Beyond

Venue: D2-LP-08
Moderator: Kerry Lee

1. The contributions of executive functions to number word learning across cultures: A pilot study
Roberto A. Abreu Mendoza, *Indiana University Bloomington (IU Bloomington)*
Sammy Ahmed, *University of Rhode Island*
Natalia Arias-Trejo, *Universidad Nacional Autónoma de México*
Yaira Chamorro, *Universidad de Guadalajara*
Jenny Yun-Chen Chan, *EdUHK*
Sara García Sanz, *ELTE Eötvös Loránd University*
Attila Krajcsi, *Universidad del Atlántico Medio*
Hande Musullulu, *ELTE Eötvös Loránd University*
Daniel Romero, *Universidad de Guadalajara*
Elizabeth A. Gunderson, *IU Bloomington*

2. Children's flexible tradeoff between using absolute-number heuristic and proportions in probabilistic judgments
Siyi Liu, *Peking University*
Yanjie Su, *Peking University*

3. More gist, better math: Fuzzy trace theory-based investigation of the relationship between long-term memory and mathematical skills
Michał Obidziński, *Jagiellonian University in Krakow (JU)*
Nina Bażela, *JU*
Mateusz Hohol, *JU*

4. Relationships between academic performance and motor proficiency of Elementary children: A cross-sectional study in Hong Kong
Hay Mar Myat Kyaw, *EdUHK*
Annie Yixun Li, *EdUHK*
Million Yiying Wan, *EdUHK*
Catherine Mamaid Capio, *Hong Kong Metropolitan University*
Derwin King Chung Chan, *EdUHK*
Sum Kwing Cheung, *EdUHK*

5. Learning number magnitudes through analogy: Insights from mouse trajectory analysis
Yujia Zhang, *The Ohio State Univerisity*
John E Opfer, *The Ohio State Univerisity*

6. How language influences thought: The case of multiplying fractions
Hannah Whitehead, *University of Toronto*
Yue Cai, *University of Toronto*
Ingrid D'Silva, *University of Toronto*
Julia Turco, *University of Toronto*
Mackenzie Crawford, *University of Toronto*
Zack Hawes, *University of Toronto*

7. Examining the relationship between mathematics-specific language and mathematical abilities in children: A three-level meta-analysis
Tingyu Zhu, *Shaanxi Normal University*
Lijin Zhang, *Shaanxi Normal University; Shaanxi Provincial Key Research Center of Child Mental and Behavioral Health; Shaanxi Key Laboratory of Behavior and Cognitive Neuroscience*
Haiyan Luo, *Shaanxi Normal University*
Chen Yan, *Shaanxi Normal University*

8. Intrapersonal profiles of Latine students' math identity predicting their math skill development
Tamika L McElveen, *Miami University*
Caroline Byrd Hornburg, *Virginia Tech*
Nydia Prishker, *St. Thomas Aquinas College*
Michael D Eiland, *Purdue University*
Gigliana Melzi, *New York University*
Sarah R Powell, *The University of Texas at Austin*
Dana Miller-Cotto, *University of California, Berkeley*
Sara A Schmitt, *University of Oregon*
Bernadette Andres-Salgarino, *Santa Clara County Office of Education*
Amanda S Mayes, *Delaware Department of Education*
David J Purpura, *Purdue University*

June 11: Symposiums/Lightning Talks

1000-1115: Parallel Session 7

Symposium 7.1 - From roots to impact: A multi-dimensional perspective on math anxiety through gender, family dynamics, and cognitive challenges

Venue: D1-LP-08

Chair: Oi Ying Leung, *Leiden University*

Discussant: Yuen Pui Tam, *University of Cambridge*

1. Gender differences in children's perceptions of their parents' math attitudes
Fraulein Retanal, *University of Ottawa*
Elena Bakker, *University of Ottawa*
Jean-Francois Bureau, *University of Ottawa*
Jo-Anne LeFevre, *Carleton University*
Helena P. Osana, *Concordia University*
Sheri-Lynn Skwarchuk, *University of Winnipeg*
Erin Maloney, *University of Ottawa*

2. Prevalence, relative risk, and multi-reporter accuracy of math anxiety across the lifespan
Tsz Tan Lau, *University of Waterloo*
Josie Puleo, *Florida State University*
Rachelle Johnson, *Florida State University*
Colleen Ganley, *Florida State University*
Sara Hart, *University of Waterloo*

3. Cognitive and affective factors related to spatial and math performance: The roles of domain-specific anxiety, self-efficacy, and working memory
Chloe Oi Ying Leung, *Leiden University*
Marian Hickendorff, *Leiden University*
Christine Espin, *Leiden University*
Dietsje Jolles, *Leiden University*

