

EARLI SIG5 Conference 2026

Creating a hopeful future for every child

Conference book

August 19–21, 2026

University of Jyväskylä
FINLAND



CONTENTS

Welcome.....	3
Conference Venue	5
Practical information and tips.....	9
Programme overview.....	13
Keynote speakers	14
Expert panel.....	17
Workshops.....	18
Daily programme and abstracts	20
Wednesday 19th of August 2026.....	24
Thursday 20th of August, 2026.....	90
Friday 21st of August 2026	137

Welcome

With great pleasure, we welcome you to the EARLI SIG5 Conference 2026!

EARLI Special Interest group SIG5 – Learning and Development in Early Childhood has organized a conference every two years since 2010. These events have demonstrated the vibrancy of SIG5 by bringing together researchers, professionals, and policymakers from around the world to share and discuss the research on early years learning and development. The current conference in Jyväskylä will continue the tradition of the previous conferences and bring together nearly 160 researchers from all over the world interested in the learning and development of children from birth to age 8.

The theme of the conference is *Creating a hopeful future for every child*. Young children grow and develop in a rapidly changing world, where the landscapes are shifting, and the future can feel uncertain. Supportive systems surrounding the child have become more vital than ever, and the unpredictable times call for collective efforts and committed collaboration between researchers, policymakers, practitioners and families. As hopeful futures are being created today, the conference provides a forum for researchers, practitioners and policy experts to explore and discuss both short and long-term means of achieving them.

We are proud to present three keynote speakers and an expert panel featuring distinguished international scholars in the field, along with over 100 oral paper presentations and 10 poster presentations by researchers around the globe. The presentations broadly cover early childhood development, care, education and pedagogy, as well as the role of home environment in child development and the professional development and wellbeing of ECEC teachers in the changing landscapes of different educational systems. Moreover, three intriguing workshops provide an opportunity to learn about and discuss timely topics and methods in the field of early childhood.

The SIG5 conference 2026 is jointly organized by the University of Jyväskylä and EARLI SIG5. We thank all the presenters and their co-authors for submitting proposals of such high quality, and we extend our warm thanks also to our sponsors and collaborators.

We hope that the 9th SIG5 Conference in Jyväskylä will be inspiring and will help foster a strong network of connections that can contribute to creating a hopeful future for every child.

Jenni Salminen and Giulia Pastori

SIG5 coordinators

Tekla Seppälä

SIG5 JURE coordinator

Local scientific committee

Jenni Salminen, Tekla Seppälä, Tuire Koponen, Pia Krimark, Marja-Kristiina Lerkkanen, Saara Ojala, Eija Pakarinen, Anna Roikonen, Jenni Ruotsalainen, Eija Sévon, Anna-Elina Taskinen, and Minna Torppa

EARLI SIG5 Conference 2026

Creating a hopeful future for every child

We are grateful to European Association for Research on Learning and Instruction (EARLI), the Federation of Finnish Learned Societies (TSV) and the University of Jyväskylä (JYU) for sponsorship and support for the 2026 SIG 5 Conference in Jyväskylä, Finland.



**Federation of Finnish
Learned Societies**



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

Conference venue

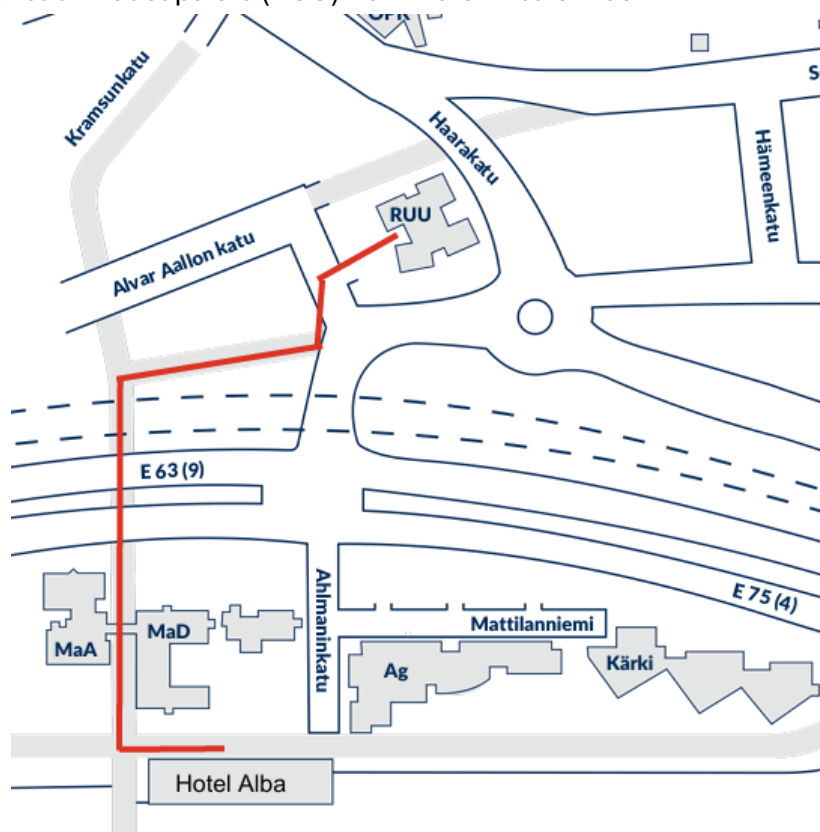
Ruusupuisto building - Venue for parallel sessions, workshops, lunch and coffee

Address for Ruusupuisto is Alvar Aallon katu 9, 40600 Jyväskylä, Finland.

How to reach Ruusupuisto by foot – The Ruusupuisto building of the University of Jyväskylä is located within walking distance of the city center (approximately 1.6 km). If you are staying in Hotel Alba, please see Map 1 for safe walking route to Ruusupuisto. Marked with orange color.

Other ways to reach Ruusupuisto – The local bus (number 7, 8, 12, 14, 16, 21, 22 23,) operate between the city center and the university area. Up-to-date timetables and route information are available through Jyväskylä Regional Transport ([Linkki](https://linkki.jyvaskyla.fi/en)). Tickets can be purchased via the Linkki or Waltti mobile app (<https://linkki.jyvaskyla.fi/en>; <https://waltti.fi/en/>), from R-kiosks, or directly from the bus driver (cash & card). If you prefer to travel by taxi, you can call +358 100 6900, use the JYTAKSI APP or use one of the taxi stands located in the city centre, for example on Kauppakatu near the City Church or at the Travel Centre.

Map 1. How to reach Ruusupuisto (RUU) from Hotel Alba on foot.



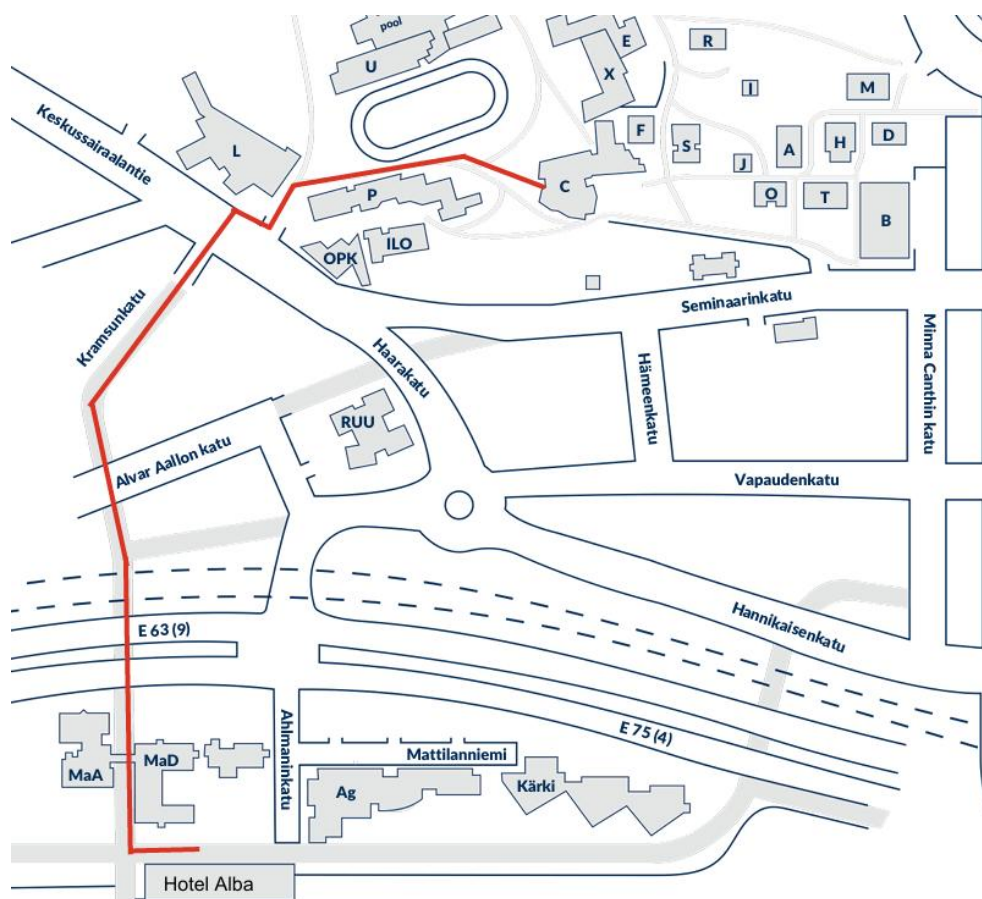
The University Main Building (Capitolium, C) - Venue for key-notes and welcome reception

Address for the Main Building (Capitolium, C) building is Seminaarinkatu 15, 40100 Jyväskylä, Finland.

How to reach Main Building by foot – The conference site is within walking distance of the city center (1,5km). Map 2 includes the straightest routes from Hotel Alba to Main Building C (marked with orange line).

How to reach Main building C from citycenter– The local buses (e.g., number 5, 7, 8, 12, 16, 20, 21, 22) run close to the Main building (C) from the city center. Up-to-date timetables and route information are available through Jyväskylä Regional Transport ([Linkki](https://linkki.jyvaskyla.fi/en)). Tickets can be purchased via the Linkki or Waltti mobile app (<https://linkki.jyvaskyla.fi/en>; <https://waltti.fi/en/>), from R-kiosks, or directly from the bus driver (cash & card). If you prefer to travel by taxi, you can call +358 100 6900, use the JY TAKSI APP, or use one of the taxi stands located in the city centre, for example on Kauppakatu near the City Church or at the Travel Centre.

Map 2. How to reach Main Building (C) from Hotel Alba on foot

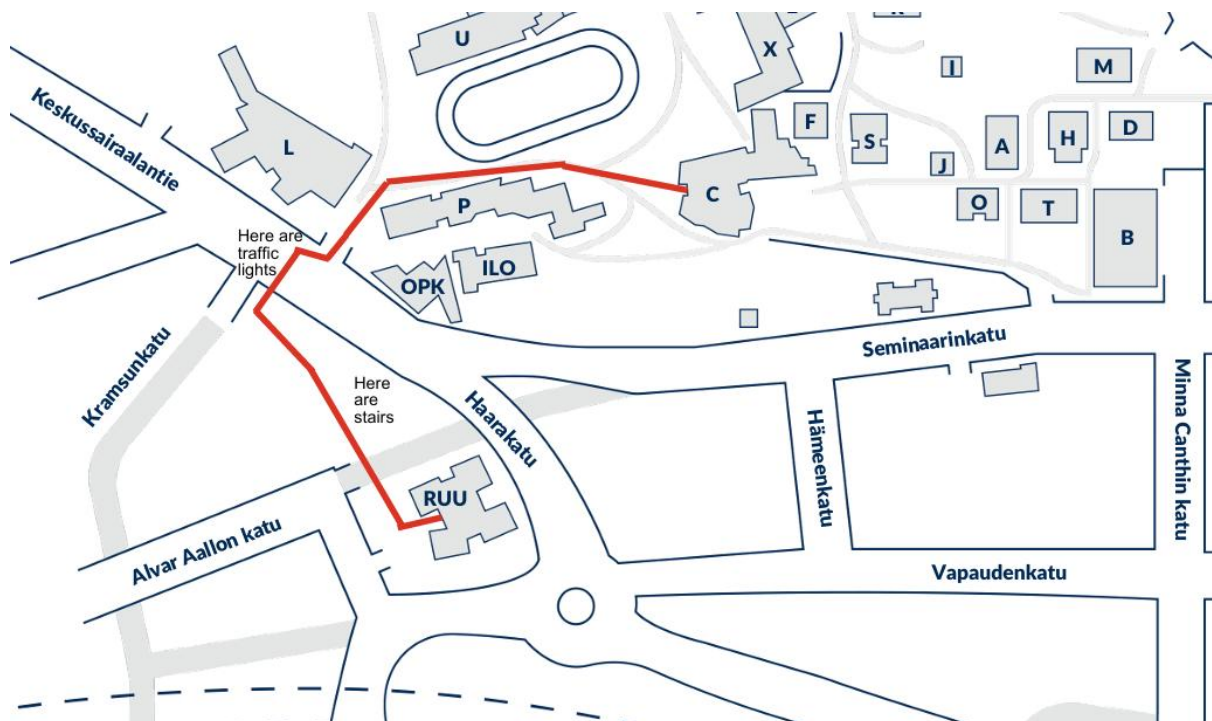


How to transit from Ruusupuisto to Main Building

There are several ways to transit from Ruusupuisto (RUU) to Main Building (C), the two main venues of the SIG5 Conference.

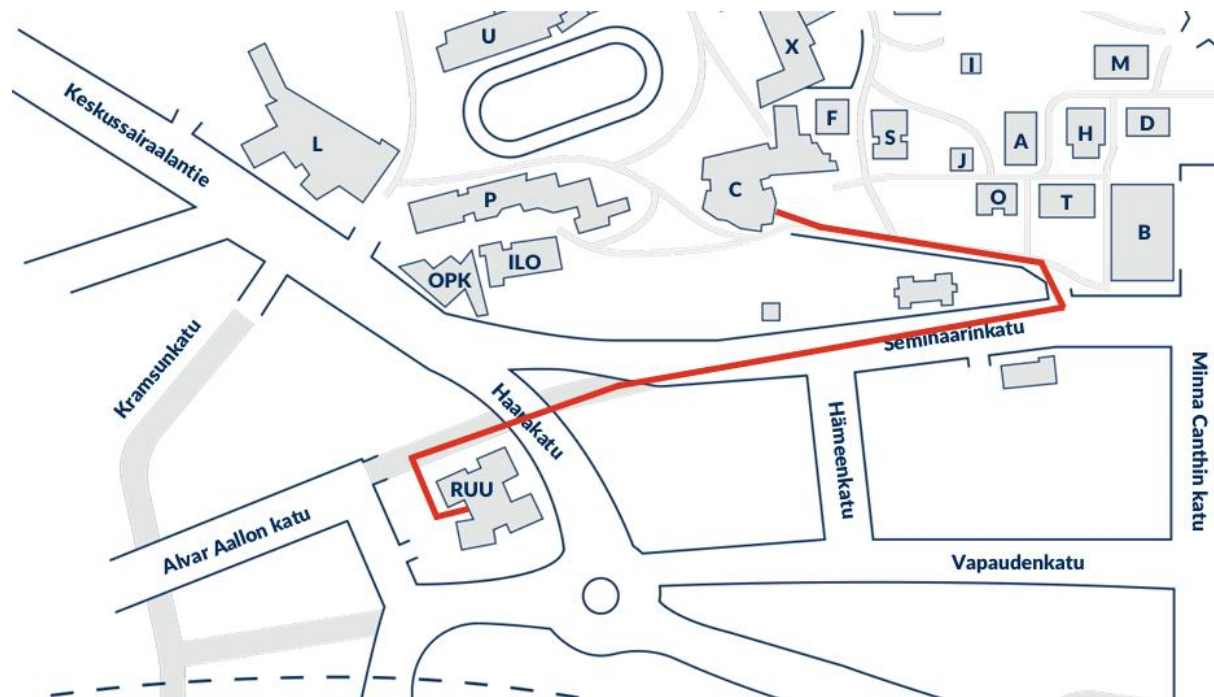
The shortest route goes through a staircase next to Ruusupuisto (RUU) building. After the staircase you should go over the road called Keskussairaalandie. There are traffic lights. After the traffic lights continue straight and keep on the right of the sport field until you reach the Main Building. Please see the map 3.

Map 3. Shortest route from Ruusupuisto (RUU) to Main Building C.



More accessible route from Ruusupuisto to Main Building goes first under a bridge under a street Haarakatu and continues uphill a street named Seminaarinkatu. Little before the university's library building (B) you should make a left and continue uphill until you make it to the C building. The route is marked orange on the map. Please see the map with number 4.

Map 4. More accessible route from Ruusupuisto (RUU) to Main Building (C)



Practical information and tips

- If you need assistance relating to any practicalities during the conference, always **first contact the registration desk** in the Ruusupuisto-building lobby, our conference volunteers are more than happy to help you. You can also contact us via conference email sig5conf2026@jyu.fi

- **Wi-Fi**

- **Eduroam** is available throughout the conference venue and can be accessed using your home institution's credentials.
- For participants without Eduroam access, a conference Wi-Fi network is available

WLAN SSID:	jyu-guest
Login:	aedx-7193
Password:	x3+rvvx

- Keep your **conference badge** with you at all times.
- **Lunch** is included in the conference fee and it will be served at **the campus restaurant Uno** (1st floor of the Ruusupuisto building). To receive the free lunch, please show your name tag or tell the cashier that you are participating in the **EARLI SIG 5** conference.
- **Coffee, tea and light snacks** will be served during the coffee breaks at the 1st floor lobby of the Ruusupuisto building.
- **Tap water** in Ruusupuisto and main building C and everywhere in Jyväskylä **is good and safe to drink**. There will also be drinking water available throughout the conference.
- You can also buy small snacks, coffee, tea and soft drinks at your own expense from the restaurant **Uno** (Ruusupuisto) or café **Belvedere** (C-building) during the opening hours.
- While registering to the conference, you have agreed to follow University of Jyväskylä's **principles of a safer and more responsible space**. Please treat others with respect, value diversity, and contribute to an inclusive, accessible, and welcoming environment.
 - If you experience or witness behavior that violates these principles, please contact a member of the organizing committee or the designated safer space contact person Anna-Elina Taskinen (anna-elina.a-e.taskinen@jyu.fi, +358 50 449 1080)
- The **nearest cash machine (ATM)** is located *at the* center of Jyväskylä. For example, you can find one in Kauppakatu 18.
- In case of an **emergency**, requiring **immediate medical assistance** during the conference, please call: **112**
- More information and **things to do in city of Jyväskylä**, see [the city's webpage](https://www.jyvaskyla.fi/en): <https://www.jyvaskyla.fi/en>. You can also ask for suggestions and recommendations from the conference assistants.

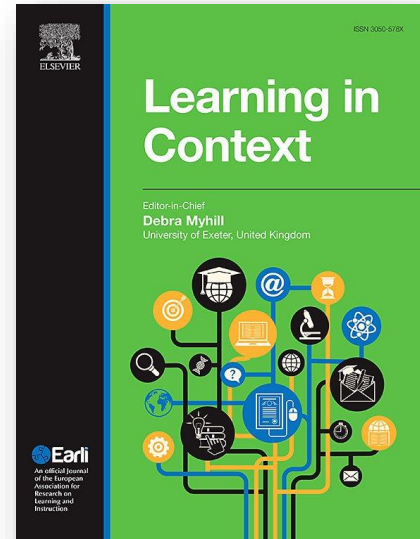
- For those arriving with their own car, please use the [eParking](#) application while parking your car. Check more information on webpage: <https://web.eparking.fi/>
- The nearest parking garage, [P-Cygnaeus](#), is located at Vapaudenkatu 35. In addition to the parking garage, there are plenty of [street parking spaces](#) managed by the City of Jyväskylä near our campuses.
- Many **local buses** run (e.g., 12, 21, 22) from city center to Ruusupuisto. Up-to-date timetables and route information are available through Jyväskylä Regional Transport ([Linkki](#)). Tickets can be purchased via the Linkki or Waltti mobile apps (<https://linkki.jyvaskyla.fi/en>; <https://waltti.fi/en/>), from R-kiosks or directly from the bus driver (cash & card).
 - For more information check Linkki webpage: (<https://linkki.jyvaskyla.fi/>).
- **Local Taxi services** (Operator) JYtaksi:
 - +358 100 6900 or the JY TAKSI APP

Publication avenues

Learning in Context

Consider submitting your research to *Learning in Context*!

