

## This edition's spotlight Educational Maths apps



Summer is here!

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A warm welcome to our latest newsletter from the CDLD lab!

This term has been very busy and we are very excited to announce updates on ongoing projects, funding we have received for new projects. We have also created some new educational guidelines with young people. In September we will be hosting a fantastic event with UNESCO and we can announce our latest CPD course on dyscalculia!

So have a quick look inside and find out more about our work.

I also want to use this opportunity to say a massive thank you to all participants (parents, children, teachers, educational professionals etc.) that have taken part in our research and all of you who have helped with disseminating our research.

I hope you all have a restful summer and see you hopefully at some of our events.

All the best,  
Jo



# Educational Math Apps

## Can Maths Apps Add Value to Learning?

**Dr Laura Outhwaite, Dr Erin Early, Dr Jo Van Herwegen & Dr Christothea Herodotou**

The research project conducted a systematic review and content analysis into educational maths apps for children in the first three years of compulsory education.

The key findings from the study included:

The most common type of maths apps identified were practice-based which support the acquisition of learning content through targeted practice.

The most common area of maths covered in the maths apps was understanding number representations and relationships.

Over half of the maths apps provided explanatory feedback that explained why an answer was correct/incorrect and motivational feedback such as “great job!”

17% of the maths apps provided learning content that was tailored to the child based on an initial assessment.

Children’s learning outcomes with maths apps were maximised when the apps provided a scaffolded and personalised learning journey and explanatory and motivational feedback.

The study recommended parents and teachers to consider the following when deciding if and which educational maths apps to use with children:

- Can the child meaningfully interact with the maths apps based on their existing mathematical and language skills?
- How can the chosen maths apps be implemented in the classroom or home?
- Does the chosen app contain explanatory feedback and provide learning content that is personalised to the child?

More information for parents can be found here -

<https://discovery.ucl.ac.uk/id/eprint/10149353/>

You can also read more about the study and access the final report on the project

website: <https://www.ucl.ac.uk/ioe/departments-and-centres/centres/centre-education-policy-and-equalising-opportunities/research-themes/early-years/can-maths-apps-add-value-learning>

# New Guidelines

## My Williams' learning log

Together with Dr Fionnuala Tynan we have co-created new educational guidelines about Williams syndrome. These guidelines were co-created with children with Williams syndrome for children with Williams syndrome (WS) and was funded by the Williams Syndrome Foundation.

We worked with 12 young people with WS aged 5 to 15 and asked them lots of questions, including what they would like to know about learning in WS, how they are supported in school and what they like and didn't like at school. We then used this information to create a workbook that contains advice and activities to help children with WS understand their own learning. It explains what Williams syndrome is, what children might be good at or struggling with and what support or good practice can be put into place within school. The workbook allows children to set their own smart targets to work on. This workbook can be used by teachers, parents and young people with WS.

The workbook is currently with the graphic designer but will be advertised on the Williams Syndrome Foundation website by the start of the new school year but we thought you might want to know already.

Working with young people with WS and co-creating the materials also allowed to think about best practice on how to extract the child's voice. You can find our top tips in our latest blog:

<https://blogs.ucl.ac.uk/cld/2022/07/11/extracting-the-voice-of-young-people-with-intellectual-disabilities-top-tips/>

# New Short course dyscalculia

## Dyscalculia; Co-Producing a CPD toolkit for teachers

Our latest research has shown that teachers have very little awareness and knowledge about dyscalculia in terms of how to identify students with mathematical learning difficulties and how to support these students in the classroom.

As a result, we have co-created a toolkit to help teachers, teaching support staff as well as Senco's to understand what dyscalculia is, how students can be identified and supported within the classroom. This project was funded by HEIF knowledge exchange funds and is in collaboration between the CDLD lab (Dr Jo Van Herwegen, Dr Laura Outhwaite, Unta Taiwo) and the Centre for Inclusive Education (Liz Herbert). The toolkit includes:

- A full online short-course:
- A two part hybrid follow-on short course:
- An infographic on how to identify students with dyscalculia
- An overview of existing dyscalculia checker.
- Infographic with red flags for dyscalculia in primary and secondary school
- Top tips on how to support students in the classroom

We are currently finalising these materials but if you are interested in these materials, keep an eye on our blog (<https://blogs.ucl.ac.uk/cld/>) and consult the short course tab on the following website:

<https://www.ucl.ac.uk/ioe/departments-and-centres/centres/ucl-centre-inclusive-education>

# Current Study Updates



## ***AiMS: Autism Intervention for Motor Skills***

Tugce Cetiner joined the CDLD lab in December 2019. Her PhD focuses on developing a sensorimotor based early childhood intervention program that can be implemented in the homes of parents of young autistic children aged 4-5 years. Tugce completed her two studies (systematic literature review, and survey), and she is currently designing her intervention program that is called AiMS. The program focuses on developing handwriting skills of young autistic children aged between 4 and 5 by supporting their motor skills in home environment. During the program children will do 10 minutes daily, easy, funny activities with their parents. AiMS will start in September (2022)!