Symposium 7.2 - Essential developments for supporting the problem solving of students experiencing mathematics difficulty

Venue: D2-LP-09

Chairs:
Katherine Berry, *The University of Texas at Austin (UT Austin)*

1. Problem posing within elementary mathematics: A systematic review
Alison M. Hardy, *UT Austin*

2. Problem posing within mathematics word-problem intervention
Katherine Berry, *UT Austin*
Kayla A. Garvais, *UT Austin*

3. Illustrations and mathematical word-problem solving: A systematic review
Terhi Vessonen, *University of Helsinki*
Heidi Hellstrand, *Åbo Akademi University*
Pirjo Aunio, *University of Helsinki*
Anu Laine, *University of Helsinki*

4. Development of an early childhood mathematics problem-solving measure
Pirjo Aunio, *University of Helsinki*
Anssi Vanhala, *University of Helsinki*
Anu Laine, *University of Helsinki*

Symposium 7.3 - Grounding mathematics in embodied learning: Concreteness, finger strategies, and movement

Venue: D2-LP-09

Chair: Venera Afërdita Gashaj, *University of Teacher Education in Special Needs (HfH)*

Discussant: Korbinian Moeller, *Loughborough University; University of Tübingen; Leibniz-Institut für Wissensmedien*

1. On the design of embodied learning interventions: The lens of concreteness
Julia Chatain, *ETH Zurich; Singapore-ETH Centre*
Charlotte Hannah Müller, *ETH Zurich*
Keny Chatain, *Institut Jean Nicod, École Normale Supérieure*
Manu Kapur, *ETH Zurich; Singapore-ETH Centre*

2. Symmetrical representations of tie addition problems on fingers in young children
Marie Krenger, *University of Lausanne*
Catherine Thevenot, *University of Lausanne*

3. How jumping and balancing build math skills: Insights into the motor-math link in 6-10-year-olds
Venera Gashaj, *University of Teacher Education in Special Needs (HfH); UniDistance Suisse*
Dragan Trninic, *Human Factored Design, Steamboat Springs*

Lightning Talk 7.4 - Home Math Environment

Venue: D2-LP-08
Moderator: Mary DePascale

1. Math actions and math talk between Chilean mothers and their infants
Fernanda Ahumada Medina, *MEMAT*
María Inés Susperreguy, *MEMAT; Pontificia Universidad Católica de Chile*
Marigen Narea, *Centro de Estudios Avanzados sobre Justicia Educacional (CJE)*

2. The longitudinal relationships between parent-child and sibling-child numeracy activities and young children's number skills
Xinzhuo Zou, *The University of Hong Kong*
Xiangzi Ouyang, *Lingnan University*
Catrina Cuina Liu, *PolyU*

3. Parent math skills contribute to variability in children's early fraction knowledge
Giulia Alexandra Borriello, *Kent State University*
Samantha Zaborowski, *Kent State University*
Charles Fitzsimmons, *University of North Florida*
Daniel Scheibe, *Kent State University*
Bradley Morris, *Kent State University*
Clarissa Thompson, *Kent State University*

4. Home math environment and children's arithmetic fluency: Longitudinal familial control study
Lotta Pauliina Sieppi, *University of Jyväskylä*
Daria Khanolainen, *University of Jyväskylä*
Minna Torppa, *University of Jyväskylä*
Jenni Salminen, *University of Jyväskylä*
Eija Räikkönen, *University of Jyväskylä*
Tuire Koponen, *University of Jyväskylä*

5. The relation between home numeracy activities and children's math skills: The moderating role of home numeracy resources
Siyu Wu, *Zhejiang University*
Wei Wei, *Zhejiang University*
Chang Xu, *Queen's University Belfast*
Jike Qin, *Xi'an Jiaotong-Liverpool University*

Jo-Anne LeFevre, *Carleton University*

6. The use of MathPath: A tool to enhance early math skills in children aged 5-6 in the home context
Esmeralda Dionicio, *Pontificia Universidad Católica de Chile; Millennium Nucleus for the Study of the Development of Early Math Skills (MEMAT)*
María Inés Susperreguy, *Pontificia Universidad Católica de Chile; MEMAT*
Christian Peake, *Universidad Diego Portales; MEMAT*

7. Symbolic Interaction theory-based spatial symbols of young children during block play in kindergartens in urban China
Xiao Li Yang, *The Open University of Sichuan*

1345-1500: Parallel Session 8

Symposium 8.1 - Unlocking success in early mathematics: From individual to environmental predictors

Venue: D1-LP-08

Chair: Sum Kwing Cheung, *The Education University of Hong Kong (EdUHK)*

1. Developing a novel task for spontaneous focusing on numerosity
Winnie Wai Lan Chan, *EdUHK*
Terry Tin-Yau Wong, *The University of Hong Kong*