EARLI'S newest journal, *Learning in Context*, offers you the opportunity to publish relevant research which investigates teaching and learning through the lens of context. At the heart of this is a conceptualisation of context which moves beyond simple descriptions of the research setting or participant backgrounds. Instead, we view context as including the *participants and their history, perspective and characteristics*, the *tools, communities and institutions* involved, the *activities* performed, sometimes *over time*, as well as the changing and/or evolving *relationships* between these elements. A submitted article may focus in detail on one or more of these aspects of context.



So we welcome research from contexts across the lifecourse which:

- Focuses on teaching and learning as reflected in the views and experiences of participants and key actors;
- Provides contextual, situated accounts of learning across personal, institutional, cultural, and societal levels;
- Examines teaching and learning processes, highlighting relations, dynamics, and temporality.

Our key criteria for acceptance are that the article a) represents robust, high-quality research and b) is in line with the Aims and Scope of the journal. Before submitting, we encourage authors to read the Aims and Scope for the journal, the [guide for authors](#), and especially the commentary on the Inaugural Special Issue, where we outline in more depth the expectations of the journal in relation to learning in context ([Damşa et al.](#))

For more information: <https://www.sciencedirect.com/journal/learning-in-context>

Debra Myhill, Åke Ingerman, Crina Damşa, Bea Ligorio and Riikka Hofman

Learning in Context Editorial Team

Journal of Early Childhood Education Research

Journal of Early Childhood Education Research (JECER) welcomes new submissions!

Journal of Early Childhood Education Research (JECER) is an international gold open access journal that publishes high-quality scientific research related to early childhood education.

JECER publishes peer-reviewed theoretical, empirical and review articles as well as **other scientific writings** in Finnish and English. JECER welcomes research articles with any theoretical and methodological approaches to societal, pedagogical, professional, or educational questions related to early childhood education. Articles in JECER can address questions related to growth, development, education, learning, and well-being of young children up to 8 years of age within the institutional practices of early childhood education.



JECER is gold open access journal without article publishing charges (APC); as such, all the articles published in JECER are available online right after publication freely and without costs to either authors or readers. Publisher of JECER is *Early Childhood Education Association Finland ECEAF*.

We accept new submission continuously.

Before submitting your research to JECER, please:

- Visit JECER's website for more information about the journal: <https://journal.fi/jecer/index>
- Read the author guidelines carefully and prepare your manuscript accordingly.

You can also check **the latest volume** (Vol 13, no 3) <https://journal.fi/jecer/issue/view/13652> and **the open call for papers for special issue** in JECER (topic *posthumanist research perspectives in early childhood education research*): <https://journal.fi/jecer/announcement/view/1022>

The JECER editorial team welcomes new manuscripts and is happy to answer your questions.

Programme overview

19 August - Wednesday		20 August - Thursday		21 August - Friday	
8:00 Registration opens	8:00-11:15 Main building C 11:30 --> Ruusupuisto	8:00-9:00 SIG5 member meeting	Ruusupuisto		
8:30-10:30 ECEC & school visits and campus tour	All visit tours depart from C- building	9:00-10:30 Session C	Ruusupuisto	9:15-10:45 Session D	Ruusupuisto
10:30-11:00 Opening session	Main building C	10:30-11:00 Coffee break	Ruusupuisto lobby	10:45-11:15 Coffee break	Ruusupuisto lobby
11:00-12:00 Keynote 1	Main building C	11:15-12:15 Keynote 2	Main building C	11:30-12:30 Keynote 3	Main building C
12:00-13:00 Lunch	Ruusupuisto Restaurant Uno	12:15-13:15 Lunch	Ruusupuisto Restaurant Uno	12:30-13:30 Lunch	Ruusupuisto Restaurant Uno
13:15-14:45 Session A	Ruusupuisto	13:30-14:30 Expert Panel	Ruusupuisto	13:30-15:00 Session E	Ruusupuisto
14:45-15:30 Coffee break	Ruusupuisto lobby	14:30-15:30 Coffee break & posters	Ruusupuisto lobby	15:10-15:30 Closing session	Ruusupuisto
15:30-17:00 Session B	Ruusupuisto	15:30-16:30 Workshops	Ruusupuisto		
17:30-19:00 Welcome reception	Main building C	18:00-23:00 Conference dinner	Departure from harbour		

Keynote speakers

Keynote 1

Time: 11:00–12.00 Location: Main building C1

Chair: Professor
Eija Pakarinen,
University of
Jyväskylä

Beyond suspension and expulsion: How soft exclusionary disciplinary practices limit children's learning and the role of teacher attributions

Amanda P. Williford, Batten Bicentennial Professor of Early Childhood Education, University of Virginia, US

Abstract



This keynote examines how young children experience exclusionary discipline long before formal removal from the classroom through suspension or expulsion. It focuses on *soft exclusionary disciplinary practices*—everyday instructional and behavioral responses that limit children's full participation in classroom learning without formal disciplinary action. Although often perceived as minor or temporary, these practices can systematically disrupt children's academic and social-emotional learning and isolate them from meaningful classroom engagement. Drawing on findings from several recent empirical studies, the keynote describes what is known and what remains to be understood about the prevalence, function, and consequences of these practices in early learning settings. The keynote concludes by identifying teachers' behavioral attributions as a critical and underexamined leverage point for change. It introduces an attribution-focused strategy designed to support reflective language, perspective-taking, and relational connection, shifting how teachers interpret and respond to challenging behavior in ways that increase motivation and willingness to change practice.

Keynote 2

Time: 11.15–12.15 Location: Main building C1

Chair: Associate
professor Eija
Sévon, Vice Dean
University of
Jyväskylä

From automatic responses to intentional practice: Building competences for teacher–child relationships

Jantine Spilt, Associate professor, Faculty of Psychology and Educational Sciences, KU Leuven, Belgium

Abstract



Teacher–child relationships are central to children’s social-emotional and academic development in early childhood. Yet the processes that shape these relationships are inherently complex and difficult to capture. This keynote will focus on the implicit processes involved in how teachers form and maintain relationships with children in early education settings. Implicit processes—such as automatic emotional responses, unconscious biases, and intuitive judgments—are processes that guide teachers’ interactions with specific children without deliberate awareness, and therefore tend to remain hidden from outsiders. Understanding these implicit processes requires the use of valid and reliable measures. The keynote will therefore discuss the measurement of implicit processes in teacher-child relationships. Second, the keynote will discuss evidence-informed approaches to fostering professional development in relationship building in preservice and in-service contexts. It will outline key relationship-building competences - knowledge, positive attitudes, and situation-specific skills - to guide professional development. It will also show why deliberate, guided reflection may be particularly well suited to mitigating unintended negative effects of implicit processes in teacher–child relationships. Ultimately, this keynote aims to equip researchers with actionable insights and robust tools to support teachers in cultivating strong, supportive relationships with every child. In doing so, teachers can help make schools safe, nurturing environments where young children can thrive despite living in an uncertain and rapidly changing world.

Keynote 3

Time: 11.30–12.30

Location: Main building C1

Chair: Professor
Minna Torppa, Uni-
versity of Jyväskylä

**Research-based decision-making in early childhood educa-
tion: Two-year preschool experiment as an example**

*Marja-Kristiina Lerkkanen, Professor, Department of Teacher
Education, University of Jyväskylä, Finland*

Abstract



Children deserve the highest-quality early childhood education and care we can provide, ensuring a strong foundation for their lifelong learning and hope for the future. Research-based decision-making is therefore essential for developing the quality of early childhood education, enabling policy-makers to make well-informed decisions and educators to select effective practices and tailor instruction to support children's development and wellbeing. Achieving this requires reliable data on the effects of implemented practices, as well as systematic monitoring and assessment of children's development. Successful implementation depends on an evidence-based process that values both professional expertise and rigorous research. This keynote emphasizes the need for a multifaceted approach that considers the systemic factors necessary to bridge research-based policy-making and to embed evidence-based practices within the early childhood sector. It presents an example from Finland in which research evidence was actively sought prior to a major education policy reform in order to evaluate its potential consequences for children, educators and families. The two-year pre-primary education trial, conducted from 2021 to 2024 as a randomized field experiment across 148 municipalities, involved 37,357 children. The experiment required drafting a temporary act, developing a national core curriculum, and collecting an extensive body of research data.

Expert panel

Creating a hopeful future for every child

Time: 13.30–14.30

Location: RUU lobby/staircase

Host and panel facilitator:

Senior lecturer Jenni Salminen, University of Jyväskylä

The expert panel will utilize the conference theme "*Creating a hopeful future for every child*" as a starting point for the discussion and approach it through varying perspectives such as everyday practices, professionalism and the possibility of reflecting challenges as possibilities.

Expert panelists



Professor Mirjam Kalland,
University of Helsinki, Finland



Professor Thomas Moser,
University of Stavanger, Norway



Associate Professor, Noora Heiskanen,
University of Eastern Finland, Finland



Professor Pauline Slot,
University of Utrecht, the Netherlands

Workshops

Workshop 1

Time: 15.30–16.30

Location: RUU Helena

Exploring superdiversity in early childhood education and care

Organizers: Eija Sevón & Niina Rutanen, University of Jyväskylä

Welcome to our workshop to discuss superdiversity in early childhood education and care in your country. Equity and respect for diversity and democracy are core aims of early childhood education and care (ECEC) in Europe. Growing cultural, ethnic, and linguistic diversity, conceptualised as superdiversity, has profoundly transformed ECEC in many European countries. Despite the topicality of superdiversity in ECEC, various research gaps persist across diverse cultural and policy contexts in Europe. It is argued that educational policies or practices cannot be understood if the congenital ideals, values, habits, institutions, and world views that make countries distinct are not considered (Alexander, 2021; Vertovec, 2024). Broader societal and historical debates about equity, language, diversity, and racism thus permeate ECEC policies and pedagogical practices, shaping how superdiversity is understood and enacted (Mallinson, 2024; Røn-Larsen & Stanek, 2024).

Therefore, this workshop offers a possibility to discuss how ECEC policies and practices in different European societies respond to the superdiversity of children and families in an increasingly globalised world. In this workshop the multidimensionality of superdiversity in ECEC is acknowledged and different conceptual, theoretical and methodological starting points for the study of superdiversity in ECEC can be shared. We welcome all who are interested in to discuss key issues in the study of superdiverse ECEC settings.

Workshop 2

Time: 15.30–16.30

Location: RUU Juho

Interactive Workshop on Observation of (Educators' Facilitation of) Infants' Exploratory Play in the Home and Daycare Context

Organizers: Isa Linders, Utrecht University and Ora Oudgenoeg-Paz, Utrecht University

Early development is shaped by children's skills to explore, play, and interact with their environment. Through exploration, infants and toddlers acquire cognitive, motor, and social skills. By perceiving and acting on the affordances (action possibilities) in their environment, children and parents create moments of interaction in which children learn valuable information about how the world works.

This interactive workshop highlights the importance of exploration and introduces two complementary approaches for observing (the facilitation of) exploration. The first method of observation focuses on capturing the complexity of exploration in infants

and toddlers aged 11-21 months. Using a systematic observation scheme grounded in neo-Piagetian theory, this approach offers a structured, theory-driven framework for analysing the development of exploratory behaviour in both home and daycare settings. The second method examines how childcare educators facilitate curiosity-driven play with children aged 0-2 years. Based on narrative observations and informed by the CLASS Infant framework, this newly developed observation instrument captures how educators support exploration through the design and structuring of the learning environment, or the “Mise en Scène” of play. Participants will engage with video-based examples of real observations and have the opportunity to practice collective scoring using both instruments. The workshop will also include group discussion to reflect on participants’ experiences with the observation methods and practical implications for research and early childhood practice.

Workshop 3	Time: 15.30–16.30	Location: RUU Lucina
Quality criteria across perspectives on measurement in early childhood education research		
Organizer: Joris Van Elsen, University of Antwerp, Renée Claes, KU Leuven, and Eva Dierickx, Vrije Universiteit Brussel	Quality criteria for measurement in early childhood education research vary depending on the measurement’s purpose, type, context, and target population. However, the appraisal of measurement quality often relies on a limited set of common quality indicators. This workshop invites participants to discuss and critically reflect on measurement quality from multiple perspectives. The workshop is grounded in the building blocks of measurement quality provided by the <i>Standards for Educational and Psychological Testing</i> (AERA et al., 2014), the <i>Educational Measurement</i> book series, COSMIN (Mokkink et al., 2016), and other key frameworks. Based on four diverse studies that address measurement from psychometric, edumetric, large scale assessment, and socio-ethical perspectives, we explore, discuss, and reflect on key concerns related to measurement quality. In smaller groups, participants construct a quality framework for educational assessment for each perspective and subsequently compare the prioritized priorities. Through this workshop, we aim to identify commonalities and differences across perspectives and examine how they can inform one another to enhance the quality of measurement in early childhood education research.	

Daily programme

Wednesday 19th of August

Keynote 1

Time: 11.00–12.00

Location: Main building C1

Amanda P. Williford, Batten Bicentennial Professor of Early Childhood Education, University of Virginia

Beyond suspension and expulsion: How soft exclusionary disciplinary practices limit children's learning and the role of teacher attributions

Chair: Professor Eija Pakarinen,
University of Jyväskylä

Session A

Time 13.15–14.45

RUU Helena A:1 Symposium	RUU Juho A:2 Symposium	RUU Katri A:3 Single papers	RUU Lucina A:4 Single papers	RUU Aino A:5 Single papers	RUU Onni A:6 Single papers
Learning in Families through Technology (LiFT)	Innovating professional development in ECEC: Digital, adaptive, AI-based practice-based pathways to quality	Teacher–child interactions and instructional practices in early mathematics and science learning	Well-being, work conditions, and retention in ECEC	Transitions, inclusion, and collaboration in early childhood education	Language and literacy skills in early childhood

Session B

Time: 15.30–17.00

RUU Juho B:1 Symposium	RUU Helena B:2 Symposium	RUU: Katri B:3 Symposium	RUU Aino B:4 Single papers	RUU Onni B:5 Single papers	RUU Lucina B:6 Single papers
Learning and learning-related emotions in the early school years: The role of the home and the school contexts	Supporting early language development in infancy: In home and daycare contexts	Navigating transitions together: Strengthening parent-professional partnership	Children's individuality and role in research	Socioeconomic inequalities, home learning environments, and early child development	Self-regulation and social competence at home and in ECEC

Thursday 20th of August

Session C

Time: 9.00–10.30

RUU Helena C:1 Symposium	RUU Lucina C:2 Symposium	RUU Juho C:3 Symposium	RUU Aino C:4 Single papers	RUU Katri C:5 Single papers	RUU Onni C:6 Single papers
Advancing insight in child self-regulation: Assessment and associations between EF and teacher-child interactions at the dyadic and classroom level	Looking through the teachers' and children's eyes: Mobile eye tracking in early childhood education	Strengthening language rich early childhood education: Insights from interventions, dialogic reading, and teacher-child interventions	Early literacy and reading development in ECEC and primary education	Early mathematics learning and development	Well-being in ECEC and home environments

Keynote 2

Time: 11.15–12.15

Location: Main building C1

Jantine Spilt, Associate professor, Faculty of Psychology and Educational Sciences, KU Leuven

From automatic responses to intentional practice: Building competences for teacher-child relationships

Chair: Associate professor Eija Sévon, Vice Dean
University of Jyväskylä

Expert panel: *Creating a hopeful future for every child*

Time: 13.30–14.30

Location: RUU lobby/staircase

Poster session

Time: 14.30–15.30

Location: RUU 2nd floor lobby

Workshops

Time: 15.30–16.30

RUU Helena Workshop 1	RUU Juho Workshop 2	RUU Lucina Workshop 3
Exploring superdiversity in early childhood education and care	Interactive Workshop on Observation of (Educators' Facilitation of) Infants' Exploratory Play in the Home and Daycare Context	Quality criteria across perspectives on measurement in early childhood education research

Friday 21th of August

Session D

Time: 9.15–10.45

RUU Helena	RUU Juho	RUU Lucina	RUU Katri	RUU Aino	RUU Onni	RUU 3rd floor lobby
D:1 Symposium	D:2 Symposium	D:3 Single papers	D:4 Single papers	D:5 Single papers	D:6 Single papers	D:7 Single papers
Home and children's language and literacy development	Contemporary challenges in ECEC staff conditions and quality: Perspectives from Portugal and Sweden	Home and ECEC supporting the child	Career entry and professional development in ECEC	How children coordinate talk, action, and attention: A process-oriented study of collaborative problem solving	Wellbeing of teachers and children	Associations between digital media and early language skills

Keynote 3

Time: 11.30–12.30

Location: Main building C1

Marja-Kristiina Lerkkanen, Professor, Department of Teacher Education, University of Jyväskylä

Research-based decision-making in early childhood education: Two-year pre-primary education experiment as an example

Chair: Professor Minna Torppa, University of Jyväskylä

Session E

Time: 13.30–15.00

RUU Juho E:1 Symposium	RUU Lucina E:2 Symposium	RUU Katri E:3 Single papers	RUU Aino E:4 Single papers	RUU Onni E:5 Single papers
Long-term associations between early cognitive development and learning	Towards more continuity and integration across the early childhood system	Self-regulation during early childhood: Development and support	Digital learning	Social and emotional learning



Wednesday

19th of August
2026

Wednesday 19th of August 2026

Registration opens

Time: 8.00

Location: 8:00–11:15 Main building C
11.30 → RUU lobby

Social program

ECEC and school visits and campus tours

[Click for more information](#) [→ Programme]

Time: 8.30–10.30

Location: Departure from main building C.

Pre-registration required! Registered participants have been informed about the practicalities via email prior to conference.

Opening session:

Welcome to the SIG5 conference 2026

Time: 10.30–11.00

Location: Main building C1

The opening session of the conference will be inaugurated by Vice Rector of the University of Jyväskylä, *Marja-Leena Laakso*.

The program will feature a performance by *KolmeKuutoset*, a children's representative choir of Jyväskylä's basic education system. Led by *Suvi Airaksinen and Hilda Ivars*, KolmeKuutoset will present a repertoire primarily consisting of Finnish folk music.

Welcoming words are given on behalf of the local organising committee and the SIG5 by *Jenni Salminen* and *Tekla Seppälä*.

[Click for more information](#)

[→ Programme → Read more about the opening session and welcome reception on Wednesday 19th of August]

Session A

Session A: 1

Time: 13.15–14.45

Location: RUU Helena

Symposium: Learning in families through technology (LiFT)

Chair: **Victoria Murphy, University of Oxford**

Organizer: **Victoria Murphy, University of Oxford**

Discussant: **Kathy Hirsh-Pasek, Temple University**

Are we asking the right questions? Families' and educators' research priorities on young children's use of digital technology

Sophie Booton, University of Oxford; Renyu Jiang, University of Oxford; Pablo Bernabeu, University of Oxford; Sara Ratner, University of Oxford; Victoria Murphy, University of Oxford

Enhancing parent-child joint media engagement in a commercial drawing app: Effects of themed activities and embedded conversation prompts

Fiona Jelley, University of Oxford; Sandra Mathers, University of Oxford; Daniela Singh, University of Oxford; Pablo Bernabeu, University of Oxford; Kelley Dobinson, University of Oxford; Victoria Murphy, University of Oxford

From family priorities to interactional design: Embedding prompts for joint media engagement in digital storybooks

Sara Ratner, University of Oxford; Fiona Jelley, University of Oxford; Sandra Mathers, University of Oxford; Victoria Murphy, University of Oxford

Abstracts

Learning in families through technology (LiFT)

Symposium (overarching abstract)

Digital technologies are increasingly embedded in the everyday learning ecologies of families, yet research and design efforts often fail to align with family priorities, interactional practices, and real-world constraints. This symposium brings together three complementary papers under the theme Learning in Families through Technology (LiFT), offering a coherent examination of how family perspectives can inform research agendas, theory, and the design of digital learning environments for children.