If you would like to join this project, please email Tugce on:

[tugce.cetiner.19@ucl.ac.uk](mailto:tugce.cetiner.19@ucl.ac.uk)

## **Mathematical Abilities in Down Syndrome**

Erica Ranzato is a third-year PhD student. Her latest project: **Teaching mathematics to students with Down syndrome** was funded by the UCL Train and Engage programme.

The project involved a series of online focus groups with teaching staff supporting students with Down syndrome in primary school settings in order to reflect on the current teaching practices and to co-develop learning resources to support the mathematical skills of these students.

In particular, the project focused on the following:

- Participants' experiences and expectations on mathematical abilities of the student with Down syndrome that they were supporting
- useful teaching practices, including teaching strategies and learning resources used to support mathematical skills of students with Down syndrome
- the main challenges that teaching staff face when supporting the mathematical learning of students with Down syndrome
- co-development of maths learning resources

Erica has recently completed the series of 3 focus groups with  $n = 5$  participants and she is now in the process of analysing the data and of designing the resources co-developed with the participants.

If you wish to contact Erica, or would like to receive copy of the co-developed resources, you can find her at [e.ranzato@ucl.ac.uk](mailto:e.ranzato@ucl.ac.uk)

# Current Study Update

## Preliminary Outcomes on Anxiety during Transition from Primary to Secondary School

Vassilis Sideropoulos ([v.sideropoulos@ucl.ac.uk](mailto:v.sideropoulos@ucl.ac.uk))

### What is this project about?

A joint research project between IOE, UCL's Faculty of Education and the Centre of Education Studies from University of Warwick funded by the Baily Thomas Charitable Trust has investigated anxiety during transition from primary to secondary school in children with neurodevelopmental conditions. While we know from previous research that educational changes such as a school transition have an impact upon autistic children, there is limited research for children with Down Syndrome and none for those with Williams Syndrome. Our current work examined this phenomenon through a longitudinal design by surveying parents, teachers and children. Our team attempted to understand whether school transitions have a unique or different impact on anxiety levels through a cross-condition comparison.

### What are the outcomes?

By measuring adjustment and psychopathology, maladaptive behaviours, cognitive abilities and social impairment over 61 parents and their children we have noticed that there is a far and wide variability within our three groups. There were no differences between the parent-reported anxiety before and after the transition. However, when we attempted to understand what factors could predict anxiety, there were key differences between the groups. For example, maladaptive behaviours; emotional, conduct, and peer problems were key predictors for anxiety in the autistic population before the transition. However, only emotions and peer problems were significant key factors for predicting anxiety in the same population post-transition. For children with Down Syndrome, both pre-school and post-school transition the only factor that predicted anxiety was emotional problems. Finally, for children with Williams Syndrome, only maladaptive behaviour problems predicted anxiety in post-school transition. Overall, there are many reasons why there is such wide variability in the predictors of anxiety levels. For instance, it could be that each child has different concerns or experiences in their educational provision. For example, all children expressed concerns about bullying and adjustment to new school whereas children with Down Syndrome and Williams Syndrome scored higher compared to children with autism on concerns about settlement in the new school.

### Conclusions

All children with neurodevelopmental conditions experienced several difficulties related to the transition. Whilst there was no change in anxiety levels over time, the factors predicting anxiety during pre- and post-school transition varied. Our preliminary findings suggest that school transition is a time of high anxiety and thus children would benefit from additional support, especially wellbeing support during their school transition.

*Special thanks to the PIs of the study Dr. Olympia Palikara; Dr. Jo Van Herwegen as well as to the research assistants: Elizabeth Burchell and Maria Ashworth.*

You can find more information about this project and resources here:

<https://www.movingtosecondaryschoolsend.com/>

# Current Study Update



## Teaching mathematics to children with Down syndrome and children with Williams syndrome: Parent and teacher survey

Mathematical skills are an essential part of everyday living and numerical skills prepare us for independence in our adult lives. Research has shown that individuals with Down syndrome and Williams syndrome have delays and some atypical characteristics in mathematical abilities. (Van Herwegen et al., 2020; Van Herwegen & Simms, 2020). These findings suggest that support for improving numerical skills is an important factor in developing life skills and greater autonomy in adulthood for those with Down syndrome and Williams syndrome.

In the CDLD Lab we are conducting a survey to understand what parents and teachers think about mathematical abilities and how they currently endeavour to support children in both populations at home and school. Preliminary findings from this survey suggest that 73% of parents of children with either Down syndrome or Williams syndrome do not receive any form of maths homework from school. Furthermore, of the parents who have participated in the survey so far, only 21% reported receiving some training to support maths learning related to their child's needs. Data also suggests that parents of children with Down syndrome utilise more mathematical learning-based resources than parents of children with Williams syndrome.