2. Parents' positive attitudes towards mathematics and their young children's numeration knowledge
Hay Mar Myat Kyaw, *EdUHK*
Yuk Hin Yiu, *EdUHK*
Pui Shan Yip, *EdUHK*
Yuet Ching Liu, *EdUHK*
Bertha H. C. Kum, *EdUHK*
Sum Kwing Cheung, *EdUHK*

3. The longitudinal associations between home numeracy activities and mathematics achievement in preschoolers: The moderating role of parents' math anxiety
Yuen Pui Tam, *University of Cambridge*
Xiangzi Ouyang, *Lingnan University*
Dénes Szücs, *University of Cambridge*
Flavia H. Santos, *University College London*
Winnie Wai Lan Chan, *EdUHK*

4. The roles of parent-teacher relationships, home environment quality, and early childhood program quality in very young children's mathematics ability
Sum Kwing Cheung, *EdUHK*
Tik-Sze Carrey Siu, *University of Canterbury*
Melissa Pearl Caldwell, *EdUHK*

Symposium 8.2 - Math development in preschool and elementary age children

Venue: D1-LP-06

Chair: Maithri Sivaraman, *Columbia University*

Discussant: Tuire Koponen, *University of Jyvaskyla*

1. Relational language and early math skills in preschool children: Does spontaneous relational talk matter?
Maithri Sivaraman, *Columbia University*

2. Early representation of functional thinking in toddlers
Chen Cheng, *The Hong Kong University of Science and Technology*

3. Exploring the role of visuospatial working memory and central executive in approximate number system: A congruency-based analysis
Ankit Mishra, *Indian Institute of Technology Bombay (IIT Bombay)*
Azizuddin Khan, *IIT Bombay*

Symposium 8.3 - Interconnections of early math skills, cognitive processes, and language development in young children

Venue: D1-LP-06

Chairs:
Di Zhang, *EdUHK*
Yawei Yang, *South China Normal University*

1. Reciprocal relations among children's performance in length, area and volume measurements
Di Zhang, *EdUHK*
Yawei Yang, *South China Normal University*
Xiao Zhang, *The University of Hong Kong*

2. Bidirectional relationships between young children's understanding of length measurement unit and spatial measurement: A three-wave longitudinal study
Yawei Yang, *South China Normal University*
Xiangzi Ouyang, *Lingnan University*
Xiao Zhang, *The University of Hong Kong*
Xinzhuo Zou, *The University of Hong Kong*

3. The longitudinal correlates of language skills and math-specific skills in nonverbal calculation and story problem solving in Chinese preschoolers
Catrina Cuina Liu, *PolyU*
Xiangzi Ouyang, *Lingnan University*
Xinzhuo Zou, *The University of Hong Kong*

4. Pathways to math patterning in Hong Kong kindergarteners: The interplay of working memory, non-symbolic magnitude comparison, and visual-spatial skills
Jane Xiang, *EdUHK*
Chun Wing Ng, *EdUHK*
Yasmin Fong, *EdUHK*
Alfredo Bautista, *EdUHK*
Jin Sun, *University of Macau*
Sum Kwing Cheung, *EdUHK*
Tik-Sze Carrey Siu, *University of Canterbury*
Kerry Lee, *Yew Chung College of Early Childhood Education*

Posters

June 9: Poster Session 1

Time: 1400-1500
Venue: [Outside C-LP-02 & C-LP-11]

1. Arithmetic learning is associated with developmental increases in similarity between brain activity and artificial neural networks
Tomoya Nakai, *Araya Inc., Tokyo*
Jérôme Prado, *University of Lyon*

2. Attention alters preference of numerosity tuning in the human brain
Liangyou Zhang, *Utrecht University, Netherlands Institute for Neuroscience*
Surya Gayet, *Utrecht University*
Yuxuan Cai, *South China Normal University*
Serge O. Dumoulin, *Utrecht University; Netherlands Institute for Neuroscience; Spinoza Centre for Neuroimaging; Vrije Universiteit Amsterdam*
Ben M. Harvey, *Utrecht University*

3. Do classroom tools support children's working memory? A propensity score matching analysis
Dana Miller-Cotto, *University of California, Berkeley*
Andrew Ribner, *Chatham University, Pittsburgh*

4. Executive Function in Strategy Selection: The differential impact of Inhibition and Shifting
Qiushan Liu, *University of Wisconsin-Green Bay*

5. Facilitating fraction magnitude processing and arithmetic in adults with an online training platform using visuospatial models
Siu Kwan Antonius Tam, *University of Western Ontario*
Chenxi He, *University of Western Ontario*
Daniel Ansari, *University of Western Ontario*