The first paper adopts a participatory priority-setting methodology to identify the research questions that families, educators, and children themselves consider most pressing for young children's digital technology use. By foregrounding stakeholder-defined uncertainties, it challenges researcher-led agendas and provides a roadmap for socially grounded future research. The second paper moves from priorities to practice by experimentally examining how joint media engagement (JME) can be supported in a commercial creative app, showing that explicit conversational and collaborative scaffolds—rather than favourable conditions alone—enhance language-rich parent-child interaction. The third paper treats interaction as a design

problem, demonstrating how principles of JME and dialogic reading can be embedded at scale within a digital storybook platform, with evidence that narrative-embedded prompts support sustained, non-disruptive family dialogue.

Together, the papers form a clear progression from what families want to know, to how interaction unfolds, to how research-informed interactional supports can be designed and implemented in real-world technologies. The symposium concludes with a discussion led by Professor Kathy Hirsh-Pasek, who will synthesise insights across papers and situate them within broader debates on learning, equity, and family-centred digital design.

Keywords: Family learning; Digital technology in early childhood; Joint Media Engagement

Are we asking the right questions? Families' and educators' research priorities on young children's use of digital technology

Presentation as part of a symposium

*Sophie Booton,
Renyu Jiang, Pablo Bernabeu,
Sara Ratner & Victoria
Murphy*

Background and Aims. Research on young children's use of digital technology is expanding rapidly, yet concerns remain about whether current research agendas adequately reflect the questions and uncertainties of those most directly involved in children's everyday digital lives. Drawing on participatory research principles, the present study aimed to identify and prioritise research questions about digital technology use among children aged 2–11 years, as articulated by families, educators, and children themselves. By engaging research users at the earliest stage of agenda-setting, this project sought to align future research more closely with stakeholder needs and enhance its relevance and impact.

Methods. The study adopted a mixed-methods Priority Setting Partnership (PSP) approach, adapted from the James Lind Alliance framework. Three phases were conducted in the UK. Phase 1 gathered uncertainties and questions through an open-ended online survey completed by family members and educators (N = 236) and through participatory focus groups and interviews with children aged 10–11 years (N = 10). Responses were analysed using inductive qualitative content analysis to generate indicative research questions, with reliability checks conducted across coders. In Phase 2, a ranking survey invited a broader sample of families and educators to prioritise these indicative questions. Phase 3 involved a consensus workshop in which families and educators discussed and agreed on a final set of top research priorities.

Results. Across phases, over 650 stakeholder questions and statements were collected and consolidated into a manageable set of indicative research questions spanning multiple dimensions of children's digital technology use, including safeguarding, adult mediation, age-appropriateness of content, social-emotional impacts, cognitive development, health and wellbeing, and policy and regulation. While families and educators showed strikingly similar patterns in the topics they prioritised, children's contributions foregrounded experiential concerns, particularly around social relationships, fairness, and emotional impacts of digital technologies. The final consensus process resulted in a top-priority list that emphasised questions

about how digital technologies affect children's wellbeing and social-emotional development, how adults can best support safe and beneficial use, and how policy and commercial practices shape children's digital experiences.

Theoretical and practical significance. This study contributes to educational and developmental research by demonstrating the value of PSP methodologies for shaping research agendas in complex, socially contested domains such as children's digital technology use. It highlights how participatory agenda-setting can surface priorities that cut across traditional disciplinary boundaries and challenge assumptions embedded in researcher-led agendas. Practically, the findings provide a stakeholder-driven roadmap for researchers, funders, and policymakers, identifying questions that are perceived as both urgent and under-addressed. By centring the voices of families, educators, and children, this work supports the development of research that is more responsive, equitable, and impactful, and offers a model for participatory priority setting in education and child development research more broadly.

Keywords: Family learning; Digital technology in early childhood; Participatory research / priority setting

Enhancing parent-child joint media engagement in a commercial drawing app: Effects of themed activities and embedded conversation prompts

Presentation as part of a symposium

Fiona Jelley, Sandra Mathers, Daniela Singh, Pablo Bernabeu, Kelley Dobinson & Victoria Murphy

Background and aims. Joint media engagement (JME) involves adults and children sharing media experiences, extending the idea of 'co-viewing' to include a greater focus on interactions and meaning making. Evidence suggests that app features which directly scaffold adult-child interaction (e.g. conversation prompts) can enhance JME, whereas features that provide favourable conditions without direct encouragement do not show the same effects. However, most work on conversation prompts has focused on e-books. We tested whether JME can be enhanced in an open-ended creative drawing app by combining 'favourable conditions' (themed activities to inspire talk) with direct supports for parent-child conversation and collaboration. We focus here on two indicators of language-supporting engagement: interaction length and quantity of talk.

Methods. Twenty-three UK parent-child dyads (children aged 3-5) received a tablet and used a research version of a commercial drawing app at home. Using a within-subjects design, dyads completed five activities in a fixed order: Context 1) free drawing (a blank canvas), Context 2) two themed activities (one themed scene; one photo-upload to decorate), and Context 3) two themed activities with direct JME supports (one themed; one photo-upload). The activity themes (foods, alien, bedroom decoration, drawing hats) were presented in a counterbalanced order. Each activity included two phases: 'drawing' and 'replay' (rewatching a screen recording of the drawing process). Direct JME supports comprised: (i) collaborative drawing prompts (e.g. turn-taking), (ii) conversation prompts embedded in

drawing and replay (first prompt appearing automatically; others user-initiated with nudges), and (iii) a brief parent-facing video encouraging prompt use. Dyads audio-recorded sessions; app tracking data were also collected. Recordings were professionally transcribed and segmented into utterances by researchers; reliability checks yielded 88% agreement.

Results. Preliminary analyses on drawing-phase data from 70% of dyads used linear mixed-effects models with by-participant random intercepts (and slopes where convergent), controlling for child age and parent qualification. Dyads produced significantly more utterances in Context 3 (theme + direct supports) than Context 2 (theme only) ($b = 63.21$, 95% CI [28.03, 98.39], $p < .001$), with no dyad-level differences between Context 1 (free drawing) and either themed condition. For children's talk, Context 3 exceeded both Context 2 and free drawing, while parent talk was higher in both free drawing and Context 3 than Context 2. Interaction length (minutes of recorded audio) showed a similar pattern to the parent talk, with longer engagement in free drawing and Context 3 ($C1 = 10.21$, $C2 = 7.28$, $C3 = 9.67$ minutes). Full drawing and replay data will be presented, alongside tracking data to triangulate the audio findings.

Theoretical and practical significance. Early findings suggest that 'favourable conditions' (themed activities) alone may not increase JME, whereas combining themes with explicit conversational and collaborative scaffolds can increase language-rich interaction opportunities, particularly for children's verbal participation, even in a non-e-book context. Results inform design principles for embedding light-touch JME supports in commercial creative children's apps. However, it remains a challenge to generate relevant and topic-supporting prompts without the structured content of an e-book.

Keywords: family learning, joint media engagement; digital technology in early childhood

From family priorities to interactional design: Embedding prompts for joint media engagement in digital storybooks

Presentation as part of a symposium

Sara Ratner, Fiona Jelley,
Sandra Mathers & Victoria
Murphy

Background and Aims. Research on young children's learning with digital technologies has increasingly emphasised the importance of family perspectives and socially mediated practices. Participatory priority-setting work with families highlights strong parental concern for how digital tools shape interaction, communication, and shared experiences, while research on joint media engagement demonstrates that learning benefits arise not from media use per se, but from the quality of adult child interaction that surrounds it. Yet a persistent gap remains between these insights and the design of digital products used by families in everyday contexts.

This paper addresses that gap by examining how principles associated with joint media engagement and dialogic reading can be translated into the design of a digital storybook app used at scale. The study focuses on the

development and evaluation of family-facing prompts embedded within Let's Story, a generative digital storybook platform for children aged three to nine years. Rather than treating interaction as an outcome to be measured, the study conceptualises interaction as a design problem. It examines how digital environments can best actively invite, scaffold, and model adult child dialogue during shared digital reading.

Methods. Drawing on sociocultural theory and dialogic reading research, the authors developed a prompt framework structured around three interactional goals: supporting vocabulary development, connecting stories to children's lived experiences, and encouraging creative engagement. These principles were operationalised into generic prompts designed to function across multiple story structures, reflecting the constraints of scalable digital design while remaining grounded in interactional pedagogy. Prompts were intentionally aligned with the narrative story arc (orientation, complication, and resolution) to support dialogue at meaningful moments without disrupting narrative flow.

Using a design-based research approach, the study combined formative play testing with families ($n = 18$) across English and French language contexts and post-launch usage data ($n = 5,800,000$) collected following public release. Play tests examined how children and caregivers noticed, interpreted, and engaged with different prompt designs, comparing text-only pop-up prompts with prompts delivered via an in-story character intended to simulate adult-child interaction. Large-scale platform data were then used to examine persistence and acceptability of the selected design.

Results. Findings indicate that character-based prompts embedded within the narrative attracted substantially greater engagement than text-only prompts, which were frequently ignored. Importantly, families reported that these prompts were experienced as supportive rather than disruptive, suggesting that narrative and social embedding may legitimise pauses for dialogue within digital reading. Post-launch data show sustained interaction with the prompts across 5.8 million story sessions, indicating that research-informed interactional scaffolds can be viable within family-facing technologies at scale.

Theoretical and practical significance. Situated alongside symposium contributions on family priority setting and joint media engagement, this paper offers a design-focused perspective on how family-identified concerns and interactional principles can be operationalised in real-world digital products. It contributes relevant design knowledge about the affordances and limits of embedding joint engagement supports within digital media.

Keywords: Family learning; Interaction-focused design; joint media engagement

Session A: 2

Time: 13:15-14:45

Location: RUU Juho

Symposium: Innovating professional development in ECEC: Digital, adaptive, AI-based practice-based pathways to quality

Chair: **Ingrid Løkken, BI Norwegian Business School**

Organizer: **Ingrid Løkken, BI Norwegian Business School**

Discussant: **Franziska Vogt, PH St. Gallen**

The effectiveness of digital professional development on the quality of language support in one-on-one situations in ECEC

Fabienne Körner, ifp Bayern; Franziska Egert, KSH München; Steffi Sachse, PH Heidelberg

Beyond one-size-fits-all: Leveraging AI-driven adaptivity in blended digital professional development for ECEC practitioners

Eva Pölzl-Stefanec, University of Graz

Oslo Early Education Study (OEES): Enhancing interaction quality through practice-based professional development in early childhood education and care

Ratib Lekhal, University of Oslo; Siri Steffensen Bratlie, University of Oslo; Lisa-Marie Karlsen, University of Oslo; Tone Sofie Røsholt Ovat, University of Oslo; Elise Øksendal, University of Oslo; Tiril Wilhelmsen, University of Oslo; Veslemøy Rydland, University of Oslo

The effectiveness of blended-learning professional development for ECEC teachers. A meta-analysis

Franziska Egert, KSH München; Eva Pölzl-Stefanec, University of Graz; Ingrid Midteide Løkken, BI Norwegian Business School

Abstracts

Innovating professional development in ECEC: Digital, adaptive, AI-based practice-based pathways to quality

Symposium (overarching abstract)

This symposium brings together four complementary studies that examine innovative approaches to professional development (PD) in early childhood education and care (ECEC), with a shared focus on enhancing the quality of teacher–child interactions. (1) The first contribution presents an experimental study comparing two digital PD formats aimed at improving language supportive practices in one on one interactions with young children. Findings show that a concise online training combining input and video feedback yields modest improvements in child centered strategies, whereas a standalone digital reflection tool does not produce measurable effects. (2) The second paper explores adaptive blended learning formats as a means to address structural inequalities in disadvantaged ECEC contexts. Drawing on mixed methods pilot data, it illustrates how organizational flexibility and AI supported reflective processes can facilitate more responsive and needs based professionalization. (3) The third

contribution reports results from the large scale Oslo Early Education Study, testing a sustained, practice embedded PD model that integrates coaching, peer learning, and iterative reflection. Results demonstrate improvements across multiple dimensions of interaction quality in culturally and socioeconomically diverse ECEC settings. (4) The fourth paper synthesizes existing evidence through a meta analysis of 25 blended learning PD programs, showing small to moderate positive effects on teaching practices and smaller but significant effects on child outcomes. Together, the four studies offer converging evidence that digital, blended, and practice based PD formats can strengthen ECEC quality, while also highlighting the importance of dosage, adaptivity, and contextualized implementation.

Keywords: early childhood education and care, professional development, blended-learning, interaction quality, coaching, practice-based intervention

The effectiveness of digital professional development on the quality of language support in one-on-one situations in ECEC

Presentation as part of a symposium

Fabienne Körner, Franziska Egert & Steffi Sachse

An increasing number of studies highlight the critical role of high-quality teacher-child interactions in early childhood education and care (ECEC) for supporting language learning in young children prior to school entry (Mashburn et al., 2008; Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009). Evidence also shows that the quality of these interactions is often only moderate (Wadepohl, Damaske, Johannsen & Mackowiak, 2024). A growing body of evidence clearly indicates that professional development is a valuable tool to increase interaction quality (Egert, Dederer & Fukkink, 2020), and digital teacher training might offer new opportunities.

Therefore, the experimental study investigates the effectiveness of two different online professional development programs to provide high-quality language support for children with language delays in ECEC: (1) a digital in-service training, in which three online sessions provided highly condensed input on strategies fundamental for language promotion as well as two video-feedback sessions, allowing teachers to review and discuss their interactions with children. (2) a digital reflection tool, designed to guide teachers in systematically observing and reflecting on their (language-supportive) interactions. Overall, data was available for 16 teacher-child dyads. Two different one-on-one situations with books and playdough were videotaped before and after the intervention. The quality of teacher-child interactions was assessed using the Teacher Interaction Language Rating Scale (TILRS; Girolametto, Weitzman, & Greenberg, 2000) and the Classroom Assessment Scoring System (CLASS PRE-K; Pianta, La Paro, & Hamre, 2008).

The results showed that (1) the digital professional development led to significant improvements on the dimension of “child-centered strategies” ($\eta^2=.32$, $p<.01$) such as waiting and listening, follow children’s lead, and be face to face. Other aspects of interaction quality remained unchanged. (2) The reflection tool had no measurable effect on interaction quality.

These findings suggest that short-term online interventions may have potential to improve teacher-child-interactions, but the effects tend to be modest. Teacher reflection without specific input does not seem to be sufficient. For sustainable improvement, a larger dosage or a blended learning approach that combines the flexibility of digital formats with the practical and social benefits of in-person support, is needed. Nevertheless, the study provides important insights for designing and implementing professional development in ECEC: Digital interventions can serve as valuable supplements to improve the quality of teacher-child-interactions.

Keywords: early childhood education and care, professional development, blended-learning, interaction quality, coaching, practice-based intervention

Beyond one-size-fits-all: Leveraging AI-driven adaptivity in blended digital professional development for ECEC practitioners

Presentation as part of a symposium

Eva Pölzl-Stefanec

The professional development of early childhood education and care (ECEC) professionals faces significant challenges in socially and geographically disadvantaged areas, where structural factors hinder the implementation of pedagogical quality in daily practice (Schieler & Menzel, 2024; Ackah-Jnr et al., 2022; OECD, 2018). This article presents the initial findings of a pilot study (N=36) that examines whether an adaptive blended learning program can contribute to equal opportunities in professional development through digital flexibility and pedagogical adaptability. Following Creswell's (2014) mixed-methods approach, the research design uses an explanatory sequential embedded design to explore the potential of this format to bridge the gap between different social spaces. Quantitative data on participation were analyzed using non-parametric tests, while the qualitative part used a contrastive case analysis of four ECEC institutions based on systematic field observations.

The preliminary results of this pilot phase reveal three potential dimensions of adaptive professionalization. The data suggest that barriers can be overcome through organizational flexibility. The combination of 1/3 asynchronous self-learning and 2/3 synchronous sessions seemed to facilitate the integration of professional development into everyday work ($Z = -2.84$, $p = 0.005$). Furthermore, the use of generative AI was tested within a 'human-in-the-loop' framework to analyze reflections and determine whether trainers can more effectively identify obstacles to understanding and tailor sessions to the specific needs of the group. █

Following Bohnsack's (2014) praxeological typology, the analysis of the observations shows that structural obstacles do not necessarily lead to poor process quality, resulting in a hypothetical distinction of three types based on their underlying orientations. The responsive, questioning type seems to show resilience even in stressful environments and maintain a high quality of interaction. In contrast, the didactic-instructive type shows a possible discrepancy between theoretical knowledge and emotional

support. Finally, the administrative-structural type points to a risk where structural stress can lead to a focus on restrictive behavior management.

These preliminary findings indicate that a shift towards adaptive professionalization is necessary in the context of continuing professional development. Rather than providing definitive proof, this study aims to determine whether targeted support can better meet diverse professional requirements. This study serves as a starting point for further research on the development of inclusive digital continuing education and training.

Keywords: early childhood education and care, professional development, blended-learning, interaction quality, coaching, practice-based intervention

Oslo Early Education Study (OEES): Enhancing interaction quality through practice-based professional development in early childhood education and care

Presentation as part of a symposium

Ratib Lekhal, Siri Steffensen Bratlie, Lisa-Marie Karlsen, Tone Sofie Røsholt Ovati, Elise Øksendal, Tiril Wilhelmsen & Veslemøy Rydland

High-quality early childhood education and care (ECEC) is widely recognized as a key contributor to children's social, emotional, and cognitive development (e.g., Apps et al., 2013; Camilli et al., 2010; Havnes & Mogstad, 2011; Melhuish et al., 2015; Vandell et al., 2010). Central to ECEC quality are everyday interactions between practitioners and children, which shape children's opportunities for participation, communication, and learning (Slot, 2018). Despite high enrollment rates and broad agreement on the importance of quality, research consistently shows substantial variation in interaction quality across ECEC settings in Norway and internationally, indicating a continued need for effective professional development (PD) models for staff (Bjørnstad & Os, 2018; Bjørnstad et al., 2020; Egert et al., 2020).

The Oslo Early Education Study (OEES) was developed to address these challenges through a large-scale, practice-based PD intervention in Norwegian ECEC. The study was conducted in 56 ECEC centers located in urban districts characterized by persistently low-income households and high levels of cultural and linguistic diversity. The sample included 89 toddler classrooms and 125 preschool classrooms, and the intervention group was compared with a waitlist control group over an 18-month period.

OEES is a multi-component PD model offered to all staff within participating centers. The intervention integrates introductory workshops, observation, feedback, coaching, and collective reflection, and is designed to be embedded in everyday ECEC practice. The overarching aim is to strengthen practitioners' capacity to support children's participation in extended dialogues and meaningful interactions during everyday activities such as shared reading, exploration of natural phenomena, and peer play.

A core element of OEES is a two-level coaching model. At the first level, external mentors support head teachers and center leaders through regular coaching sessions focused on reflection, professional learning, and

leadership for quality improvement. At the second level, head teachers facilitate peer observation and peer coaching within classrooms, supporting collaborative learning among staff. Across the intervention period, practitioners engage in repeated cycles of self-reflection, joint analysis of practice, and discussion of interaction quality, supported by practice-oriented materials and video examples. Content and focus areas are introduced gradually and revisited over time, allowing staff to build competence and confidence through sustained engagement.

This study examines the effects of the OEES on staff interaction quality compared to a business-as-usual control group, using multiple measures of interaction quality. Findings from OEES indicate that the intervention contributed to improvements in staff interaction practices across different dimensions and operationalizations of interaction quality. The study demonstrates the potential of sustained, multi-component professional development models to support quality improvement in ECEC settings serving diverse populations. In addition it contributes to the limited body of research using causal designs to examine the effects of professional development in Nordic ECEC contexts (Buøen et al., 2021).

Keywords: early childhood education and care, professional development, blended-learning, interaction quality, coaching, practice-based intervention

The effectiveness of blended-learning professional development for ECEC teachers. A meta-analysis

Presentation as part of a symposium

Franziska Egert, Eva Pözl-Stefanec & Ingrid Midteide Løkken

In early childhood education and care (ECEC), in-service professional development (PD) is widely regarded as a key lever for improving teaching quality and children's developmental outcomes (e.g., Egert et al., 2018; Markussen-Brown et al., 2017; Werner et al., 2016). In recent years, blended-learning professional development (BLPD) which combines face-to-face formats with digital learning components as gained increasing attention due to its potential to enhance accessibility, flexibility, and cost-efficiency. However, despite strong theoretical assumptions and growing implementation, empirical evidence on the effectiveness of blended-learning PD remains fragmented. Previous meta-analyses have largely focused on face-to-face PD and included only a small number of studies with online components (Egert et al., 2018; Markussen-Brown et al. Werner et al., leaving open questions about the overall effectiveness of BLPD and the conditions under which it is most effective.