This survey currently remains open, and we hope to recruit more participants to capture the lived experience of those who on a daily basis support their children with Down syndrome and Williams syndrome. Later this year this study aims to recruit parents and teachers to participate in focus group discussions about mathematical support for both populations and an intervention study, which will take place early in 2024. If you are interested to know more, or would like to get involved, please get in touch with Unta Taiwo.

Email: [unta.taiwo.14@ucl.ac.uk](mailto:unta.taiwo.14@ucl.ac.uk)

Survey Link: [https://uclioe.eu.qualtrics.com/jfe/form/SV\\_0v1OT20DFRxDIeq](https://uclioe.eu.qualtrics.com/jfe/form/SV_0v1OT20DFRxDIeq)

Van Herwegen, J., Ranzato, E., Karmiloff-Smith, A., & Simms, V. (2020). The foundations of mathematical development in Williams syndrome and Down syndrome. *Journal of Applied Research in Intellectual Disabilities*, 33(5), 1080–1089. <https://doi.org/10.1111/jar.12730>

Van Herwegen, J., & Simms, V. (2020). Mathematical development in Williams syndrome: A systematic review. *Research in Developmental Disabilities*, 100, 103609. <https://doi.org/10.1016/j.ridd.2020.103609>

# Conferences



June has been a very busy month for some members of the Child Development and Learning Difficulties (CDLD) Lab attending conferences across the country and abroad.

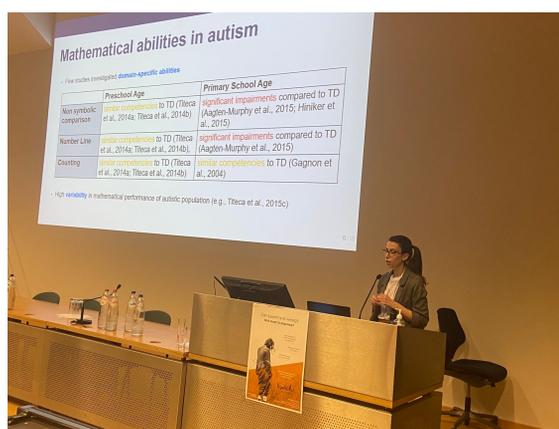
## **MSCLS June 1<sup>st</sup> to 3<sup>rd</sup> 2022 Antwerp, Belgium**

This year the Maths Cognition Learning Society (MCLS) conference was hosted by the Numbers and Brain network team at Ku Leuven University in Antwerp. We had CDLD members presenting posters and also talking in symposiums. Dr Laura Outhwaite presented findings from a systematic review which examined how apps support mathematical learning and development. PhD student Zahra Siddiqi's poster presentation provided insight into longitudinal gameplay data to better understand the significance of dosage when children play educational maths apps. PhD students Erica Ranzato and Unta Taiwo presented in a symposium *Neurodivergent Perspectives on Mathematical Cognition*. Here Erica discussed early findings from a study which suggest that young autistic people show differences in non-symbolic maths tasks compared to children in two typically developing groups. Unta Taiwo also discussed preliminary findings from a survey which sought the views of parents of children with Down syndrome and children with Williams syndrome. From an early analysis of survey data, she discussed key challenges parents face when supporting maths at home, such as a limited range of resources, lack of training and issues with child motivation and attention. MCLS was jammed packed with outstanding talks showcasing global scientific research into maths cognition, interventions, the impact of the home maths environment, maths anxiety, the SNARC effect and future directions for research to name a few. We were also lucky to have a guided tour of Antwerp by a former local (our lab director)!

# Conferences

## Neurodevelopmental Annual Seminar (22<sup>nd</sup> to 24<sup>th</sup> of June 2022)

The Neurodevelopmental Annual Seminar (NDAS) took place in Edinburgh this year. Over three days a host of events took place ranging from workshops to presentations. Our lab directors Laura and Jo led discussions that homed in on best practices in intervention research. Tugce Cetiner presented in a poster an overview of an upcoming intervention study which will examine a home-based handwriting intervention for autistic children in their early years. Unta Taiwo shared more early insights from parent survey data, which investigated issues relating to maths homework, home-school communication and tailored maths training for Down syndrome and Williams syndrome. Jo also presented lessons learned from co-producing educational guidelines for young people and individual with Williams syndrome. Despite national transport industrial action, there was a brilliant turn out of academics invested in sharing lessons learned in research, pooling together resources for richer findings, understanding complex mechanisms behind development, engaging in critical discussions about what measures truly measure and how we capture the learning from unintended (need a better term) outcomes. Dr Sinead Rhodes and her team hosted a fantastic event and really highlighted the significance of co-producing research with the participants and community involved. Thank you NDAS, we look forward to next year.