6. Frequently cited but seldomly actually measured: The Mathematical cast of mind
Michaela A. Meier, *University of Graz*
Zsofia Heinemann, *University of Graz*
Anna Ehrengruber, *University of Graz*
Stephan E. Vogel, *University of Graz*
Roland H. Grabner, *University of Graz*

7. How about: Numerosity adaptation is tuned to perceived but not physical numerosity
Runshu Liu, *South China Normal University*
Yuxuan Cai, *South China Normal University*

8. Profiling time processing skills in dyscalculic primary and middle school children
Federica Cortesi, *Vita-Salute San Raffaele University (UniSR)*
Andrea Gambarini, *UniSR*
Anna Ogliari, *UniSR; San Raffaele Hospital*
Valentina Tobia, *UniSR; San Raffaele Hospital*

9. Rethinking the origins of arithmetical thought: The priority of proto-numbering (multiplicity) over counting (quantity)
Paul Poparad, *University of Bucharest*

10. Tuned to focus on structure: Connection between patterning and reasoning
Tongyao Zhang, *Indiana University*
Emily R. Fyfe, *Indiana University*

11. U.S. adults automatically process the magnitude of common fractions: Evidence of size congruity effects in symbolic fraction comparison
Charles Fitzsimmons, *University of North Florida*
Samuel Pearl, *University of North Florida*

12. Visuo-perceptual skills and mathematical learning: A school-based investigation
Elise Rombaux, *UCLouvain*
Virginie Crollen, *UCLouvain*
Grace Iarocci, *Simon Fraser University*

13. What information do people encode when reading graphs?
Evelyn Hsin-I Tsai, *Columbia University*
Beenle Mingxi Han, *Columbia University*
Yoojin Hahn, *Columbia University*
Robert Siegler, *Columbia University*

14. A little shopper's journey: Integrating relational language and number relation skills to promote mathematical equivalence
Jenny Yun-Chen Chan, *The Education University of Hong Kong (EdUHK)*
Ruru Yu Rou Peng, *EdUHK*
Valerie Yi Jie He, *EdUHK*
Yi Shen, *EdUHK*
Shirley Yuen Man Tsang, *EdUHK*

15. A scoping review of math anxiety in early childhood: Assessment, associated factors, and performance implications
Jane Xiang, *The Education University of Hong Kong (EdUHK)*
Tak-Yue Dickson Chan, *EdUHK*

16. Decomposing the cognitive building blocks of early place-value concept
Chuyan Qu, *Western University*
Daniel Ansari, *Western University*

17. Developing a questionnaire on the observation of mathematical skills in early childhood education
Sara Teuscher, *Karlsruhe University of Education (PH Karlsruhe)*
Stephanie Roesch, *University of Tübingen*
Korbinian Moeller, *University of Tübingen; University of Loughborough*
Christiane Benz, *PH Karlsruhe*

18. Early representation of functional thinking in toddlers
Chen Cheng, *The Hong Kong University of Science and Technology (HKUST)*
Yuan Zhang, *HKUST*

19. Math understanding and teaching in different SES kindergarten classrooms: Unravelling the origin of the gender gap
Macarena Angulo Carmona, *Universidad Diego Portales; Universidad Alberto Hurtado; Millennium Nucleus for the Study of the Development of Early Math Skills (MEMAT)*

20. Numerical processing at birth: an investigation of the Approximate Number System (ANS), Object Tracking System (OTS), Visual Working Memory (VWM), and their spatial components, in newborns
Vittoria Volpi, *INCC - Universitè Paris Citè*
Maria Dolores de Hevia, *INCC - Universitè Paris Citè*

22. Developing a behavioural checklist for the identification of mathematical learning difficulties
Stanley Cheng, *Macquarie University*
Rebecca Bull, *Macquarie University*
Emma Burns, *Macquarie University*

23. Mathematics-writing performance of students with mathematics difficulties in China
Xiaonan Han, *University of Macau*
Xin Lin, *University of Macau*

24. The integrated trajectories of Math Attitudes and Anxiety in children: Associations with Math Achievement and Engagement
Hongmin Feng, *Shandong Normal University*
Kaiyue Guo, *Shandong Normal University*
Yanli Xu, *Shandong Normal University*
Hongxia Li, *Shandong Normal University*
Yudan Wang, *Shandong Normal University*
Siyao Wu, *Shandong Normal University*
Jiwei Si, *Shandong Normal University*

25. What's your relationship with math? An investigation into teachers' mathematics identity
Hannah Whitehead, U*niversity of Toronto*
Lidya Rosenbaum, *University of Toronto*
Ingrid D'Silva, *University of Toronto*
Julia Turco, *University of Toronto*
Mackenzie Crawford, *University of Toronto*
Myah Birrell, *University of Toronto*
Zack Hawes, *University of Toronto*