This meta-analysis aims to synthesize the available empirical evidence on the effectiveness of blended-learning in-service professional development for ECEC teachers. Specifically, the study addresses three research questions: (1) To what extent does BLPD improve teaching practices? (2) To what extent does BLPD enhance child developmental outcomes? and (3) Which methodological, contextual, and professional development characteristics moderate BLPD effectiveness?

A systematic literature search was conducted across international databases (ERIC, PsycINFO, ProQuest D&T, FIS Bildung, and NB-ECEC), complemented by manual searches of reference lists. (Quasi-)experimental studies published between 2000 and 2024 were included if they evaluated blended-learning PD combining digital and face-to-face components and reported sufficient statistical data. Two datasets were formed: one focusing on teaching practices and one on child outcomes. In total, 23 studies with 25 different BLPD met the inclusion criteria. Effect sizes were calculated as Hedges' g and aggregated using random-effects multilevel meta-analyses. Moderator analyses examined study design quality, ECEC setting characteristics, and PD features.

Results show a small-to-moderate positive effect of BLPD on teaching practices ($g = 0.40$; 95%CI = 0.27–0.52; $k = 18$), and a small but statistically significant effect on child outcomes ($g = 0.21$; 95%CI = 0.11–0.30; $k = 22$). Effects on teaching practices were moderated by methodological features, particularly assignment procedures and comparison conditions, with more rigorous designs yielding more conservative estimates. In contrast, effects on child outcomes were not significantly moderated by study design, ECEC setting, or PD characteristics. Across both outcomes, significant advantages were found not found for specific digital functions, synchronous versus asynchronous formats, or longer program duration.

Overall, the findings indicate that blended-learning professional development is an effective approach for improving ECEC teaching practices and, to a lesser extent, child outcomes. The magnitude of effects is comparable to previous meta-analyses on traditional face-to-face PD (Brunsek, 2021, Jensen & Rasmussen, 2018) suggesting that blended formats can maintain effectiveness while offering structural advantages such as scalability and flexibility. However, the modest effects on child outcomes highlight the need for future research examining mechanisms of transfer, implementation fidelity, and long-term effects. These findings have important implications for policy and practice, supporting investment in high-quality blended PD as a sustainable strategy for strengthening the ECEC workforce.

Keywords: early childhood education and care, professional development, blended-learning, interaction quality, coaching, practice-based intervention

Session A: 3

Time: 13:15-14:45

Location: RUU Katri

Single papers: **Teacher–child interactions and instructional practices in early mathematics and science learning**

Chair: Xiaona Lu, University of Jyväskylä

Teacher–child interaction during mathematical picture book reading: analysis of interaction patterns

Birgit Kinnaer, KU Leuven & Ghent University; Lieven

Verschaffel, KU Leuven; Hilde Van Keer, Ghent University; Joke Torbeyns, KU Leuven

Improving early childhood interaction quality through global and math-specific teacher training: Evidence from an intervention study in toddler classrooms

Julia Zuber, German Youth Institute; Anja Linberg, German Youth Institute; Nadine Besser, Otto-Friedrich-University of Bamberg; Marina Kammermeier, University of Education Weingarten; Simone Lehl, University of Education Weingarten; Sabine Weinert, Otto-Friedrich-University of Bamberg; Hans-Günther Roßbach, Otto-Friedrich-University of Bamberg; Dorothea Dornheim, Otto-Friedrich-University of Bamberg

Types of mathematics-related educational dialogue in Finnish first-grade classrooms

Anna-Elina Taskinen, University of Jyväskylä; Heli Muhonen, University of Jyväskylä; Tuire Koponen, University of Jyväskylä; Marianne Hustvedt, Volda University College; Jenni Salminen, University of Jyväskylä

Cultivating culturally responsive science teaching among Bedouin preschool teachers

Idit Shaul, Bar Ilan University; Ornit Spektor-Levy, Bar Ilan University

Abstracts

Teacher–child interaction during mathematical picture book reading: analysis of interaction patterns

Birgit Kinnaer, Lieven Verschaffel, Hilde Van Keer & Joke Torbeyns

Aim

This study explores teacher–child interaction patterns during shared picture book reading (SPBR) in the domain of early mathematics. Prior research in domains different from mathematics indicated that classroom interactions (including SPBR) in early childhood education (ECE) typically follow an Initiation–Response–Follow-up (IRF) pattern: The teacher initiates the conversation, a child responds, and a teacher provides a follow-up (Coulthard & Sinclair, 1975; Mascareño et al., 2016; Muhonen et al., 2022). Teacher's follow-up may be simple (i.e., accepting or evaluating the child's response) or elaborative (i.e., providing or asking additional information; Mascareño et al., 2016). Two types of IRF patterns have been described (Rojas-Drummond et al., 2013). First, in a loop IRF pattern, the teacher's (often simple) follow-up closes the conversation, resulting in only one IRF sequence related to the initiation. Second, in a spiral IRF pattern,

the conversation continues after the first (often elaborative) follow-up. This second type allows for more agency of the children and stimulates thinking processes (Buzzelli, 1996; Thoms, 2012). In addition to their loop versus spiral characterization, ECE interaction patterns can be described along complexity level. IRF patterns of high complexity level or of mixed low and high complexity levels are shown to more effectively support preschoolers' development than IRF patterns of low complexity (Masca-reño et al., 2016).

Although early mathematics is recognized as crucial for children's later academic development (e.g., Burgoyne et al., 2019) and high-quality interaction is considered a key factor in fostering mathematical thinking (Clements et al., 2023), empirical studies on the teacher-child interaction in the domain of early mathematics are scarce. This study aims to identify the teacher-child interaction patterns during SPBR in early mathematics along their IRF structure and complexity level.

Methods

Thirty-seven preschool teachers (all female, M age = 43.41 years) and their 4–5-year-old preschoolers participated. Each teacher shared a picture book on repeating patterns with their preschoolers. All SPBR activities were video-registered, transcribed, and coded according to a researcher-developed coding scheme. To detect recurrent interaction patterns, we will (starting in March 2026) conduct T-pattern analysis in THEME6 software, a method designed to identify recurrent temporal patterns or structures (Magnusson, 2020).

Potential Results

Based on findings in domains different from mathematics (e.g., Masca-reño et al., 2016), we expect a predominance of loop IRF patterns, of homogeneously low and homogeneously high complexity level and mixed complexity levels. Given the data-driven nature of T-pattern analysis, we further anticipate the identification of additional interaction patterns, such as child-initiated conversations, patterns without teacher follow-up, etc.

Theoretical and practical significance of the study

Our study will provide new insights into teacher-child interaction patterns in the domain of early mathematics. These new insights are pivotal to better understand early mathematical development and important features of the effective stimulation of this development. These theoretical insights have practical implications as well, as they offer building blocks to improve ECE teacher training and professional development programs and (consequently) ECE mathematics education, leading to enhanced mathematical development for all children.

Keywords: early mathematics; shared picture book reading; teacher-child interaction; IRF

Improving early childhood interaction quality through global and math-specific teacher training: Evidence from an intervention study in toddler classrooms

Julia Zuber, German Youth Institute; Anja Linberg, Nadine Besser, Marina Kammermeier, Simone Lehl, Sabine Weinert, Hans-Günter Roßbach, Dorothea Dornheim

Educational processes are central to child development, with teacher-child interactions playing a key role. High-quality interactions show well-documented short- and long-term effects on children's socio-emotional and academic development (Howard et al. 2024; Vandell et al., 2016) and are commonly differentiated into global and domain-specific characteristics (Kluczniok et al., 2013; Sylva et al., 2006).

Global teacher-toddler interactions refer to broadly stimulating interactions that promote children's engagement and learning through responsive guidance, feedback, scaffolding and emotional support (Slot et al., 2017). Domain-specific interactions are differentiated by learning domains such as language and mathematics. Language-related interactions include verbal elaboration, open questioning, and phonological cues, whereas math-specific interactions support children in constructing mathematical meanings in everyday contexts, for example through mathematical language in play-based activities (Besser et al. 2025; LeFevre et al., 2010).

Teacher trainings are a promising approach to enhancing both quality and quantity of supportive interactions (Lee et al., 2025). From a competence-oriented perspective, training effects depend not only on knowledge acquisition but also on teachers' beliefs, attitudes, and professional orientations, which shape implementation of new practices in everyday interactions (Anders, 2012).

However, in Germany, empirical evidence on the effects of global and math-specific professional development on toddler interactions and on the mechanisms underlying these effects—remains limited. Against this background, the study addresses two research questions:

- (1) To what extent do global learning support and math-specific interventions affect global and math-specific teacher-child interactions, and do effects differ by intervention focus?
- (2) To what extent are potential intervention effects mediated by changes in teachers' beliefs and attitudes, including their image of mathematics and perceived self-efficacy in supporting children's learning?

The analyses are based on an intervention study, including pre- and post-test. Early childcare teachers (n=95) were randomly assigned to one of three groups: a global intervention, a mathematics-specific intervention, or no intervention. Both intervention groups attended a two-day training with an eight-week implementation phase. At pre- and posttest, teachers engaged in standardized interaction situations with two- to three-year-old children (two books and one game settings), which were video recorded and coded using multiple rating scales assessing math and language support and responsive learning support. Teachers additionally completed questionnaires on their attitudes and beliefs regarding mathematics and general learning.

Analyses are conducted using fixed-effects models in Stata 19 to estimate within-person changes. Preliminary results indicate significant improvements over time in language support across all intervention groups. For math support, significant effects over time and between groups emerged, with highest posttest scores in the mathematics intervention group; however, effects were small and pretest group differences were observed. Responsive learning support increased significantly over time across all groups.

Overall, the findings suggest that domain-specific professional development can enhance math-related interaction practices with toddlers. At the same time, modest effect sizes, baseline differences, and the limited sample size restrict generalizability. The study contributes to a differentiated understanding of global versus domain-specific professional development in early childhood education and highlights the importance of considering teachers' professional orientations as potential mechanisms of change.

Keywords: interaction quality, professional development intervention; math and language support; toddler classrooms

Types of mathematics-related educational dialogue in Finnish first-grade classrooms

Anna-Elina Taskinen, Heli Muhonen, Tuire Koponen, Marianne Hustvedt & Jenni Salminen

Building a strong foundation in mathematics during the early primary years is essential for students' everyday life and academic success. This study examines different types of mathematics-related educational dialogue in Finnish first-grade classrooms between the teacher and students aged 7–8.

Educational dialogue, in which participants explain, justify, and explore ambiguity together, provides a structured approach to constructing shared understanding. In this study, educational dialogue refers to oral interaction and deliberative information exchange that supports the cumulative co-construction of shared knowledge (Alexander, 2008). Framed within sociocultural theory (Vygotsky, 1978), the study focuses on different types of educational dialogue in mathematics lessons.

Educational dialogue bridges collective and individual reasoning and supports students' participation, engagement, and conceptual development (Alexander, 2008; Mercer & Littleton, 2007). Prior research shows that dialogic exchanges foster children's explanation, questioning, and justification (Hennessy et al., 2016; Vrikki et al., 2018). However, variation in educational dialogue across different classroom interaction settings in the early primary grades has received limited research attention.

Alexander's (2008) dialogic teaching principles (collectiveness, supportiveness, reciprocity, cumulateness, and purposefulness) offer a suitable lens for analysing whole-class and private teacher–student dialogue within the same lessons. This framework provides conceptual tools for examining how participants co-construct knowledge through educational dialogue. By distinguishing between two interaction settings in first-grade mathematics lessons, this study addresses a gap in research regarding educational dialogue

in early mathematics education. The research questions are: What types of mathematics-related educational dialogue can be identified in (1) whole-class situations and (2) in private teacher-student situations?

The data originate from the VUOKKO longitudinal study (Salminen et al., 2021–2023) and comprise 36 transcribed video-recorded mathematics lessons. A total of 60 episodes of mathematics-related educational dialogue were identified based on Alexander's principles, categorised according to interactional context, segmented into turns and units, and analysed using micro-level communicative act coding with the Scheme for Educational Dialogue Analysis (Hennessy et al., 2016). This process enabled the identification of distinct types of educational dialogue in both whole-class and private settings.

The findings showed that in both interaction settings, three types of mathematics-related educational dialogue were identifiable. At the whole-class level, the types were Teaching for dialogue (n=13), Teaching through dialogue (n=10), and Dialogue as a flexible space (n=12). At the private level, the types were Dialogue for content (n=10), Content through dialogue (n=7), and Dialogue as an equilibrium (n=8). Whole-class episodes often focus on constructing common knowledge through shared procedures, whereas private level episodes tend to deepen conceptual understanding through personalised sharing and knowledge-building.

This study extends prior research on educational dialogue by showing how instructional content, interactional roles, teachers' scaffolding, and students' participation vary across dialogue types in whole-class and private settings, including types where educational dialogue served not only as a tool for knowledge construction but also as a skill or content to be learned. The findings may offer insights for teachers, teacher educators, and curriculum designers by clarifying how interactional contexts shape teachers' orchestration and students' participation in educational dialogue in early primary grades.

Keywords: educational dialogue, early primary grades, mathematics education

Cultivating culturally responsive science teaching among Bedouin preschool teachers

Idit Shaul & Ornit Spektor-Levy

This study examined the impact of a community-based Culturally Responsive Science Education (CRSE) professional development program (PDP) on Bedouin preschool teachers' attitudes, beliefs, and practices related to science teaching, with particular attention to teachers' curiosity (as a motivational driver in teachers' PD). Persistent achievement gaps in science education, especially among Indigenous and marginalized communities, highlight the need for culturally grounded approaches beginning in early childhood. In the Bedouin context, where formal education has emphasized memorization and where questioning is not culturally encouraged, science teaching poses distinct pedagogical and cultural challenges. The present study addressed these challenges by investigating whether and

how a sustained CRSE-oriented PDP supports teacher development and fosters more inquiry-based, culturally meaningful science instruction.

The study employed a mixed-methods design. 54 Bedouin preschool teachers from diverse Bedouin communities in the Negev Desert participated in a two-year CRSE-PDP. Quantitative data were collected using validated self-report instruments (pre- and post-PDP) to measure teachers' attitudes and beliefs toward science teaching, their instruction practices, and their prior level of curiosity. Statistical analyses included paired-sample t-tests, correlational analyses, and hierarchical regression models to examine the contribution of curiosity to teachers' attitudes and practices. Qualitative data were gathered through in-depth semi-structured interviews with a subsample of 15 teachers conducted before and after the PDP. Interview data were analyzed using a phenomenological approach and inductive content analysis to capture changes in teachers' attitudes, beliefs, and practices.

Quantitative findings indicated no statistically significant pre-post differences in teachers' overall attitudes toward science teaching, likely due to high baseline scores and ceiling effects. However, teachers' curiosity emerged as a significant predictor of positive attitudes toward science teaching. Higher levels of curiosity were associated with greater comfort in teaching science, stronger beliefs in the benefits of science for children, and heightened awareness of instructional challenges. Qualitative findings indicated initial shifts at the conceptual, epistemological, and pedagogical levels following the PDP. Teachers described inquiry processes initiated by children and reflected a gradual transition from teacher-directed to more child-centered, inquiry-oriented practices.

A central qualitative finding was teachers' reconceptualization of Bedouin cultural and Indigenous knowledge as legitimate scientific knowledge. Post-PDP, teachers integrated traditional practices—such as agriculture, food preparation, herbal medicine, and material technologies—into science teaching, often in collaboration with elders and community members. This shift enabled teachers to frame culture as an epistemic resource rather than as peripheral enrichment, thereby strengthening the relevance and authenticity of science learning for young children.

Theoretically, the study advances early childhood CRSE scholarship by empirically linking teachers' curiosity to culturally responsive science teaching and highlighting curiosity as a key epistemic and motivational mechanism in teacher learning. Practically, the findings underscore the importance of sustained, community-based PDP that integrates Indigenous knowledge holders, supports inquiry-based pedagogy, and nurtures teachers' curiosity. Such approaches hold promises for promoting equitable, culturally grounded science education from the earliest years, particularly in marginalized minorities contexts.

Keywords: culturally responsive science education, preschool teachers, curiosity, minority, inquiry

Session A: 4

Time: 13:15-14:45

Location: RUU Lucina

Single papers: **Well-being, work conditions, and retention in ECEC**

Chair: Mimmu

Sulkanen, University of Jyväskylä

Job demands, job resources, self-control, and occupational well-being among beginning early childhood education teachers: A three-wave prospective study

Jian-Bin Li, The Education University of Hong Kong; Xue-Qing Yuan, The Chinese University of Hong Kong; Yu Xu, The Education University of Hong Kong

Beyond intention to leave: Depersonalization and low accomplishment as drivers of actual turnover in early childhood settings

Esther Adi-Japha, Bar-Ilan University; Hila Azoolay Hachmon, Bar-Ilan University

ECEC novice teachers' job satisfaction: the role of work engagement

Hà Phạm-Đào, University of Jyväskylä; Elina Koivusalo, University of Jyväskylä; Eija Räikkönen, University of Jyväskylä; Maarit Alasuutari, University of Jyväskylä

Antecedents and outcomes of work meaningfulness in early childhood educators: A three-level meta-analysis

Juan Yan, The Education University of Hong Kong; Yu Xu, The Education University of Hong Kong; Hui Wang, The Education University of Hong Kong; Junjun Chen, The Education University of Hong Kong; Jian Bin Li, The Education University of Hong Kong

Abstracts

Job demands, job resources, self-control, and occupational well-being among beginning early childhood education teachers: A three-wave prospective study

Jian-Bin Li, Xue-Qing Yuan & Yu Xu

A high-quality early childhood education (ECE) lays a critical foundation for children's positive development in the long run. The extent to which ECE teachers manage to deliver quality education and teacher-student interaction not only relies on their professional skills, but also on their well-being at work (e.g., job satisfaction and burnout). However, occupational well-being (OWB) among ECE teachers has been considered a global concern in the current era, when the ECE industry is facing numerous challenges. Worse still, this concern may be particularly salient among beginning ECE teachers, who not only need to take up as many duties as veteran teachers but also face multiple additional stressors during the transition period, such as adapting to the job duties, the work groups, and the

sector's work climate. Prior qualitative and cross-sectional studies have suggested job factors like demands and resources, as well as personal social-emotional factors (e.g., self-control) are key factors that shape novice ECE teachers' OWB. However, little research has examined how novice ECE teachers' OWB unfolds over time, and even less is known about whether job factors shape OWB through altering teachers' personal factors. Drawing upon Collie and Martin's (2024) academic and social-emotional flourishing framework, this three-wave longitudinal study aimed to disclose the role of job demands, job resources, and self-control in OWB among beginning ECE teachers.

At T1 (October 2023), 318 beginning ECE teachers took part in our online survey, reporting their job demands (quantitative, emotional, and cognitive demands), job resources (collegial support, quality of leadership, and work climate), self-control, and OWB (i.e., job satisfaction and burnout). Those who continued working in the same ECE sector were eligible to participate again in T2 (April 2024) and T3 (October 2024) surveys. The final sample included 157 teachers. Results of path analysis found that after controlling for time-varying covariates (e.g., class sizes, monthly salary) and baseline levels of key variables (i.e., self-control, job satisfaction, and job burnout), T1 cognitive demands predicted lower T3 job satisfaction; no other main effects of job demands and resources were found. In addition, T1 quantitative demands reduced T2 self-control; no other predictive effects of T1 demands and resources on T2 self-control were found. Moreover, T2 self-control predicted increased job satisfaction and reduced job burnout at T3. Importantly, T2 self-control mediated the association between T1 quantitative demands and T3 job satisfaction and job burnout.

Taken together, the current findings suggest that beginning ECE teachers' initial perceptions of quantitative demands reduced OWB (i.e., decreased job satisfaction and increased job burnout) one year later by impairing self-control. These results imply that managing beginning ECE teachers' quantitative demands at the beginning and enhancing their self-control are key to enhancing their wellness at work.