The Conference season doesn't stop here: our CDLD team will continue to attend local and international conferences, such as the Williams Syndrome Foundation Convention in Butlins, JURE 2022 (in Porto) and SIG 15 (in Ghent). If you would like to know more information about any of the presentations discussed above, please do get in touch with us!

# Upcoming events



**unesco**

Mahatma Gandhi Institute of  
Education for Peace and  
Sustainable Development

**isee**  
ASSESSMENT

*The International  
Science and Evidence  
based Education  
Assessment:  
Roundtable*



A discussion around the findings from  
**Reimagining Education: The International Science and Evidence  
based Education Assessment**, hosted by UNESCO MGIEP and the  
Institute of Education, UCL's Faculty of Education and Society.

September 15th, 2022 | **Venue:** 20 Bedford Way and online

**Register here:** <https://www.eventbrite.co.uk/e/ucl-and-unesco-mgiep-iseea-roundtable-tickets-379557455567>



# Who are we?

Founded in 2014, the CDLD unit is a research group consisting of academics, PhD students and researchers with a broad range of interests and expertise in how children learn and develop.

## Lab director:

Dr Jo Van Herwegen

## Deputy director:

Dr Laura Outhwaite

## Researchers

Dr Erin Early

## Affiliates

Dr Petri Partanen

Dr Afaf Manzoor

Dr Muhammad Shakir

## PhD-students

Tugce Cetiner

Seyda Cetintas

Hannah Hamid

Erica Ranzato

Zahra Siddiqui

Vassillis Sideropolous

Unta Taiwo

Helen Williams

## Research Students

William Taylor

Jaimie Leung

Kaiyue Jia

Chenxu Gao

Rebecca Connor

Laura Alderson

Marcella Lam

Victoria Levy

Isabella Wong

Sophie Yao

For more information about us or to apply to become a volunteer researcher, please see email [j.vanherwegen@ucl.ac.uk](mailto:j.vanherwegen@ucl.ac.uk)

# Meet the researcher!

My name is Vassilis Sideropoulos, and I work as a Senior Research Technician at the Department of Psychology & Human Development at IOE, UCL's Faculty for Education and Society. I've recently joined the Child Development and Learning Difficulties (CDLD) lab to conduct my research on the mental health of individuals with neurodevelopmental conditions. My background is in Psychology and thus far my research work has focused on understanding mental and physical health (anxiety, depression, addiction) on various populations (typical, atypical, smokers, ex-smokers, students).



My research within CDLD attempts to understand the effects of uncertain stressful events (e.g., school-transitions, pandemics, lockdowns) upon the anxiety levels of individuals with Autism, Down Syndrome and Williams Syndrome. Furthermore, it aims to identify factors that predict anxiety and detect the similarities and differences between these three groups. Since my research is data-driven, it can be used to inform strategic decisions and policies. Finally, I have received funding from UKRI (2019-2021), Baily Thomas Charitable Fund (2021) as well as UCL Seed Fund from ChangeMakers (2020).

# Meet the researcher!

## Seyda Cetintas

Seyda Cetintas has been a part of the CDLD Lab since January 2022. She is a first-year PhD student in the Psychology and Human Development Department at UCL IOE. She was awarded by a full-time PhD scholarship by Republic of Türkiye Ministry of National Education. Her PhD research aims to understand how secondary schools in the UK promote and support autistic students' mental health. She is adopting an experience sensitive approach to reveal the preferences, needs, facilitators and barriers that autistic students, their parents, and mental health practitioners face in day-to-day real-life settings. Her PhD project is supervised by Dr. Georgia Pavlopoulou (UCL) and Dr. Jo Van Herwegen.



# Thanks for reading!



Do you have any questions about our activities? Or any questions about children's development you would like some answer to?

or are you interested in any CPD events for staff at your school or organization? Then please contact Jo on [j.vanherwegen@ucl.ac.uk](mailto:j.vanherwegen@ucl.ac.uk)

At CDLD we work together with a number of other UCL based labs and centres.

- Centre for Educational Neuroscience (CEN): <http://www.educationalneuroscience.org.uk/>
- Centre for research in Autism and Education (CRAE): <http://crae.ioe.ac.uk/>
- Centre for Language, Literacy and Numeracy: Research & Practice (LL&NRP): <https://www.ucl.ac.uk/ioe/departments-and-centres/centres/centre-language-literacy-and-numeracy-research-practice>

twitter 

To stay up-to-date with our events: follow us on Twitter @CDLDlab



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<https://www.facebook.com/CDLD-Unit-Research-Group-238269226640000/>

Read out blog: <https://blogs.ucl.ac.uk/cld/>