26. A systematic review of fraction addition and subtraction interventions for students with mathematics difficulty
Jessica Mao, *The University of Texas at Austin*

27. Adaptations to a math talk coding manual for children with disabilities
Mackenna Vander Tuin, *The University of Texas at Austin*
Sarah Eason, *Purdue University*
Kevie Drake, *University of Oregon*
Janice Fong, *University of Oregon*
Gena Nelson, *University of Oregon*

28. Effects of transcranial low-level light therapy in numerical cognition
Masoud Mehdizadeh, *Tabriz University*
Leyla Rastgar-Farajzadeh, *Tabriz University of Medical Sciences*

29. Mapping success: Unpacking the role of mathematics motivational factors in mathematics performance of adolescents
Onur Ramazan, *Washington State University - Pullman*
Robert William Danielson, *Washington State University - Spokane*

30. Supporting preschool teachers in numeracy lessons: A professional development approach
Regine Poon, *Nanyang Technological University (NTU)*
Pierina Cheung, *NTU*
EeLynn Ng, *NTU*
David Munez, *NTU*
Baoqi Sun, *NTU*
Zachary Hawes, *OISE University of Toronto*
Fannie Kiat Hui Khng, *NTU*
Christina Lim-Ratnam, *NTU*

31. Improving young children's flexible attention to magnitudes through mathematical language
Hyekyung Park, *Indiana University Bloomington (IU Bloomington)*
Xinhe Zhang, *IU Bloomington*
Marissa Brown, *University of Dayton*
Noah Scott, *IU Bloomington*
Molly Griffin, *University of Dayton*
Amanda Grenell, *University of Tampa*
Mary Wagner, *University of Dayton*
Elizabeth A. Gunderson, *IU Bloomington*

June 10: Poster Session 2

Time: 1330-1430
Venue: [Outside C-LP-02 & C-LP-11]

1. Attentional field size influences human numerosity perception
Yuxin Sun, *South China Normal University*
Yuxuan Cai, *South China Normal University*

2. Domain-specific inhibition rather than domain-general inhibition affects numerical processing
Yujie Lu, *Beijing Normal University (BNU)*
Mengyi Li, *Beijing Normal University; Tianjin Normal University*
Qianyi Jiang, *Beijing Normal University*
Bingqian Ren, *Beijing Normal University*
Xinlin Zhou, *Beijing Normal University*

3. Exploring neural 'paths' to maths: EEG coherence linking executive function and symbolic number processing
Bethan Grimes, *University of Oxford*
Sophia Shatek, *University of Oxford*
Gaia Scerif, *University of Oxford*

4. Exploring the role of procedural feedback and conceptual prompts in fostering decimal knowledge
Jing Tian, *Fordham University*
Elizabeth Gunderson, *Indiana University Bloomington*

5. Influences of number word syntax on the processing of two-digit numbers in French speakers
Roman Juls Janssen, *Université Paris Cité*
André Knops, *Université Paris Cité*
Arnaud Viarouge, *Université Paris Cité*
Elise Klein, *Université Paris Cité*

6. Invisible numerosity perception in human brains: Using 3T fMRI
Ruifei Zhong, *South China Normal University*
Yuxuan Cai, *South China Normal University*

7. Learning fractions using number line paper folding: The role of analogy
Jike Qin, *Xi'an Jiaotong-Liverpool University*
Mufan Tang, *Xi'an Jiaotong-Liverpool University*
Shuyuan Yu, *Carleton University*

8. Neural mechanisms of quantity sequence expectations: Evidence from multivariate pattern analysis and neural oscillations
Sifang Yu, *South China Normal University*

9. Processing the total perimeter of dots is critical to the association between numerosity comparison and arithmetic
Bingqian Ren, *Beijing Normal University*
Xinlin Zhou, *Beijing Normal University*

10. Students' manifestations of adaptive expertise in mathematics
Pauliina Katariina Salonen, *University of Turku (UTU)*
Minna M. Hannula-Sormunen, *UTU*
Saku Määttä, *UTU*
Hilma Halme, *UTU*
Jake McMullen, *UTU*

11. The relationship between ordinality and mathematical abilities among adults
Elad Avraham, *Ben-Gurion University of the Negev (BGU)*
Hanit Galili, *University of Haifa*
Avishai Henik, *BGU*

12. The relationship between time management and mental computation abilities: The role of executive functions
Andrea Gambarini, *Vita-Salute San Raffaele University (UniSR)*
Cortesi Federica, *UniSR*
Ogliari Anna Lucia, *UniSR*
Tobia Valentina, *UniSR*