Keywords: self-regulation, occupational health, job demands, job resources, preschool teachers

Beyond intention to leave: Depersonalization and low accomplishment as drivers of actual turnover in early childhood settings

*Esther Adi-Japha &
Hila Azoolay Hachmon*

Early childhood education (ECE) staff work under demanding conditions that place them at heightened risk for burnout and turnover. Low professional status, modest compensation, limited career advancement, and high emotional labor characterize the profession, while large group sizes, staffing shortages, and frequent procedural changes further intensify daily pressures. These conditions have been consistently linked to elevated burnout and increased intention to leave the field. In Israel, where ECE turnover rates are among the highest in OECD countries, understanding the mechanisms that drive actual job departure is particularly urgent. This

study examined predictors of burnout, intention to leave, and actual turnover among 400 ECE staff members working in public (ages 3–5, universal service) or private (birth–2) care settings during 2022–2023, following the withdrawal of COVID 19 restrictions.

Guided by the Job Demands–Resources (JD–R) model, the study assessed how structural characteristics, personal resources, personal stress, job demands, and job resources contribute to three burnout components—emotional exhaustion, depersonalization, and personal accomplishment—and which of these components predict actual turnover one year later. Participants completed questionnaires measuring workload stress, exposure to changes in daycare procedures, workplace support, coaching availability, personal strength, and non work related stress. Burnout and intention to leave were assessed at baseline, and actual turnover was recorded a year later. Three hierarchical regressions identified predictors of each burnout component, followed by a logistic regression predicting actual turnover.

Emotional exhaustion was shaped primarily by job demands and job resources. Higher workload stress and frequent procedural changes were associated with greater exhaustion, while strong workplace support and higher personal strength served as protective factors. This pattern aligns with the JD–R model, in which high demands and low resources increase exhaustion, while personal resources buffer against it.

Personal accomplishment was driven mainly by personal and relational resources. Personal strength emerged as the strongest predictor, followed by workplace support and professional experience, suggesting that this dimension reflects a sense of competence and professional growth rather than immediate work pressures.

Depersonalization was most strongly associated with low personal strength and, to a lesser extent, lower workplace support and less experience. Job demands did not predict depersonalization, consistent with the view that it reflects a defensive coping mechanism arising when personal and relational resources are insufficient.

The logistic regression predicting actual turnover revealed that intention to leave strongly predicted job departure, but intention alone did not fully explain who left. Two burnout components—depersonalization and low personal accomplishment—predicted actual turnover even after controlling for intention. Emotional exhaustion did not contribute further. These findings indicate that while exhaustion contributes to dissatisfaction and intentions to leave, the transition from intention to action is driven by deeper relational and professional factors. Depersonalization and diminished accomplishment function as turning point mechanisms that push educators from considering leaving to actually exiting the profession.

This study highlights the importance of strengthening personal and relational resources in ECE settings. Interventions that enhance personal strength, workplace support, and professional growth may reduce

depersonalization and increase accomplishment, thereby mitigating actual turnover.

Keywords: Burnout, intention to leave, procedural changes in daycare

ECEC novice teachers' job satisfaction: the role of work engagement

Hà Phạm-Đào, Elina Koivusalo, Eija Räikkönen & Maarit Alasuutari

To solve the issues of workforce shortage in early childhood education and care (ECEC), various studies have been conducted on ECEC teachers' job satisfactions in relation to their work conditions, motivation and professional commitment. However, their work engagement and its relationship with different dimensions of job satisfaction have not been examined among ECEC novice teachers while previous studies among non-ECEC teachers showed that it may contribute to the much-needed improvement of ECEC teachers' work conditions, wellbeing and retention. Thus, to increase our understanding on this research gap, this study utilizes the conceptualization of the two constructs by Schaufeli et al. (2002), Judge et al., (2017) and Jeon & Wells (2018), to analyze their relationships while taking Job Demand-Resources (Bakker et al., 2023), Self-Determination (Ryan & Deci, 2020), and social cognitive career (Lent & Brown, 2006) theories into consideration. The web-based survey data collected from novice Finnish ECEC teachers (N = 333) in February 2024 was examined using regression analyses with Mplus (Muthén & Muthén, 1998–2024), controlling for ECEC teachers' age, genders, financial satisfaction, educational levels and previous work experiences in ECEC. The findings showed that novice ECEC teachers' work engagement is related to their satisfaction with work conditions and support from their colleagues. Thus, implications drawn from the results for direct improvement of novice ECEC teacher's job satisfaction and indirectly their professional retention is to systematically support their work engagement both during their teacher education and induction phase.

Keywords: work engagement, job satisfaction, ECEC teachers' occupational wellbeing

Antecedents and outcomes of work meaningfulness in early childhood educators: A three-level meta-analysis

Juan Yan, Yu Xu, Hui Wang, Junjun Chen & Jian Bin Li

Early childhood education is a meaningful vocation. A strong sense of work meaningfulness is a core feature that characterizes the excellence of early childhood educators (ECEs). However, its demanding nature, the public's underappreciation, and the industry's uncertainty and decreasing morale arising from the broader context (e.g., declining birth rate), may hinder ECEs from establishing and maintaining a strong sense of work meaningfulness. Prior research has widely examined antecedents and outcomes of ECEs' work meaningfulness, but findings are inconsistent. To reassure the importance of ECEs' work meaningfulness in teachers' thriving and to identify factors that can be leveraged to enhance ECEs' work meaningfulness, this three-level meta-analysis synthesized the associations between

ECEs' work meaningfulness and its potential antecedents (based on job demands-resources theory) and outcomes (based on job characteristics theory and work as a calling theory), while also exploring factors that can explain the heterogeneity of the associations.

This study was developed following the PRISMA guidelines. Specifically, we systematically searched four electronic databases (i.e., PsychINFO, Web of Science, Education Resources Information Center, and ProQuest Dissertations & Theses Global) using two categories of keywords related to work meaningfulness and ECEs, covering publications up to October 12, 2024. Based on inclusion criteria, 18 studies with 107 effect sizes were finally included in the analyses. We then applied three-level random-effects models in RStudio to examine the associations between antecedents/outcomes and ECEs' work meaningfulness. Additionally, the moderating effects of participant demographics (e.g., age and cultural context) and study characteristics (e.g., study design) were also examined.

The results found that job resources ($r=.215$, $p<.001$), organizational resources ($r=.424$, $p=.014$), and personal resources ($r=.346$, $p=.008$) were positively and significantly associated with ECEs' work meaningfulness, but job demands ($r=-.071$, $p=.252$) and self-regulation strategies ($r=.104$, $p=.607$) were not. In addition, work meaningfulness was significantly associated with greater well-being ($r=.485$, $p<.001$), lower turnover intention ($r=-.425$, $p=.003$), and stronger commitment ($r=.413$, $p=.005$), but not with work-family conflict ($r=.002$, $p=.987$). These associations were sporadically moderated by teachers' age, work experience, educational level, culture, and study design and quality. However, work meaningfulness was more vulnerable to job demands ($F[1,11]=10.054$, $p=.009$) and more strongly associated with turnover intention ($F[1,6]=18.678$, $p=.005$) for young/novice ECEs. In addition, the association between job resources and work meaningfulness was stronger among ECEs with higher educational attainment ($F[1, 21]=12.854$, $p=.002$).

In conclusion, this study indicates the importance of organizational, job, and personal resources in sustaining ECEs' work meaningfulness and verifies its significant role in fostering professional thriving and sustainability. Theoretically, this study provides the first comprehensive synthesis of the antecedents and outcomes of ECEs' work meaningfulness, contributing to a timely and nuanced understanding of this critical construct. Practically, the findings inform stakeholders that providing diverse resources is an effective strategy for nurturing ECEs' work meaningfulness, and young/novice ECEs with lower educational attainment are in more dire need of support.

Keywords: Meaning of Work; Preschool Teachers; Meta-Analysis

Session A: 5

Time: 13:15-14:45

Location: RUU Aino

Single papers: **Transitions, inclusion, and collaboration in early childhood education**

Chair: **Dini Rahmawati, University of Jyväskylä** **Collaboration during educational transitions for children with SEN: Experiences of early childhood education and care professionals**

Eva Staffans, Åbo Akademi and Karlstad University; Kaisa Pihlainen, University of Eastern Finland; Johanna Hirvi, Åbo Akademi

Tracing children's transitions through ECEC to school: Insights from a longitudinal qualitative study

Mari Vuorisalo, University of Jyväskylä; Kaisa Harju, University of Jyväskylä; Yaiza Lucas Revilla, University of Jyväskylä; Jasemin Çan, University of Jyväskylä; Raija Raittila, University of Jyväskylä; Niina Rutanen, University of Jyväskylä

Between ideals and realities: Professionals' interpretations of participation for children with SEN during educational transitions

Johanna Hirvi, Åbo Akademi University; Katri Hansell, Åbo Akademi University; Heidi Hellstrand, Åbo Akademi University

Children's transition from home to early childhood education and care in Greece: Educators' and parents' perspectives

Eleni Zisopoulou, International Hellenic University; Eleni Tympa, International Hellenic University; Maria Tsitiridou, International Hellenic University; Theodora Margaritopoulou, International Hellenic University

Abstracts

Collaboration during educational transitions for children with SEN: Experiences of early childhood education and care professionals

Eva Staffans, Kaisa Pihlainen & Johanna Hirvi

A recent report (Pihlaja et al., 2026) highlights the need for continuous and coherent support for children with special educational needs (SEN), which requires early childhood education personnel to have strategies for coordinating educational transitions in ways that safeguard the child's best interests.

Multi-professional collaboration is a key element of ECEC, particularly in supporting children with SEN during transitions. In Finland, such collaboration is shaped by legislation, institutional structures, and professional

roles, and depends on clearly defined responsibilities to ensure pedagogical quality (Karila & Kupila, 2023). Ranta et al. (2023) further emphasise that collaboration across multiple levels—external, unit, team, and individual—is essential for securing children’s right to appropriate support.

Educational transitions require proactive and coherent practices to guarantee continuity, inclusion, and adequate support for all children, especially those with SEN (Warren & Harden-Thew, 2019). Effective collaboration among professionals, parents, and children, together with structured transition practices, is crucial for achieving this continuity (Daley et al., 2011; Sands & Meadan, 2022). In Finland, these processes are further influenced by institutional expectations that shape both children’s agency and professionals’ work (Niemi & Mietola, 2017).

Despite extensive research on collaborative practices during educational transitions, there remains limited knowledge of when and how collaboration actually occurs in practice, particularly in studies that integrate both quantitative and qualitative data from the Finnish ECEC context. The aim is twofold first, to examine how and when collaboration takes place during educational transitions for children with SEN in ECEC; and second, to analyse early childhood education and care professionals’ (ECEP) descriptions of how this collaboration is organised and experienced in everyday practice.

Data for this study were collected through an online survey administered in spring 2023 to 60 ECEPs working in ECEC settings across eight municipalities in Western Finland. The analysis draws on both closed items and one open-ended question. Descriptive statistics were used to identify when different forms of multi-professional collaboration take place—before, during, or after educational transitions. To enrich these findings, a thematic analysis of the open-ended responses (Braun & Clarke, 2006; 2022) was conducted, adding contextual understanding not captured by the quantitative analysis.

Preliminary results show that collaboration most often occurs with children, parents, and colleagues within the same ECEC unit, whereas cooperation with external professionals is less common. Although collaboration with all actor groups was significantly more frequent than no collaboration ($p < .001$), the findings indicate that practices are primarily concentrated within local settings rather than across institutional boundaries. The thematic analysis revealed four key elements considered vital for continuity during educational transitions: information sharing and documentation, coordination among actors, ensuring security and relational continuity, and other practical actions supporting the transition process. These insights contribute to a broader understanding of transition processes by integrating both structural and individual dimensions, and by highlighting the multifaceted nature of effective collaboration and support for children with SEN during educational transitions.

Keywords: Transition, special education, support, collaboration

Tracing children's transitions through ECEC to school: Insights from a longitudinal qualitative study

Mari Vuorisalo, Kaisa Harju, Yaiza Lucas Revilla, Jasemin Çan, Raija Raittila & Niina Rutanen

The aim of this paper is to provide a comprehensive understanding on children's transitions in early childhood education and care on the basis of the project Tracing children's socio-spatial relations and lived experiences in early childhood education transitions, Trace in ECEC (2019-2024, University of Jyväskylä, FIN).

The project builds on earlier research conceptualizing transitions as diverse forms of discontinuity and continuity between educational contexts (Fabian 2012), encompassing both children's personal transition processes and the institutional arrangements that shape these paths (Farrelly & Hennessy 2014; Walther et al. 2022).

In this project, transitions are explored from relational and spatial perspectives (Raittila et al. 2024), through interactions and practices (Lucas Revilla et al. 2023), children's resources and positions (Can et al. 2024), teachers' pedagogical practices (Vuorisalo et al. 2025) linked to structuring and organization of ECEC in Finland (Harju et al. 2024).

Grounded in an interpretive paradigm and combining a qualitative longitudinal approach with ethnographic methods, the study followed five children and their evolving peer groups from their entry into early childhood education and care through to school entry at the age of seven. For this synthesis, seventeen publications presenting the main findings of the project will be reviewed using critical content analysis.

The project created novel perspectives on transitions. 'Transition space' was constituted in the socio-spatial re-organization of relations in diverse transitions. In addition to children's own contributions, the local structural organization of ECEC and pre-primary education were central in this constitution.

The study generates practical insights into how children's individual transition processes can be effectively supported, highlighting not only the importance of recognizing and responding to each child's unique experiences and needs, but also the necessity of attending to structural and often overlooked aspects of transition practices. By drawing attention to these systemic invisibilities, the study underscores how institutional routines, expectations, and organizational arrangements shape children's paths in ways that may remain unnoticed without critical reflection.

Keywords: Transitions, space, relational approach, longitudinal approach, qualitative inquiry

Between ideals and realities: Professionals' interpretations of participation for children with SEN during educational transitions

Johanna Hirvi, Katri Hansell & Heidi Hellstrand

When children with special educational needs (SEN) move between or within early childhood educational settings, their opportunities to be heard

are shaped by how early childhood education and care (ECEC) personnel interpret children's participation, as well as by the structural decisions made within the educational context. The voices of children with SEN seldom enter transitions without being filtered through adult meaning-making. The aim of this study is to examine how two groups of professionals in early childhood education and care (ECEC), special education teachers and ECEC leaders, make sense of participation for children with SEN during educational transitions.

The study draws on semi-structured interviews with special education teachers and ECEC leaders working in Finnish early childhood education. The interview material is analysed using reflexive thematic analysis (Braun & Clarke, 2022), guided by an abductive approach. The analysis is informed by a critical realist ontology (Bhaskar, 2008; Sayer, 2010), with attention to both professionals' interpretations and the structural conditions shaping them. Preliminary analytical patterns indicate that possibilities for meaningful participation arise through the interplay between interpretive practices and structural conditions.

Drawing on Tisdall & Punch's (2012) relational participation framework, the analysis highlights how participation for children with SEN is shaped through interpretation and structure in educational transitions. The analysis pays particular attention to the tension between policy ambitions and the realities of everyday practice. From this perspective, educational transitions are understood as pedagogical practices in which opportunities for children's participation are shaped through everyday professional practices and decision-making. Participation is thus approached as interpretive and situated, shaped through everyday professional practices within existing structural conditions.

Keywords: children's participation, educational transitions, professional interpretations, special educational needs (SEN)

Children's transition from home to early childhood education and care in Greece: Educators' and parents' perspectives

Eleni Zisopoulou, Eleni Tympa, Maria Tsitiridou & Theodora Margaritopoulou

Transitioning from the home to early childhood education is a significant emotional journey for both children and their families. According to Klasnić et al. (2022), this adjustment period is influenced by experiences before and during entry. Extant research highlights the role of parental involvement (Wildenger & McIntyre, 2010), the impact of support programs (Cutler & Slicker, 2020), and the factors facilitating adjustment as perceived by both parents and educators (Miller, 2014; Revilla et al., 2022). Beyond identifying emotional responses, research emphasizes that smooth transitions rely on family-educator cooperation, flexible approaches, and strong stakeholder relationships (Dockett & Perry, 2014). This proposal aims to map, for the first time in Greece, the views of parents and educators regarding early childhood transitions and adaptation. In doing so, it

will identify existing gaps in current practices to better inform future educational strategies.

The study utilized a custom questionnaire developed by the research team, administered to a convenience sample of 333 educators and 242 parents across various regions of Greece. Data analysis was conducted using SPSS (Version 26.0). The findings indicate that while parents believe educators frequently implement practices focused on direct childcare and support during the home-to-preschool transition ($\bar{x} = 3.17/4$), practices specifically addressing the family's needs before and during this period were rated significantly lower ($\bar{x} = 2.22/4$). From the educators' perspective, practices centered on the child during the transition received the highest ratings ($\bar{x} = 3.56/4$), followed by those addressing the family during the transition period ($\bar{x} = 3.39/4$). Conversely, practices directed toward the family prior to the transition were reported as the least frequently implemented ($\bar{x} = 1.82/4$). Furthermore, the data indicates that educators who participated in transition-related professional development implemented child- and family-centered practices—both during and before the transition—at a significantly higher rate than their untrained peers. In conclusion, both parents and educators recognize the primacy of child-centered practices during the transition, yet support for the family remains less prioritized, particularly in the pre-transition phase. These findings underscore a critical need to strengthen preparatory practices and highlight the pivotal role of professional development. Enhancing educator training is essential for fostering holistic strategies that facilitate a seamless and supportive transition for both children and their families into early childhood education settings.

Keywords: Transition, preschool center, practices, parents, pedagogies

Session A: 6

Time: 13:15-14:45

Location: RUU Onni

Single papers: Language and literacy skills in early childhood

Chair: **Lotta Sieppi,**
University of Jyväskylä

**Early literacy and reading skills development in Grade 1:
Findings from a randomised control trial with GraphoLearn-
Rime and teacher-led phonics instruction**

*Deepti Bora, University of Jyväskylä; Ulla Richardson, University
of Jyväskylä; Anna-Maija Poikkeus, University of Jyväskylä;
Minna Torppa, University of Jyväskylä*

Learning to read Finnish and English in the First Grade
Sanni Mänttyoja, University of Turku, Rauma Campus

**The importance of fishing rod – (linguistic) support for chil-
dren's environment as a way to create a future full of hope
for every child**

Hanna Jaloza, Jyväskylän yliopisto

Teachers' reflections on the linguistic and semiotic landscape of a language-enriched preschool

Maria Kvist, Åbo Akademi University, Katri Hansell, Åbo Akademi University

Abstracts

Early literacy and reading skills development in Grade 1: Findings from a randomised control trial with GraphoLearn-Rime and teacher-led phonics instruction

Deepti Bora, Ulla Richardson, Anna-Maija Poikkeus & Minna Torppa

Foundational literacy is a key lever for higher levels of learning and well-being of the society. Yet many children, especially in low-income contexts, are at the brink of literacy crisis. In India, the context of this study, students struggle with the acquisition of emergent literacy and reading skills in English as a Second Language and eventually face learning poverty in higher grades. Whereas sub-optimal language acquisition environment and classroom instruction has escalated this crisis, prior studies have indicated limited to no effects of computer-assisted reading interventions for supporting young learners. In this context, the current study aims to examine the contribution of teacher-led phonics instruction and GraphoLearn-Rime to the development of foundational English literacy and reading skills of Grade 1 level children.

Participants were 5-8-year-old students (N = 234) attending English-medium schools and acquiring literacy in their first language and English simultaneously. Students were randomly allocated into three groups. The Phonics only group (n = 83) received phonics instruction from trained teachers. The Phonics+GL group (n = 89) received GL-Rime along with phonics instruction from the teachers for 15-20 minutes a day. Both groups received respective interventions for 30 minutes of teacher-led instruction thrice a week over five months. Control group (n = 62) received business-as-usual instruction.

Results on the effectiveness of interventions indicated that the Phonics only and Phonics+GL groups outperformed the control group on the measures of phonological awareness ($\eta^2 = .20-.63$) and reading skills ($\eta^2 = .07-.11$). Moreover, in both intervention groups, students at the bottom 25th percentile at baseline scored better in oral- and paper-based measures of phonological awareness, Grade 1 word reading, and in-game letter sound knowledge measure ($\eta^2 = .17-.62$). Further, the Phonics+GL group outperformed the Phonics only group on paper-based measure of letter sound knowledge indicating transfer of skills from a technology device to real-word medium. Next, results on variables explaining variance in learning outcomes indicated that students' attendance to teacher-led phonics instruction predicted gains in the letter sound knowledge measure, and unlike in-game duration, students' in-game progress predicted gains in phonological awareness and word reading skills outside the game. Finally, in the Phonics+GL group, in-game progress mediated the effects of the amount of attendance to teacher-led phonics instruction and

students' emergent literacy and word reading skills on post-intervention learning outcomes.

This randomised control trial study is significant in contexts utilising reading interventions, with or without digital technologies, for supporting foundational literacy skills of second language learners and struggling readers, especially in low-income and limited teacher-capacity contexts. Specifically, the findings indicate the potential of integrating a computer-assisted reading instruction technology and classroom instruction for better learning outcomes. Finally, by proposing a learning transfer model, the study emphasises the theoretical significance of integrating the instruction for supporting learning across digital and real-world media.

Keywords: foundational literacy, GraphoLearn Rime, randomised control trial, low-income contexts, learning transfer

Learning to read Finnish and English in the first grade

Sanni Mäntyoja

Since 2020, first graders have studied their first foreign language, typically English, alongside their mother tongue and literature. Therefore, the study aims to examine first-grade students' reading skills in Finnish and English, both within and cross-linguistically. Additionally, the research studies students' motivation to read and out-of-school exposure to the English language. This presentation is part of an ongoing longitudinal study that studies the development of the same students from first to second grade.

There are two main theoretical frameworks in the research: the Simple View of Reading (SVR) (Gough & Tunmer, 1986) and expectancy-value (Marinak et al., 2013). According to the SVR, reading comprehension consists of two subskills: decoding and listening comprehension. Based on the expectancy-value framework, the study researches three subscales: self-concept, value, and literacy out loud.

The data were collected in the spring term of 2025 from first-grade students (N = 157). The three components of SVR (i.e., decoding, listening comprehension, and reading comprehension) were measured in Finnish and English. Finnish and English decoding skills were measured using eGrader (Ståhlberg et al., 2020). Finnish decoding was measured using eGrader's word chain test and non-word test (Ståhlberg et al., 2020). English decoding was measured by both eGrader's word chain tests and the word chain test and English vocabulary translation test, both created by the researcher. Finnish listening comprehension was assessed using the ARMI-test (Lerkanen et al., 2006). The English listening comprehension test was developed for the research (Lynch et al., 2008). Finnish listening comprehension was measured using ALLU (Lindeman, 1998). English reading comprehension was assessed using a test developed for this study. Children's motivation to study English was assessed with self-ratings (Huhta & Leontjev, 2019; Marinak et al., 2015).

Preliminary results show that in the Finnish language, decoding and listening comprehension explain Finnish reading comprehension skill, and in the

English language, word translation explains reading comprehension skill most strongly. Finnish decoding explains performance in English decoding and word translation, and Finnish language comprehension explains performance in English language comprehension. The students had the highest self-concept score among the three subscales of the expectancy-value framework.

The theoretical significance of the research contributes to the SVR model's knowledge when studying a foreign language cross-linguistically. Previous studies have mainly examined second-language learners, meaning students have greater exposure to the second language than those studying a foreign language. Also, this study adds background factors into the SVR model.

Practical significance comes from cross-linguistic pathways from Finnish to English, implying that achieving a good level of Finnish reading proficiency and practising all subskills in Finnish provides a solid foundation for learning a foreign language. Additionally, the word translation test affects English language comprehension both directly and indirectly, implying that knowledge of foreign words is important even in first grade.

Keywords: Simple View of Reading, cross-linguistic language learning, motivation to read, out-of-school exposure

The importance of fishing rod – (linguistic) support for children's environment as a way to create a future full of hope for every child

Hanna Jaloza

The challenges associated with fostering multilingualism in European countries have been a subject of interest to many researchers for years (Duarte et al., 2023)). In Finland, the issue of the rising number of immigrant children and individuals with an immigrant background in early childhood education and care (ECEC) is also gaining prominence in research (Lavanti et al. 2023). A study by Aerila et al. (2024) indicates that Finnish early childhood education and care (ECEC) staff often lack confidence in working with non-Finnish-speaking children and demonstrate an inability to support the learning of Finnish as a second language (L2 / S2).

This presentation will focus on the preliminary findings of the action-based research of the Language Trampoline project, which is funded by the KONE Foundation. The present study explores the role of ECEC teachers and parents in supporting non-Finnish-speaking children in language acquisition. The results of the study indicate the necessity of implementing modifications in the support system for non-Finnish-speaking children enrolled in Finnish-speaking ECEC. These modifications should encompass the expansion of the competencies and sensitivity to language acquisition in children, both for parents and ECEC staff. It is noteworthy that both groups typically lack specialized linguistic training. A significant number of beliefs concerning the teaching of Finnish as a second language to young children are predicated on the assumption that children acquire language

skills independently through daily language immersion in a Finnish-language preschool.

The Language Trampoline project employs holistic methodologies that are applied to the entire kindergarten group, which consists not only of children who use Finnish as their S2. In the future, these tools may also be used as a form of support for native speakers who are experiencing various difficulties in language acquisition.

Keywords: 1. Multilingualism in ECEC 2. Finnish as a second language (L2/S2) 3. Immigrant children in ECEC 4. Teacher and parent competence and confidence 5. Holistic language support approaches

Teachers' reflections on the linguistic and semiotic landscape of a language-enriched preschool

Maria Kvist & Katri Hansell

The aim of this study is to explore the preschool teachers' reflections on the linguistic and semiotic landscape (LSL) of a language-enriched preschool. The study builds on previous research on LSLs (Pakarinen et al., 2024; Pesch, 2021) within the context of a language-enriched preschool (Hansell & Björklund, 2022).

LSL covers the visual learning environment, where language is used together with other modalities such as pictures (Pakarinen et al., 2024; Pesch, 2021). In this context, Swedish serves as the language of instruction, whereas Finnish is the target language. Finnish is introduced through a small-scale, language-enriched approach where less than 25% of activities being conducted in the target language. The programme supports Swedish-dominant children in developing emergent bilingualism from the start of early childhood education and care, beginning in the year the children turn five. The interviews focus on preschool teachers' teaching of children in their second year of the language-enriched program.

The study is based on social constructivist paradigm, conducted as walking interviews (Fjeld & Giæver, 2024). We interviewed two teachers to gain insight into their views on the LSL. The interviews were video recorded and transcribed for thematical analysis.

Research approval and informed consent have been provided on multiple levels; The study was permitted by the municipality, and the teachers gave informed consent to participation. The data is pseudonymized to guarantee privacy.

The findings will be discussed in relation to ongoing research on large-scale bilingual preschool education, more precisely studies focusing on early total immersion in the national languages.

In Finland, the national curriculum (EDUFI, 2014) highlights the right of monolingual children to access bi- and multilingualism within preschool – an approach that supports the vision of creating a hopeful future for every child by broadening their linguistic opportunities from an early age. Building on this policy emphasis, this study will increase understanding of how

the LSL can be used to create learning environments that support language use and learning in a language-enriched preschool.

Keywords: language-enriched preschool, linguistic and semiotic landscape, preschool teachers, walking interviews

Session B

Session B: 1

Time: 15.30–17.00

Location: RUU Juho

Symposium: **Learning and learning-related emotions in the early school years: The role of the home and the school contexts**

Chair: **Heidi Korpipää**

Organizer: **Heidi Korpipää, University of Jyväskylä**

Discussant: **No discussant**

The association between early language profiles and maternal pre- and postnatal depression and anxiety

Heidi Korpipää, University of Jyväskylä; Akie Yada, University of Jyväskylä; Eeva Levijoki, University of Turku; Elina Mainela-Arnold, University of Turku; Fiia Takio, University of Turku; Saara Nolvi, University of Turku; Eeva-Leena Kataja, University of Turku; Riikka Korja, University of Turku; Linnea Karlsson, University of Turku; Hasse Karlsson, University of Turku

Correspondence of the reading skill assessments at school and in test settings at the age of 9 – Associations with received support and self-efficacy

Susanna Koskinen, University of Jyväskylä; Noona Kiuru, University of Jyväskylä; Linnea Karlsson, University of Turku; Hasse Karlsson, University of Turku; Riikka Korja, University of Turku; Minna Torppa, University of Jyväskylä; Elina Mainela-Arnold, University of Turku; Tuomo-Artturi Autere, University of Turku; Pilvi Peura, University of Turku; Mikko Aro, University of Jyväskylä; Pihla Saaristo, University of Turku; Kiia Kurila, University of Turku; Anna Nyman, University of Turku; Katja Tervahartala, University of Turku/ University of Jyväskylä

Math anxiety in school-aged children and its associations with parental math anxiety and general anxiety

Maija Vänninen, University of Turku; Akie Yada, University of Jyväskylä; Fiia Takio, University of Turku; Riikka Korja, University of Turku; Jenni Salminen, University of Jyväskylä; Minna Torppa, University of Jyväskylä; Tuire Koponen, University of Jyväskylä

The interplay between math and reading anxiety and academic skills in primary school: A longitudinal study

Minna Torppa, University of Jyväskylä; Marek Matous Bula,

*Masaryk University; Daria Khanolainen, University of Jyväskylä;
Riikka Sorvo, Tuire Koponen, University of Jyväskylä*

Abstracts

Learning and learning-related emotions in the early school years: The role of the home and the school contexts

Symposium (overarching abstract)

Research has shown that emotional and motivational factors—such as students' anxiety and their perceptions of their own competence—are closely linked to learning and predict achievement in core academic domains (Pekrun et al., 2017). In addition to learning-related emotions and self-perceptions, various cognitive skills, including language skills, play an important role in students' academic development (Hammer et al., 2017). This symposium aims to examine learning and learning-related emotions in the domains of reading and mathematics during the early school years, as well as the role of home and school contexts in supporting the development.

The first presentation examines math anxiety in primary school-aged children and its associations with both parental math anxiety and general anxiety. The second presentation explores the interplay between math and reading anxiety and the development of academic skills in primary school. The third presentation focuses on the sensitivity of teacher evaluations in relation to multisource assessments of children's reading skills, as well as the links between reading skills, self-efficacy, and received support. Finally, the fourth presentation addresses how maternal anxiety and depression during and after pregnancy are associated with children's language skills before school age. The results underscore the crucial role of both home and school environments in supporting students' learning related emotions, self-perceptions, and cognitive skills, as well as the importance of early identification of difficulties in these areas.

Keywords: anxiety, reading skills, math skills, language skills

The association between early language profiles and maternal pre- and postnatal depression and anxiety

Presentation as part of a symposium

*Heidi Korpipää, Akie Yada,
Eeva Eskola, Elina Mainela-
Arnold, Fiia Takio, Saara
Nolvi, Eeva-Leena Kataja,
Riikka Korja, Linnea Karlsson & Hasse Karlsson*

Language skills, which predict later school readiness and academic achievement (Hammer et al., 2017), develop in early childhood through interactions between parent and child. It is also known that maternal depression and anxiety can increase the risk of adverse developmental outcomes in children, for example in language and cognitive skills before school age (see Rahbari et al., 2024). However, less is known about how a mother's mental health during and after pregnancy is associated with children's diverse language profiles during early childhood using person-oriented approach.

The study utilized data from 1,608 families in the FinnBrain Birth Cohort Study. First, Latent Profile Analysis was conducted to identify distinct profiles of language skills and maternal depression and anxiety assessed during the pre- and postnatal periods. Second, Co-occurrence Latent

Transition Analysis was applied to examine whether language profiles associate with maternal depression and anxiety profiles.

Allowing child's language profiles to depend on maternal depression profiles significantly improved model fit, indicating that the transition probabilities differed across depression profiles. Multinomial logistic regression indicated that, relative to the stable high depression profile, children of mothers in the stable low, increasing, and decreasing depression profiles had significantly lower odds of belonging to the low language profile (all p s < .05). In contrast, allowing language profiles to depend on maternal anxiety profiles did not significantly improve model fit. These findings provide important insights into how maternal depression and anxiety during pregnancy and early parenthood may shape children's language and cognitive development.

Keywords: language skills, parental depression, parental anxiety

Correspondence of the reading skill assessments at school and in test settings at the age of 9 – Associations with received support and self-efficacy

Presentation as part of a symposium

Susanna Koskinen, Noona Kiuru, Linnea Karlsson, Hasse Karlsson, Riikka Korja, Minna Torppa, Elina Mainela-Arnold, Tuomo-Artturi Autere, Pilvi Peura, Mikko Aro, Pihla Saaristo, Kiia Kurila, Anna Nyman & Katja Tervahartiala

Background: Sensitivity and accuracy of teacher's evaluation of child's reading skills is essential, because the teacher as well as special education teacher determines the need and amount of support that a child receives at school (Sundqvist et al., 2019). Given that teacher's evaluation depends on many aspects and are affected by child's individual and environmental factors (Johansson, 2013; Kikas et al., 2015; Nurmi et al., 2013), more research is needed to clarify the accuracy and sensitivity of teacher evaluation with multisource assessment of children's reading skills. Self-efficacy seems to be associated with reading skills and amount of rehearsal. Knowledge of association between reading skills, self-efficacy and gained support is essential, because reading skills have weakened among young people.

This study examines the correspondence between teacher evaluation and standardized test assessments of reading fluency and reading comprehension among nine-year old children. In addition, we aimed to find out how teachers recognize children with reading problems, and how these children gain support at school and at home. We also investigated how support received at school and at home relates to the identified reading profiles and to children's sense of reading self-efficacy.

Method: The study is part of the FinnBrain longitudinal study and focuses on the age 9 measurement point ($n = 305$). Participants' reading fluency and reading comprehension were measured using standardized tests, and child's self-report of reading related self-efficacy was administered. Teachers evaluated participants' reading comprehension and fluency relative to the average skill level of their class. In addition, parents completed a questionnaire about homework situations at home.

Results: Five reading profiles emerged based on both test performance and teacher assessments:

1. Consistently weak readers (n = 53),
2. Consistently strong readers (n = 48),
3. Average level readers underestimated at school (n = 57),
4. Low performing readers overestimated at school (n = 79), and
5. Consistently fluent readers (n = 68).

Teachers' evaluations were more consistent with test-assessed reading fluency skills than with reading comprehension skills. Reading self-efficacy was associated with belonging in certain reading profile. Consistently weak readers gained most support from school. Reading support received at school and psychological control by parents during homework situations were negatively associated with children's reading self-efficacy. In contrast, parental autonomy support during homework situations was associated with higher self-efficacy particularly among children underestimated in the school.

Conclusions: In this study we noticed that teachers recognise consistently strong and weak readers, but the need for support stays unnoticed particularly among children with weak reading comprehension and stronger fluency skills. The quality and appropriate targeting of support from the school and home may be related to children's reading self-efficacy and therefore deserve careful attention.

Keywords: reading skills, assessment, support, self-efficacy

Math anxiety in school-aged children and it's associations with parental math anxiety and general anxiety

Presentation as part of a symposium

*Maija Vänninen, Akie Yada,
Fiia Takio, Riikka Korja,
Jenni Salminen,
Minna Torppa & Tuire Koponen*

Aims

Learning and emotions are known to interact reciprocally and high levels of anxiety affect learning negatively. Anxiety can be categorized in different subtypes and in this study, we examine math anxiety and general anxiety. Previous research has explored the associations between parental and child's math anxiety, but the role of a parental general anxiety in the intergenerational transmission of math anxiety has not previously been considered. The associations between paternal and child's math anxiety have also been studied much less compared to mothers. Math anxiety is known to negatively associate with performance in mathematics, but the phenomenon has so far been studied only to a limited extent in young school-aged children.

In this study we examine the associations of maternal and paternal math anxiety and general anxiety with child's math anxiety. Additionally, we examine the associations of child-reported and parent-reported child's math anxiety with child's math performance on 3rd grade.

Methods

The data was collected from 705 Finnish children (mean age 9y11mo, 50,8% girls) who were in 3rd grade, and their parents (362 mothers and 126 fathers). The data collection took place in 2021-2023.

Child's math anxiety was measured with a parent-reported questionnaire and child's own questionnaire. Parental math anxiety and general anxiety were measured through parental questionnaires. Child's math performance was assessed using four time-limited arithmetic tasks.

Results

Parental general anxiety and math anxiety were significantly and positively associated with each other. The father's math anxiety was significantly and positively associated with the child's self reported math anxiety, whereas the mother's math anxiety was significantly and positively associated with the mother's report of the child's math anxiety. Both the child's and the parent's assessments of the child's math anxiety were significantly and negatively associated with the child's performance in mathematics.

Theoretical and practical significance

The study offers further support to the notion that even among young school-aged children, there is a negative association between math anxiety and performance in mathematics. Interestingly, mothers' and fathers' math anxiety, as well as their view of child's math anxiety, is associated with their child's math anxiety, but in different ways. Fathers' assessment of their child's math anxiety was similar to the child's own assessment, whereas mothers' own math anxiety was associated how math anxious they perceived their child to be. More anxious mothers perceived their child as being more anxious. The differential roles of the parents have been scarcely studied before and this study provides additional evidence that father's and mother's math anxiety is differentially associated with child's math anxiety and math performance. Understanding the mechanisms behind these differences warrants further research. The results of the study can be used to develop strategies that could better equip parents to support children experiencing mathematics anxiety.

Keywords: math anxiety, learning-related emotions, primary school

The interplay between math and reading anxiety and academic skills in primary school: A longitudinal study

Presentation as part of a symposium

Minna Torppa, Marek Matous Bula, Daria Khanolainen, Riikka Sorvo & Tuire Koponen

The early school years are a critical period for acquiring essential competencies in mathematics and reading, with learning and anxiety being closely interconnected. Understanding these dynamics is crucial for educators supporting children's academic development and mental health. The present study examined the development of children's mathematics

and reading skills alongside their corresponding anxieties, focusing on how and if these domains influence each other over two time points in grades 2 and 3. A Finnish sample of 800 children (409 girls) was assessed in Grade 2 ($N = 668$) and Grade 3 ($N = 711$) using standardized tests for reading and arithmetic fluency, while self-evaluation questionnaires measured reading and math anxiety. The single-domain models for math and reading revealed a bidirectional relationship between math anxiety and arithmetic fluency and a unidirectional relationship between reading fluency and reading anxiety. The cross-domain models revealed only one significant positive cross-domain path from reading fluency to arithmetic fluency. The lack of other significant longitudinal cross-domain associations suggests early domain-specificity. Concurrently, higher math and reading anxiety were associated with lower fluency across domains, but this may be due to being assessed in the same situation. No gender differences were found in the longitudinal associations between skills and anxiety. Overall, the findings suggest that by Grades 2–3, academic skills and domain-specific anxieties are already systematically linked, predominantly within domains, with only limited longitudinal cross-domain effects. These early domain-specific patterns may indicate the emergence of potential reciprocal cycles that could contribute to slower learning and heightened achievement-related anxieties

Session B: 2

Time: 15.30–17.00

Location: RUU Helena

Symposium: **Supporting early language development in infancy: In home and daycare contexts**

Chair: **Ora Oudgenoeg-Paz, Utrecht University**

Organizer: **Isa Linders, Utrecht University**

Discussant: **Paul Leseman, Utrecht University**

A structural model of early vocabulary development: Exploration, language input & gesture use

Isa Linders, University Utrecht; Keri Hilhorst, University Utrecht; Ora Oudgenoeg-Paz, University Utrecht; Pauline Slot, University Utrecht; Paul Leseman, University Utrecht

Effects of an infant/toddler intervention at 1-year follow-up: Sustained impacts to preschool entry

Dorthe Bleses, Aarhus University; Pauline Slot, Utrecht University

Developmental relationships between early vocabulary acquisition, joint attention and parental supportive behaviors

Johan Wengman, Uppsala University; Linda Forssman, Uppsala University

Abstracts

Supporting early language development in infancy: In home and daycare contexts Symposium (overarching abstract)

Objectives of the symposium

In this symposium, three speakers will present complementary insights on the support of language development in infancy across home and daycare contexts. These studies highlight how caregiver support, joint attention, and exploration provide a foundation for early learning and language development. The symposium highlights both the role of high-quality social environments as well as children's active participation in shaping their own development.