13. The topographic representation of zero in the human brain
Tianxin Shu, *Royal Netherlands Academy of Arts and Sciences; Spinoza Centre for Neuroimaging*
Liangyou Zhang, *Utrecht University*
Ben M. Harvey, *Utrecht University*
Serge O. Dumoulin, *Royal Netherlands Academy of Arts and Sciences; Spinoza Centre for Neuroimaging*

14. Contributions of symbolic and non-symbolic number skills to preschoolers' computational thinking: A two-wave longitudinal study
Hao Li, *The University of Hong Kong*
Xiao Zhang, *The University of Hong Kong*

15. Exploring math talk across languages through mother-toddler interactions in Mandarin-English and Spanish-English homes
Yueting Pan, *New York University*
Shanttell Fernandez, *New York University*
Huanhuan Shi, *New York University*
Catherine Tamis-LeMonda, *New York University*
Lilian Masek, *New York University*

16. Latent profile analysis of visual-spatial and phonological processing profiles: Links to early math and reading in kindergarten children
Chenlu Fu, *Beijing Normal University*
Zhengru Li, *Beijing Normal University*
Xiujie Yang, *Beijing Normal University*

17. Supporting parents to implement TOYBOX home numeracy activities
Mikaila Collins, *The University of Winnipeg (UWinnipeg)*
Madison Young, *UWinnipeg*
Chy Zhang, *Harbin Engineering University*
Paul Betts, *UWinnipeg*
Mane Susperreguy, *Pontificia Universidad Católica de Chile*
Stephanie Bugden, *UWinnipeg*
Sarah Melo, *Louis Riel School Division*
Alyssa Wright, *University of Manitoba*
Brenton Button, *UWinnipeg*
Ken Reimer, *UWinnipeg*
Sheri-Lynn Skwarchuk, *UWinnipeg*

18. The role of language modality and experience on early number concept acquisition
Ilaria Berteletti, *Gallaudet University*
Casey Spelman, *Gallaudet University*
Sarah Kimbley, *San Diego State University*

19. The role of parent-teacher collaboration in early numeracy skills of young children
Melissa Pearl Caldwell, *EdUHK*
Sum Kwing Cheung, *EdUHK*

20. Using child assessment data to support the TOYBOX early intervention program in Canada
Madison Young, *The University of Winnipeg (UWinnipeg)*
Mikaila Collins, *UWinnipeg*
Katie Skwarchuk, *University of Manitoba*
Chy Zhang, *Harbin Engineering University*
Paul Betts, *UWinnipeg*
Paulette Tremorin, *Université de St. Boniface*
Stephanie Bugden, *UWinnipeg*
Sarah Melo, *Louis Riel School Division*
Sheri-Lynn Skwarchuk, *UWinnipeg*

21. Development and evaluation of an intervention for adolescents and adults with dyscalculia
Caroline Biegel, *University Children's Hospital Zurich (UKZ); University of Zurich*
Olivia Schmid, *UKZ; ETH Zurich*
Manuela Foster, *University of Zurich*
Martina Bühler, *University of Zurich*
Maike Renkert, *UKZ; University of Zurich*
Gilles de Hollander, *University of Zurich*
Franziska Felder, *University of Zurich*
Sascha Schneider, *University of Zurich*
Christian Ruff, *University of Zurich*
Silvia Brem, *University of Zurich*
Nora M. Raschle, *University of Zurich*
Ruth O'Gorman Tuura, *UKZ*
Elisabeth Moser Opitz, *University of Zurich*
Karin Kucian, *UKZ; University of Zurich*

22. When you have no vision: The role of aphantasia in mathematical abilities
Amanda M George, *Memorial University of Newfoundland and Labrador (MUNL)*
Brianna O'Brien, *MUNL*
Darcy Hallett, *MUNL*

23. Assessing COVID-19 pandemic learning loss: A comparison of numeracy skills between two cohorts of elementary students in South Korea
Soo-hyun Im, *Hanyang University*
Goeun Na, *Hanyang University*
Jingyoung Heo, *Hanyang University*

24. Educators' cross-notation knowledge of rational numbers and its impact on teaching & learning mathematics
Lauren Schiller, *Kean University*
Karen Woodruff, *Kean University*
Yoojin Hahn, *Columbia University*
Roberto Abreu-Mendoza, *Indiana University Bloomington*
Charles Fitzsimmons, *University of North Florida*
Robert Siegler, *Columbia University*
Miriam Rosenberg-Lee, *Rutgers University - Newark*
Clarissa Thompson, *Kent State University*