Scientific Importance

Language development in infancy remains relatively underexplored, particularly across multiple everyday contexts. This symposium adopts a dual-context approach by examining both home and daycare settings through complementary methodological perspectives. Across the three presentations, the studies draw on observational data collected in laboratory settings, survey-based parent reports, and a naturalistic quasi-experimental design. By bringing together controlled and natural environments as well as different levels of measurement, the symposium aims to provide a more comprehensive understanding of how caregiver support and children's own behaviours relate to early language development.

Individual contributions

The first presentation investigates the associations between Swedish children's ability to initiate and respond to bids for joint attention and their vocabulary development, as well as the possible moderating role of supportive parental behaviours. The second uses survey-based indicator to examine Dutch infants' exploration as a predictor of receptive vocabulary in the home contexts, with particular emphasis on interactional pathways that may mediate this relationship. The third presents the long-term results of a quasi-experimental study conducted in Danish Early Childhood Education (ECE) settings.

Keywords: Infancy, Language, Caregiver Support, ECE

A structural model of early vocabulary development: Exploration, language input & gesture use

Presentation as part of a symposium

*Isa Linders, Keri Hilhorst,
Ora Oudgenoeg-Paz, Pauline Slot & Paul Leseman*

Aims

This study aims to examine the association between exploratory behaviour and receptive vocabulary in Dutch infants and toddlers ages 8 to 25 months. Furthermore, it aims to examine if this relationship is mediated by parental language input, parental gesture input, and children's gesture use, by using survey-based indicators for these variables. Finally, age-related differences in these associations are explored.

Methods

Data were collected through anonymous online survey via Qualtrics from parents of 183 Dutch infants and toddlers (ngirls = 91, Mage = 15.44, SD = 5.22). Parents were mostly highly educated, monolingual Dutch speaking

($n_{\text{mothers}} = 154$, $M_{\text{age}} = 32.02$, $SD = 4.37$). Data were collected using the Dutch version of MacArthur-Bates Communicative Development Inventories (Zink & Lejaegere, 2003), the Dutch version of the Infant Toddler Curiosity Questionnaire (de Boer et al., 2025, pre-print), and self-constructed questionnaires for language input and gesture input of the parents. Structural equation modelling (SEM) was used to examine the model.

Results

The results suggest that exploratory behaviour is indirectly associated with receptive vocabulary through social-communicative pathways. Specifically, higher levels of exploration were associated with increased parental language input (standardised $\beta = .337$) and greater child gesture use (standardised $\beta = .309$), both of which were positively related to receptive vocabulary (language input: standardised $\beta = .179$; child gesture use: standardised $\beta = .263$). In contrast, parental gesture input was not directly associated with receptive vocabulary when other pathways were considered, contrary to our expectations. Parental gesture input was significantly correlated with children's gesture use (standardised $\beta = .218$). When mediators were modelled, exploratory behaviour showed a small negative direct association with receptive vocabulary (standardised $\beta = -.120$), suggesting that links between exploration and vocabulary may primarily operate indirectly through interactional processes.

Theoretical and Practical Significance

The findings provide preliminary indications that children's exploration may create opportunities for social interaction relevant to language learning. Consistent with the embodied cognition theory and child-driven development perspectives, results highlight the potential role of social-communicative mechanisms in linking early exploration with vocabulary development. These early indications may inform future work on how everyday interactions scaffold early language learning.

Keywords: Exploration, Infancy, Receptive Vocabulary, Parental Support

Effects of an infant/toddler intervention at 1-year follow-up: Sustained impacts to preschool entry

Presentation as part of a symposium

Dorthe Bleses & Pauline Slot

Aims

This study investigates the sustained impacts of "We Learn Together," a low-cost, 20-week school-readiness intervention designed for infants and toddlers, on children's language skills at preschool entry. Specifically, the research examines whether the positive short-term effects on language and numeracy observed in a prior randomized controlled trial of the intervention when childcare maintained approximately one year after intervention exposure. Additionally, the study explores whether these sustained effects are conditional on parental characteristics, such as education,

income, and immigrant status. The current paper focusses on language development in infants and toddlers.

Methods

The study utilizes a quasi-experimental design derived from a large-scale effectiveness trial conducted in Danish Early Childhood Education (ECE) settings. The intervention provided teachers with instructional content and tools to support explicit, intentional interactions targeting vocabulary, language use, and numeracy. To evaluate long-term impact, researchers linked intervention data with mandatory national language assessments administered at age 3. The analytic sample included 2,327 children in the treatment group and a control group of 11,382 children from participating municipalities who did not receive the intervention. Entropy balancing was employed to match the groups on key covariates, including socioeconomic status and family background, to reduce selection bias.

Results

Results indicate that the intervention effects were maintained at similar magnitudes approximately one-year post-intervention. Children in the treatment group significantly outperformed the control group on measures of productive vocabulary, language comprehension, and communicative strategies, with effect sizes ranging from 0.09 to 0.14. Furthermore, a significant spillover effect ($ES = 0.12$) was found for rhyme detection, a skill not explicitly targeted by the intervention. Interaction analyses revealed that sustained effects on vocabulary were stronger for children from families with higher income and education levels, whereas immigrant children showed stronger sustained effects regarding communicative strategies.

Theoretical and Practical Significance

Theoretically, this study contributes to the literature on early childhood development by demonstrating that brief, domain-specific interventions in the infant/toddler period can generate lasting benefits, supporting the "skill begets skill" hypothesis. Practically, the findings offer a promising model for improving ECE quality at scale. With an estimated cost of USD \$18 per child, "We Learn Together" represents a cost-effective, scalable solution for enhancing school readiness and teacher interaction quality in universal childcare systems. These results suggest that investing in structured support for teachers of the youngest children can yield sustained educational returns.

Keywords: Infants, ECE, Intervention, Language

Developmental relationships between early vocabulary acquisition, joint attention and parental supportive behaviors

Presentation as part of a symposium

*Johan Wengman & Linda
Forssman*

The ability of infants to coordinate their visual attention with another person, to engage in joint attention (JA), is widely considered foundational for early language development, although the exact nature of its contribution remains debated. The assumed link is typically grounded in the idea

that episodes of shared attention between child and caregiver create favorable learning conditions by aligning infant attention with linguistic input. However, a recent review challenges the empirical basis for this assumption, highlighting mixed and often null findings in the literature (Astor & Gredebäck, 2022).

One potential explanation for this variability is that the role of JA in vocabulary development depends on the quality of caregiver support during JA episodes. Parental supportive behaviors, such as responding in a contingent and sensitive manner to a child's behavior, have consistently been linked to positive developmental outcomes, including enhanced vocabulary acquisition.

The aim of the present study was to investigate associations between children's ($n = 70$) ability to initiate and respond to bids for JA and their vocabulary development between the ages of 10 and 24 months. As well as the possible moderating role of supportive parental behaviors. Parents completed the Swedish Communicative Development Inventory (CDI) at four age points (10, 12, 18, and 24 months) to assess receptive and expressive vocabulary growth. Children participated in lab-based assessment of JA abilities at 10, 12, and 18 months. Additionally, at 10 and 12 months, parent-child dyads participated in a book sharing and object exploration tasks, which were coded for supportive parental behaviors during interaction.

Analyses revealed no main effects of JA on subsequent receptive and expressive vocabulary. However, a significant interaction was found between children's ability to respond to joint attention cues and parental supportive behaviors in predicting receptive vocabulary development. Specifically, children with stronger responding-to-JA skills showed greater gains in receptive vocabulary when caregivers exhibited higher levels of supportive behavior.

Together, these findings suggest that joint attention may not function as a direct driver of early vocabulary development but rather as a context that enables learning mainly when embedded in high-quality social interactions. More broadly, the results highlight the importance of the overall quality of infants' social environments, particularly the presence of contingent and sensitive adult responses, in shaping early language development across everyday interactional settings.

Keywords: Infancy, Joint Attention, Parental Support, Language

Session B: 3

Time: 15.30–17.00

Location: RUU Katri

Symposium: **Navigating transitions together: Strengthening parent-professional partnership**

Chair: **Franziska Vogt (PH St. Gallen) & Eva**

A cross-cultural study of parent–professional interactions during preschool transitions

Pölzl-Stefanec, University of Graz

Organizer: Eva Pölzl-Stefanec, Universität Graz

Discussant: Niina Ruutanen, University of Jyväskylä

Theresia Hummel, University of Bamberg; Maria Tsitiridou, International Hellenic University; Athanasios Gregoriadis, Aristotle University of Thessaloniki; George Manolitsis, University of Crete; Yvonne Anders, Dipf

Parents as reluctant 'bridge builders'? A European perspective on the role of parents in the transition from pre-school to primary school

Eva Pölzl-Stefanec, Universität Graz; Barbora Loudová Stralczynská, Charles University

Multilingual practices and educational settings during transition into centre-based childcare

Franziska Vogt, St.Gallen University of Teacher Education; Janine Hostettler Schaerer, St.Gallen University of Teacher Education; Fabienne Bohler, St.Gallen University of Teacher Education

Abstracts

Navigating transitions together: Strengthening parent-professional partnership symposium (overarching abstract)

This symposium focuses on the complex nature of transitions in early childhood education and care (ECEC) and the quality of cooperation between parents and educational professionals. Transitions are critical phases in the educational process which can determine long-term participation or exclusion (Dunlop, 2018). The three contributions examine these transitions at different levels: they investigate the influence of education systems, the handling of linguistic and cultural diversity, and the quality of everyday conversations.

The first contribution examines the transition from ECEC to primary education in a European context based on focus group discussions involving 12 countries. In many countries, ECEC and school are set up as separate systems, requiring parents to act as 'messengers' against their will to bridge structural communication gaps between institutions. This poses particular challenges for disadvantaged families.

The second contribution focuses on the transition to centre-based childcare for families with limited knowledge of the local language. Using Swiss case studies of good practice as examples, it illustrates how educational strategies such as 'translanguaging' and integrating the family language can strengthen the parent-educator cooperation and provide emotional security.

The third contribution focuses on the daily 'morning drop-off transitions' at ECEC/childcare centres. A quantitative comparison between Germany and Greece examines the quality of interaction during morning drop-offs. The analysis reveals that the quality of interaction is often moderate and could be improved to facilitate deeper relationship building.

In summary, the studies show that successful transitions depend significantly on ensuring an effective partnership between parents and professionals.

Keywords: Educational Transitions; Parent-Professional Collaboration; Educational Equity & Inclusion

A cross-cultural study of parent–professional interactions during preschool transitions

Presentation as part of a symposium

Theresia Hummel, Maria Tsitiridou, Athanasios Gregoriadis & George Manolitsis

Morning drop-off transitions in preschool settings offer brief but meaningful opportunities for interaction between professionals and parents (Swartz & Easterbrooks, 2014). These moments support trust, information exchange about children's well-being, and continuity between home and preschool (Perlman & Fletcher, 2012; Rolfe & Armstrong, 2010). Despite their importance, research on parent–professional interactions during daily transitions remains limited and has mainly focused on quantitative indicators such as contact frequency or duration, often based on self-reports or surveys (Maras et al., 2018; Coelho et al., 2019). Such approaches provide limited insight into qualitative interactional features, including relational warmth, responsiveness, and communication strategies. To address this gap, an observational instrument was developed and tested in Germany to assess parent–professional interactions during morning drop-off transitions. Findings indicated generally low interaction quality, with exchanges often brief or predominantly nonverbal, highlighting a gap between the potential significance of these moments and actual engagement [references removed for peer review]. Building on theoretical perspectives on individualism and collectivism, which emphasise cultural influences on interpersonal engagement and professional–parent roles (Oyserman & Lee, 2008), the present study applies this instrument in a Greek early childhood context. Greece is more collectivistic, emphasising relational closeness and interdependence (Gregoriadis et al., 2021), whereas Germany is more individualistic. This cross-cultural application allows examination of whether interaction quality is comparable or culturally specific differences emerge.

Data were collected during morning drop-off transitions in Greece and Germany. In Greece, 121 parent–professional dyads across 12 preschools in Crete and Thessaloniki were observed between September and November 2024. In Germany, 309 dyads across 62 preschools in North Rhine-Westphalia were observed between June 2024 and April 2025. Interactions were rated separately for each dyad during one hour of morning drop-off per preschool. Interaction quality was assessed using a standardized observational instrument comprising 13 items across three subscales (professionals' willingness to interact, communication strategies, and farewell quality) rated on a four-point scale. Preliminary analyses indicated slightly higher mean scores across all subscales in the Greek sample (Willingness to interact: $M = 2.52$, $SD = 0.62$, $Min = 1.00$, $Max = 3.75$; Communication strategies: $M = 2.69$, $SD = 0.68$, $Min = 1.20$, $Max = 3.80$; Farewell: $M = 2.33$, $SD = 0.72$, $Min = 1.00$, $Max = 3.75$) than in the German sample (Willingness to interact: $M = 2.22$, $SD = 0.65$, $Min = 1.00$, $Max = 4.00$; Communication strategies: $M = 2.53$, $SD = 0.60$, $Min = 1.00$, $Max = 3.80$; Farewell: $M = 1.73$, $SD = 0.70$, $Min = 1.00$, $Max = 3.75$). Overall interaction quality remained moderate, with mean scores not exceeding 2.7. Interactions beyond simple greetings were more

frequent in Greece (54 %) than in Germany (40 %), while variability in scores was similar across contexts.

Overall, morning drop-off transitions provide meaningful opportunities for parent–professional interaction. Interaction quality in Greek preschools was slightly higher but moderate in both contexts. These findings highlight the need to support high-quality, need-sensitive interactions during daily transitions and demonstrate the value of observational tools for cross-cultural research.

Keywords: Parent–Professional Interactions, Morning drop-off transitions, Germany, Greek, cross-cultural project

Parents as reluctant 'bridge builders'? A European perspective on the role of parents in the transition from pre-school to primary school

Presentation as part of a symposium

Eva Pölzl-Stefanec & Barbora Loudová Stralczyńska

The transition from pre-school to primary school can be a pivotal moment in the educational journey of children and their families. Depending on socialisation and environment, decisions made at this stage can lead to long-term participation or exclusion (Dunlop, 2018). Although research often focuses on the child's readiness for school or cooperation between institutions (Jahreie, 2023; Rouse et al., 2020), various European education systems demonstrate that parents play a pivotal, albeit sometimes ambiguous, role as intermediaries between disparate systems (Vogler & Woodhead, 2008).

This study adopted a qualitative approach and involved conducting four transnational online focus groups with a total of 14 experts from twelve European countries, including AT, CZ, GR, HU, IE, IT, NO, PL, SK, SI, CH and DE. As part of a qualitative content analysis (Mayring, 2014), the data were examined for statements on the role of parents, parental expectations, and communication between professionals and families.

The analysis of the focus groups revealed three key areas of tension regarding the role of parents.

1. Parents as messengers in the 'split system': in countries with strictly separate systems and data protection barriers (e.g. Austria), parents often act as the sole source of information between nurseries and schools because professionals are not permitted to communicate directly with each other. This makes the success of the transition highly dependent on parental resources and disadvantages families with a lower socio-economic status or migrant background, who find it more difficult to fulfil this mediating role.

2. Parents caught between child-centredness and pressure to perform: There is a conflict between modern, play-based curricula and traditional parental expectations of 'school'. In countries such as Italy and Greece, for example, parents often demand school-level skills (such as sitting still and writing) at an early age. In Hungary, parental uncertainty also leads to a

search for external pre-school courses, which increases the pressure on children.

3. Parents as decision-makers: In some systems (e.g. the Czech Republic and Hungary), parents have extensive powers to delay the start of school or choose schools. The results show that parents often have to compensate for structural deficits in cooperation. Successful approaches, such as family centres in Germany or participatory portfolio work in Czechia, indicate that the transition can only succeed if parents are seen as active partners rather than passive recipients.

Dunlop, A.-W. (2018). Transitions in early childhood education. In Oxford Bibliographies. Oxford University Press.
<https://doi.org/10.1093/OBO/9780199756810-0204>

Jahreie, J. (2023). Early childhood education and care teachers' perceptions of school readiness: A research review. *Teaching and Teacher Education*, 137, Artikel 104353. <https://doi.org/10.1016/j.tate.2023.104353>

Mayring, P. (2014). Qualitative content analysis: Theoretical background and procedures. In *Approaches to qualitative research in mathematics education: Examples of methodology and methods* (pp. 365-380). Dordrecht: Springer Netherlands.

Rouse, E., Nicholas, M., & Garner, R. (2020). School readiness – what does this mean? Educators' perceptions using a cross sector comparison. *International Journal of Early Years Education*, 28(2), 185–199. <https://doi.org/10.1080/09669760.2020.1733938>

Keywords: Transition to Primary School; Parental Role; Transnational Qualitative Research

Multilingual practices and educational settings during transition into centre-based childcare

Presentation as part of a symposium

Franziska Vogt, Janine Hostettler Schaerer & Fabienne Bohler

This **study** examines how transitions into centre-based childcare are designed for children and parents who have little or no knowledge of the local language of schooling. The transition is crucial, as parents are encouraged to send their child to centre-based childcare with the aim of acquiring the local language of schooling early on. Whilst developmental psychology, in particular attachment theory, as well as systemic perspectives informed transition models for childcare (Dreyer, 2017), there is, however, limited evidence on how language practices shape the transition process for migrant families. This exploratory qualitative study investigates (1) how educators organize transition processes in such linguistically diverse constellations and (2) which language practices and educational settings support children and parents during settling-in.

An ethnographic research strategy was adopted to capture everyday practices (Gelir, 2021). Four transition processes in two daycare centres in Switzerland, both recognized for well-developed transition concepts, were studied as best-practice case studies. Data collection included participant

observation of 39 visits (7–18 per child and family), informal conversations, and three semi-structured interviews with daycare centre managers. Field notes and interview transcripts were analysed using MAXQDA, combining qualitative content analysis and grounded theory method (Glaser 2014).

Findings show that educators place strong emphasis on responding to the individual needs of both children and parents. For each child, two key educators were assigned to focus on the transition process.

The case studies differed regarding linguistic practices. In two cases, communication with parents was possible in their first language – either through an educator sharing the migrant language or via a professional interpreter for an extended initial conversation. The study also highlights the particular potential of translanguaging (García & Wei, 2014). When educators, children, and parents draw on their full linguistic repertoires, the transition appears smoother, and multilingualism is explicitly valued as a resource. Interacting with the child, educators used the child's family language selectively to provide emotional security and clarify routines, whilst simultaneously using the local language to support early second language acquisition.

The observation also revealed that parents need clarification about their role during different phases of the transition (e.g., staying close to the child, holding back, etc).

Overall, the study shows that general principles of a good transition process are particularly crucial for families who do not yet speak the local language. In addition, targeted linguistic strategies – such as translanguaging, the involvement of interpreters, and multilingual information materials, translation apps – emerge as specific measures that can substantially improve the transition experience for children, parents, and educators alike.

Dreyer, R. (2017). *Eingewöhnung und Beziehungsaufbau in Krippe und Kita – Modelle und Rahmenbedingungen für einen gelungenen Start*. Herder.

García, O. & Wei, L. (2014). *Translanguaging: Language, Bilingualism and Education*. Palgrave Macmillan.

Gelir, I. (2021). Can insider be outsider? Doing ethnographic research in a familiar setting. *Ethnography and Education*, 16(2), 226–242.

Glaser, B. G. (2014). Applying grounded theory. *Grounded Theory Review*, 13(01), 46–50

Keywords: transition, parent-educator partnership, centre-based childcare, multilingual education, translanguaging

Session B: 4

Time: 15.30–17.00

Location: RUU Aino

Single papers: **Children's individuality and role in research**

Chair: **Sara Huotari,**
University of Jyväskylä

Entry age of and weekly hours in early childhood education and care – relations with children's individuality and well-being at the age of four

Mimmu Sulkanen, University of Jyväskylä; Eija Räikkönen, University of Jyväskylä; Jenni Salminen, University of Jyväskylä; Maarit Alasuutari, University of Jyväskylä

The dual perspective: How combinations of teacher and child personality types predict the quality of interactions and relationships in preschool classrooms.