25. Effects of response modality on math fluency assessment
Kruttika G. Bhat, *Stanford University*
Alexa D. Mogan, *Vanderbilt University*
Carrie Townley-Flores, *Stanford University*
Adam C. Richie-Halford, *Stanford University; Stanford University School of Medicine*
The ROAR Developer Consortium, *Stanford University*
Ben Domingue, *Stanford University*
Eric Wilkey, *Vanderbilt University*
Jason D. Yeatman, *Stanford University; Stanford University School of Medicine*

26. Efficacy of a brief video intervention on overcoming whole number bias in elementary and middle school students: Preliminary evidence
Piper Louise Rennerfeldt, *Rutgers University - Newark*
Miriam Rosenberg-Lee, *Rutgers University - Newark*

27. Mathflix: Transforming iPad kids into mathematical masterminds
Anna George, *Memorial University of Newfoundland and Labrador (MUNL)*
Darcy Hallett, *MUNL*

28. The role of educational games in developing classification skills, numeracy and arithmetic skills, and unilateral symmetry skills in early childhood in Palestine
Mohammad Awwad, *University of the Balearic Islands*

29. Solving arithmetic problems with perceptual cues: An online eye-tracking study with cognitive control assessments
Puyuan Zhang, *Worcester Polytechnic Institute (WPI)*
Sarah Olson, *WPI*
Keira Reid, *WPI*
Miles Mathieu, *University of Massachusetts Amherst*
Zelda Ferris, *WPI*
Vanessa Peloquin, *WPI*
Erin Ottmar, *WPI*

30. Slippery slopes: Examining college students' understanding of linear equations with positive and negative slopes
Nicholas Vest, *University of Wisconsin-Madison (UW-Madison)*
Jasmine Hu, *UW-Madison*

June 11: Poster Session 3

Time: 1115-1215
Venue: [Outside C-LP-02 & C-LP-11]

1. Becoming two-digit addition with carrying
Lin Chen, *Nanning Normal University*

2. Boosting number line estimation skills: The power of perceptual and embodied cues
Leran Meng, *EdUHK*
Jenny Yun-Chen Chan, *EdUHK*

3. Calculation abilities and functional connectivity of sensorimotor and number systems: An fNIRS study
Mariagrazia Ranzini, *University of Padova*
Simone Cutini, *University of Padova*
Marco Zorzi, *University of Padova*
Sabrina Brigadoi, *University of Padova*
Vincent Wens, *Université libre de Bruxelles (ULB); HUB – Hôpital Erasme*

4. Developmental trajectory of gender differences in mental rotation
Jieting Zhang, *Beijing Normal University*
Xinlin Zhou, *Beijing Normal University*

5. Effects of hand actions on the processing of numbers from 1 to 5
Maria Silvia Saccani, *University of Padua*
Sara Noacco, *University of Padua*
Jacopo Freddi, *University of Padua*
Matteo Biancifiori, *University of Padua*
Leonardo Luppi, *University of Padua*
Elena Nava, *University of Milan-Bicocca*
Michelle Giraud, *University of Milan-Bicocca*
Swathi Prabhu, *University of Milan-Bicocca*
Giovanna Mioni, *University of Padua*
Sonia Betti, *University of Padua*
Luisa Sartori, *University of Padua*
Simone Cutini, *University of Padua*
Sabrina Brigadoi, *University of Padua*
Mariagrazia Ranzini, *University of Padua*

6. Examining the psychometric properties of non-symbolic and symbolic number comparison tasks
Bingqing Zhao, *Sun Yat-sen University*
Yi Mou, *Sun Yat-sen University*

7. Exploring the impact of math manipulatives on divergent thinking in primary school students
Xinran Chen, *Beijing Normal University*
Xinlin Zhou, *Beijing Normal University*

8. Fraction understanding and its relation to executive functions
Ao Fan, *Rutgers University - Newark*
Roberto Abreu-Mendoza, *Indiana University Bloomington*
Miriam Rosenberg-Lee, *Rutgers University - Newark*

9. Investigating the link between Chinese students' ratio processing system, symbolic fraction comparison and math anxiety
Xiaotong Yi, *Texas A&M University*
Connie Barroso, *Texas A&M University*

10. Musical sounds used with the Abacus shift learning numeracy perspectives
Annie Yuen, *Easy Zone Education Limited*

11. The effect of unattended sets of objects and non-numerical properties in numerosity estimation
David Maximiliano Gomez, *Universidad de O'Higgins; Millennium Nucleus for the Study of the Development of Early Math Skills (MEMAT)*
Valentina Giaconi, *Universidad de O'Higgins; MEMAT*

12. What role does the hippocampus play in developmental dyscalculia?
Ursina McCaskey, *University Children's Hospital Zurich (UKZ)*
Bruderer Eileen, *UKZ*
Samira Zurbrügg, *UKZ*
Ruth O'Gorman Tuura, *UKZ; University of Zurich*
Karin Kucian, *UKZ; University of Zurich; Swiss Federal Institute of Technology*

13. Working with numbers: Does task content influence the measurement of executive functions and their relation to math ability?
Alexa D. Mogan, *Vanderbilt University*
Kruttika Bhat, *Stanford University*
Nathan T.T. Lau, *Western University*
Amelia Murray, *Vanderbilt University*
Monica Bashir, *Vanderbilt University*
Eric D. Wilkey, *Vanderbilt University*

14. Cognitive skills underpinning mathematical abilities in autistic and neurotypical children: A systematic review
Fran Ramakrishnan, *CUNY School of Professional Studies*
Maithri Sivaraman, *Columbia University*

15. Dual representations and symbolic magnitude in preschool and kindergarten
Sydney Katherine Johnson, *Ball State University*

16. Early numeracy is underemphasized in pediatric practice, but opportunities exist to promote it
B. Poston, *University of Notre Dame*
K. Walter, *University of Notre Dame*
C. Quinn, *Icahn School of Medicine at Mount Sinai*M. L. Luna, *University of Notre Dame*
J. M. Pentimonti, *University of Notre Dame*
P. K. Kirkland, *University of Notre Dame*
K. Macaluso, *University of Notre Dame*
C. J. Otuonye, *University of Notre Dame*
W. Angst, *University of Notre Dame*
C. R. Gibbs, *University of Notre Dame*
N. M. McNeil, *University of Notre Dame*

17. Investigating the neural mechanisms of number word processing in adults and children using functional near-infrared spectroscopy
Madelyn A E Timmins, *The University of Winnipeg*
Stephanie Bugden, *The University of Winnipeg*

18. Leveraging screens to test the role of executive function in doing mathematics in early childhood
Andrew Ribner, *Chatham University*

19. The development of the SNARC effect from kindergarten to first grade: Group-level and individual consistency analyses
Tânia Ramos, *University of Luxembourg*
Carrie Georges, *University of Luxembourg*
Christine Schiltz, *University of Luxembourg*

20. A novel diagnostic test battery for specific learning disorder in mathematics in a multilingual education context
Vera Hilger, *University of Luxembourg*
Linda Romanovska, *University of Luxembourg*
Sonja Ugen, *University of Luxembourg*
Christine Schiltz, *University of Luxembourg*

21. Development of an Australian numeracy screening tool to identify students at risk of low mathematics achievement
Kelly Norris, *Centre for Independent Studies*
Rebecca Bull, *Macquarie University*

22. Mathematics anxiety influences fraction magnitude estimation in adults: An eye-tracking study
Tatjana Zimasa, *University of York*
Amber Bonser, *University of York*
Martin Fischer, *University of Potsdam*
Silke Göbel, *University of York; University of Oslo*

23. Association of EEG resting state functional connectivity patterns with mathematical anxiety and general factor of anxiety
Timofey Adamovich, *Russian Academy of Education*
Sergey Malykh, *Russian Academy of Education*

24. Exploring the roots of math anxiety: A qualitative study of environmental factors on students from difficult backgrounds
Atika Srivastava, *Indian Institute of Technology Kanpur*

Ankit Mishra, *Indian Institute of Technology Bombay*

25. Data storytelling in project-based learning as a multidisciplinary tool: Preparing undergraduate students' career readiness
Yiyun Fan, *National University of Singapore (NUS)*
Kah Loon Ng, *NUS*
Wan Mei Amanda Soon, *NUS*

26. Enhancing exit tickets to improve students' monitoring ability
Lingfei cao, *Vanderbilt University*
Xinran Wang, *Vanderbilt University*
Rebecca Adler, *Vanderbilt University*
Cristina Zepeda, *Vanderbilt University*
Kelley Durkin, *Vanderbilt University*
Jon Star, *Harvard University*
Bethany Rittle-Johnson, *Vanderbilt University*

27. Enhancing introductory probability learning through invention-based scaffolds
Clare Hunter Payne, *UC Santa Cruz*

28. Examining factors of fraction knowledge of elementary students experiencing mathematics difficulties: A multilevel model analysis
Allison McClure, *Southern Methodist University (SMU)*
Joanne Joo, *SMU*
Leanne Ketterlin-Geller, *SMU*

29. Exploring students' and teachers' perspectives on generative AI tools in undergraduate mathematics comprehension
Olga Danilkina, *University of Nottingham Ningbo China (UNNC)*
Richard Rankin, *UNNC*

30. The effectiveness of a digital learning game for children with low multiplication and division skills
Tuire Koponen, *University of Jyväskylä*
Jarno Rautiainen, *University of Jyväskylä*
Heidi Harju, *University of Turku*
Markus Hähkiöniemi, *University of Jyväskylä*