Catharina van Trijp, University of Stavanger; Wilfried Smidt, University of Innsbruck; Eva-Maria Embacher, University of Innsbruck

A critical examination of ethical challenges in quantitative research, from an empirical children's rights perspective: who cares?

Eva Dierickx, Vrije Universiteit Brussel; Els Dumortier, Vrije Universiteit Brussel; Marijke Van Buggenhout, Vrije Universiteit Brussel; Mariem Es Salhi, Vrije Universiteit Brussel

Intraindividual social-emotional profiles and their developmental trajectories from early to middle childhood: An integrative analysis of three national datasets

Carolin Honigmann, Leipzig University; Tina Malti, Leipzig University; Peter Adriaan Edelsbrunner, LMU Munich; Elisa Oppermann, Leipzig University

Abstracts

Entry age of and weekly hours in early childhood education and care – relations with children's individuality and well-being at the age of four

Mimmu Sulkanen, Eija Räikkönen, Jenni Salminen & Maarit Alasuutari

Participation in early childhood education and care (ECEC) is widely associated with positive long-term developmental outcomes. While Finnish ECEC policy, similar to other Nordic countries, has encouraged broader participation across age groups, little is known about how the age of entry into ECEC, and the weekly hours spent in ECEC are related to children's well-being. According to Thomas and Chess's (1963) goodness-of-fit model, the effects of ECEC arrangements on children's well-being depend on the extent to which these arrangements align with children's individual behavioral tendencies. However, studies that have examined the role of

children's behavioral tendencies in the associations between ECEC arrangements and well-being remain scarce. The current study addresses this gap by focusing on Finnish 4-year-olds and their enjoyment in ECEC. Children's enjoyment in ECEC reflects their socioemotional well-being within the ECEC context. The current study asks:

1. How are behavioral tendencies, age of entry into ECEC, and weekly hours spent in ECEC associated with children's enjoyment in ECEC?
2. Do age of entry or weekly hours spent in ECEC moderate the associations between behavioral tendencies and enjoyment in ECEC?

The current study utilizes a parental survey conducted in 2019 as part of a larger research project. The sample consists of parents of 4-year-old children enrolled in formal ECEC (Nparents= 1699; Nchildren = 1333). Children's behavioral tendencies were measured with the Survey of Children's Individual Differences (SIDCA; Martin et al., 2021), and four behavioral tendencies activity level, consideration of others, inhibited and insecure behavior, and irritability were included in analyses based on their relevance for children's adjustment and enjoyment in ECEC. Children's enjoyment in ECEC was assessed with a six-item scale. Age of entry was classified into four, and weekly hours into three categories for analyses. In addition, several child-, parent-, and family-related covariates were controlled.

Analyses were conducted in a structural equation modelling framework using multigroup comparisons with Satorra–Bentler χ^2 difference tests and changes in CFI, TLI, RMSEA, and SRMR fit indices. Wald tests were used for pairwise comparisons. Regression analysis was used to examine the association between enjoyment and behavioral tendencies.

Preliminary results showed no associations between age of entry or weekly hours in ECEC and behavioral tendencies. However, both of these as well as all four behavioral tendencies were associated with children's enjoyment in ECEC. Weekly hours spent in ECEC moderated the associations for three behavioral tendencies, with longer hours fitting better for children with more active or more inhibited and insecure behavioral tendencies. For children with irritable behavioral tendencies, moderate hours were most beneficial. No consistent moderation was found for age of entry into ECEC.

The findings advance goodness-of-fit theory in the ECEC context and offer valuable insights into how children's weekly hours in ECEC can be better aligned with their individual characteristics to support their well-being. At the same time, the study does not reveal any risks associated with early age of entry. These results can inform planning and parental decision-making regarding their children's ECEC arrangements and the training of ECEC professionals.

Keywords: early childhood education and care, well-being, behavioral tendencies, age of entry into ECEC

The dual perspective: How combinations of teacher and child personality types predict the quality of interactions and relationships in preschool classrooms.

Catharina van Trijp, Wilfried Smidt & Eva-Maria Embacher

In preschool, children have opportunities to build relationships and interact with peers and teachers, which can promote their competence development (Booren et al., 2012; Paes et al., 2023; Sabol & Pianta, 2012). Previous research has examined predictors of interaction and relationship quality in preschool classrooms, including structural characteristics of the preschool (e.g., staff-child ratio; Cadima et al., 2015; Melhuish & Gardiner, 2019) personal characteristics of teachers (e.g., stress; Penttinen et al., 2020) and children (e.g., gender; Choi & Dobbs-Oates, 2016). Other research found that the personality of teachers (e.g., Burns et al., 2024; Eckhardt & Egert, 2018) and children (e.g., Embacher et al., 2023; Smidt & Embacher, 2023) are important for the quality of relationships and interactions in preschool. However, less attention has been paid to the dual-perspective approach (i.e., combination of teacher personality and child personality) and how this might predict the quality of the relationships and interactions in preschool classrooms. Therefore, this study aims to focus on to what extent do personality types of teachers and children predict the quality of relationships and interactions in preschool classrooms.

This study used data from the second wave of a longitudinal project conducted in Tyrol, Austria, including 287 children aged 3–5 years nested within 85 preschool classrooms. Teachers' and children's personalities were assessed using Big Five-based measures (i.e., Five Factor Questionnaire for Children – short version [FFFK-K]; Asendorpf, 2007; Big Five Inventory-SOEP [BFI-S]; Schupp & Gerlitz, 2014), and classified into three personality types—resilient, overcontrolled, and undercontrolled (Asendorpf et al., 2001; Chapman & Goldberg, 2011).

Interaction quality was observed using the Individualized Classroom Assessment Scoring System (inCLASS; Downer et al., 2010, 2012), capturing the individual child's competencies in teacher interactions, peer interactions, task orientation, and conflict interactions. Teacher–child relationship quality was assessed via teachers' reports of closeness and conflict using the Student–Teacher Relationship Scale – Short Form (STRS-SF; Pianta, 2001). Multilevel random coefficient models were estimated, by using Mplus V8 (Muthén & Muthén, 2017), to account for the hierarchical data structure and to control for relevant child, teacher, and structural characteristics.

Preliminary results showed that teachers' personality types alone did not significantly predict interaction or relationship quality, aligning with previous findings that report inconsistent or weak main effects of teacher personality (Ata & Kimzan, 2024; Burns et al., 2024). In contrast, specific teacher–child personality combinations were meaningfully associated with both interaction and relationship outcomes. Dyads involving overcontrolled children were consistently characterized by lower peer interaction quality and reduced teacher–child closeness, irrespective of teacher personality, extending earlier child-focused findings (Embacher et

al., 2023; Smidt & Embacher, 2023). Elevated conflict was particularly evident in dyads involving undercontrolled children paired with undercontrolled or resilient teachers. Personality combinations explained substantial proportions of within-classroom variance, especially for teacher–child closeness and conflict.

The findings contribute theoretically by extending personality–relationship frameworks to early childhood education through a dual-perspective, person-centered lens. Practically, they underscore the importance of considering teacher–child personality constellations when aiming to enhance interaction quality and relationship-building in preschool classrooms.

Keywords: Preschool; teacher personality, child personality; interaction quality; relation quality

A critical examination of ethical challenges in quantitative research, from an empirical children's rights perspective: who cares?

*Eva Dierickx, Els Dumortier,
Marijke Van Buggenhout &
Mariem Es Salhi*

This paper examines the ethical and methodological challenges of conducting quantitative research on sensitive topics with young children. While general ethical frameworks guide research with minors (ERIC ethical guidelines, e.g.), they often remain rather abstract and insufficiently address the concrete complexities and tensions of large-scale studies in early years settings.

Drawing on reflections from a quantitative study on bias-based bullying in early childhood and primary education, and informed by a reflexive thematic analysis of 1,170 semi-structured field notes and researcher memos, we critically examine how, despite careful design and ethical intentions, survey research may inadvertently silence children's perspectives and cause (in)direct harm. We argue that even rigorously constructed instruments risk epistemic reduction and unintended harm when applied to sensitive issues involving young children.

The analysis generated four interrelated themes. (1) Are we really listening? explores how adult-centric assumptions often shape how children's responses are elicited, interpreted, and valued. (2) Who's got the power? examines tensions between children's agency (expressed through negotiation, hesitation, or selective disclosure), the institutional conditions of schools as authority-laden sites of data collection and the role of the researcher. (3) More than words? highlights how children's responses are shaped by affective, embodied, temporal, and situational dynamics that exceed standardized formats. (4) Who cares? interrogates the ethical scope and limits of researchers' responsibilities of care embedded in decisions about measurement, reporting, and intervention.

Rather than positioning these tensions as inherent limitations of quantitative research with young children, we argue that a children's rights perspective calls for strengthened methodological reflexivity within large-scale designs.

By foregrounding children's rights, epistemic justice, and relational responsibility, this paper contributes to practical guidance for quantitative researchers in early childhood education. Instead of offering prescriptive checklists or propose all the answers to the tensions, we formulate a set of reflective prompts to support ethically attuned survey design, implementation, and interpretation with young children on sensitive subjects.

Keywords: Children's Rights, Quantitative Research Ethics, Methodological Reflexivity, Epistemic Justice

Intraindividual social-emotional profiles and their developmental trajectories from early to middle childhood: An integrative analysis of three national datasets

Carolin Honigmann, Tina
Malti, Peter Adriaan & Elisa
Oppermann

Theoretical Background

The development of social-emotional skills in early childhood lays the foundation for coping with societal challenges, including demographic change, environmental crises, and technological transformation (OECD, 2019, 2021). Social-emotional skills encompass intra- and interpersonal skills that enable children to regulate their emotions and to engage positively in social interactions (Malti & Cheah, 2021; Malti & Noam, 2016). Although the development of social-emotional skills is well researched, less attention has been paid to intra-individual heterogeneity, i.e., the extent to which social-emotional skills vary or converge in their development within children (Cheah, 2016; Groeben et al., 2011; Malti & Cheah, 2021).

Research Questions

Which intraindividual social-emotional profiles and developmental trajectories can be identified from early to middle childhood? How consistent are these profiles and trajectories across multiple datasets? In what ways do these profiles and trajectories differ according to characteristics of social background? Here, we present preliminary results on the first question, expecting the further analyses to be finished by this spring.

Methods

The study is based on three longitudinal datasets (BiKS 3–10, Weinert et al., 2019; NEPS-SC1, NEPS Network, 2025; SOEP-Core, DIW Berlin, 2019). Social-emotional skills were operationalised with the SDQ (Strengths and Difficulties Questionnaire; Goodman, 1997) and the German version of the CCQ-Sort (California Child Q-Sort; Göttert & Asendorpf, 1989) for ages 3–10 based on teacher report. Preliminary analyses are based on the BiKS-3–10 data (N=547), comprising five measurement points between ages 3.8 years (T1; SD=0.3) and 6.8 years (T5; SD=0.3) and including four scales: prosocial behaviour, emotional self-regulation, aggressive behaviour, shyness (each scale exceeds $\alpha=0.70$).

Growth Mixture Models (GMM; Wickrama et al., 2021) were used in Mplus 9.0 (Muthén & Muthén, 1998–2017) to identify intra-individual social-emotional profiles and their developmental trajectories. Missing

data and multivariate non-normality were treated using robust full-information maximum likelihood estimation.

Results

Preliminary GMM results reveal a two-class model. Likelihood ratio tests showed a significant improvement over a one-class model (Vuong-Lo-Mendell-Rubin-likelihood-ratio-test (VLMR-LRT): $2 \times \log$ -likelihood difference = 219,704, $\Delta df = 9$, $p = 0.001$; adjusted VLMR-LRT = 215.884, $p = 0.001$), with no further improvement for additional classes. Entropy was high (0.917), indicating clear separation between the two classes. The two-class model identified the following profiles: "Average-Adaptive" (81.11%) and "Aggressive-Social" (18.89%). Children with an Average-Adaptive profile showed high scores across all scales, stable from ages 3-7, with shyness decreasing slightly. In contrast, children in the Aggressive-Social profile exhibited high aggressive behaviour, low emotional self-regulation and shyness, while prosocial behaviour remained high. These patterns were stable from ages 3-7.

Interpretation of findings

Results suggest that differences between the profiles remain surprisingly consistent over time. This underscores the importance of considering intra-individual heterogeneity rather than relying solely on average developmental trends. Specifically, the second profile combines high aggression with relatively high prosocial behaviour and low shyness, highlighting a heterogeneous pattern that does not align with a purely maladaptive interpretation.

Subsequent analysis will explore additional profiles (e.g. high shyness), examine the consistency of these profiles across the three datasets, and analyse associations with children's social background in order to draw conclusions about social disparities.

Keywords: social-emotional skills; intra-individual heterogeneity; person-centered methods; longitudinal analyses; child development

Session B: 5

Time: 15.30–17.00

Location: RUU Onni

Single papers: **Socioeconomic inequalities, home learning environments, and early child development**

Chair: Tekla Seppälä,
University of Jyväskylä

The very early roots of social disparities in socioeconomic risk groups: A comparison study

Wei Huang, University of Bamberg; Weinert Sabine, University of Bamberg; Dave Möwisch, Leibniz Institute for Educational Trajectories (LifBi); Hans-Günther Roßbach, University of Bamberg

Socioeconomic differences in the multidimensional home learning environment: Links to early cognitive and social-

emotional development

Renée Claes, KU Leuven; Katrijn Denies, KU Leuven; Bert De Smedt, KU Leuven; Koen Aesaert, KU Leuven

Understanding parental stress in single parenthood: Impacts on home learning environments for young children in Germany

Luisa Prokupek, DIPF | Leibniz Institute for Research and Information in Education; Hande Erdem-Möbius, University of Bamberg

How parenting self-efficacy develops: Trajectories and influencing factors

Ariane Pickhardt, DIPF | Leibniz Institute for Research and Information in Education; Yvonne Anders, DIPF | Leibniz Institute for Research and Information in Education; Theresia Hummel, University of Bamberg; Gizem Samdan, DIPF | Leibniz Institute for Research and Information in Education

Abstracts

The very early roots of social disparities in socioeconomic risk groups: A comparison study

Wei Huang, Sabine Weinert, Dave Möwisch & Hans-Günther Roßbach

Background. Prior studies relying on aggregate population data, such as national samples, have found family socioeconomic status (SES) to be associated with parenting behaviors, but not with children's outcomes in infancy (e.g., Weinert et al., 2016). It is well substantiated that early experiences are correlated with children's outcomes, independent of SES. On average, children from low-SES families are more likely to exhibit lower levels of development than those from affluent families. In light of this, intervening with disadvantaged children is often viewed as an optimal strategy to reduce social inequality in child development (Shonkoff & Phillips, 2000). However, current knowledge is primarily drawn from mean differences across the population—that is, interventions designed around these average effects can lead to a one-size-fits-all approach that fails to account for the unique ecological pressures faced by specific subgroups (Evans, 2004; Sameroff, 2000). This perspective overlooks the within-group heterogeneity that is essential for designing efficient and targeted interventions (Shaw et al., 2024). According to the principle of equifinality (Cicchetti & Rogosch, 1996), different configurations of risk—such as the double burden of neighborhood deprivation plus an individual stressor or the compounding effect of cumulative individual stressors—may converge to produce similar developmental disparities. To better support disadvantaged children from the very

beginning, an in-depth understanding of the relative contributions of SES and parenting behavior within these specific risk groups is required.

Aims and Methods. Therefore, this study aimed to examine the emerging disparities in infancy within two distinct socioeconomically disadvantaged groups ($n = 177\text{--}490$): one experiences neighborhood-plus-individual risk—the Bremer Initiative to Foster Early Child Development (BRISE), and another experiences cumulative socioeconomic risk factors from the New-born Cohort of the German National Educational Panel Study (i.e., NEPS-SC1-Risk). Measures in both data sets were comparable. Children's sensorimotor development, visual attention (habituation paradigm), and interactive behaviors were observed at 7 months. Parenting behaviors were measured through quality and quantity/frequency of mother-child interactions at 7 months. SES contained household income, mother's educational level, and migration background. We conducted stepwise path analysis to examine the associations between SES indicators, parenting behaviors, and the child's measures. Models also were controlled for numerous mother's and child's characteristics.

Results. Overall, we found consistent patterns of associations across both risk groups. Mothers' education was associated with the quality of mothers' interactive behaviors, yet none of the SES indicators were significantly related to children's sensorimotor development and visual attention. While some SES indicators were significantly related to children's interactive behaviors, certain of them became nonsignificant after accounting for parenting behaviors. In particular, the quality of mothers' interactive behaviors were broadly associated with children's interactive behaviors and partially with children's sensorimotor development and visual attention. However, the specific dimensions of parenting quality that reached significance varied by group.

Conclusion. Our findings support the equifinality of socioeconomic risk but also highlight a level of situational specificity. This hints that while disadvantaged infants can benefit from high-quality mother's interaction, the type of support required may depend on the contextual stressors the family faces.

Keywords: social disparities, socioeconomic risk, early social and cognitive development, specific parenting behaviors

Socioeconomic differences in the multidimensional home learning environment: Links to early cognitive and social-emotional development

*Renée Claes, Katrijn Denies,
Bert De Smedt, Koen Aesaert*

Children's socio-economic status (SES) is a well-established predictor of early development. SES influences children's outcomes not only through structural resources, such as access to educational materials at home, but also through everyday experiences within the family. The home learning environment (HLE) - an umbrella term encompassing these various aspects of learning at home - has been identified as a central pathway through which SES shapes development. The HLE not only supports literacy and

numeracy but also plays a key role in children's executive functioning (EF) and social-emotional development. However, most research on the HLE has focused narrowly on observable parental behaviors and academic domains, giving limited attention to parental expectations and broader developmental dimensions. Parental expectations, in particular, likely guide the interactions parents engage in, the learning opportunities they provide, and children's emerging EF, and social-emotional growth. Emerging evidence indicates that social-emotional skills are critical for school readiness and long-term psychosocial outcomes, yet these skills remain underrepresented in HLE research. This narrow focus restricts our understanding of the diverse ways families can foster children's holistic development.

The present study seeks to broaden the conceptualization of the HLE by integrating parental expectations with home learning activities and extending the scope beyond literacy and numeracy to include executive functioning and social-emotional development. Specifically, we investigated how SES shapes variation in the cognitive and social-emotional dimensions of the HLE and how these dimensions are differentially associated with children's cognitive and social-emotional outcomes.

The study draws on Flemish data from the International Early Learning and Child Well-being Study (IELS) 2025, a large-scale international assessment coordinated by the Organisation for Economic Co-operation and Development (OECD). A stratified cluster sampling design yielded a representative sample of approximately 2,400 five-year-old children from 200 schools. Data were collected between January and March 2025. Children completed individual tablet-based assessments measuring emergent literacy, emergent numeracy, EF (working memory, inhibition, mental flexibility), and social-emotional skills (emotion identification and emotion attribution). Parents reported on the frequency of home-based activities and their expectations across each domain. Construct validity was examined using confirmatory factor analysis. To examine the associations between SES, HLE and children's outcomes, both variable-centered approaches (regression analyses) and person-centered approaches (latent profile analyses) were employed, allowing for the investigation of how distinct HLE dimensions as well as parenting profiles relate to cognitive and social-emotional skills.

All statistical analyses have been completed, but in accordance with OECD confidentiality agreements, the IELS 2025 data remain under embargo until May 2026 and empirical results therefore cannot be disclosed in this abstract. By the time of the conference, the embargo will have been lifted, allowing full presentation of the IELS 2025 data and discussion of the study's findings.

Theoretically, this study advances ecological and sociocultural models of early development by emphasizing the role of parental expectations and socio-emotional stimulation within the HLE. Practically, the findings can inform early childhood policy and family-focused interventions that

recognize diverse forms of learning support at home, extending beyond cognitive outcomes and observable parental behaviors.

Keywords: Home learning environment, early cognitive skills, early social-emotional skills, large-scale assessments

Understanding parental stress in single parenthood: Impacts on home learning environments for young children in Germany

Luisa Prokupek & Hande Erdem-Möbius

Perceived parental stress can adversely affect the home learning environment (HLE) (Masarik & Conger, 2017), and single parents may experience even greater challenges (OECD, 2018). This study investigates the relationship between parental stress and the HLE in single-parent families with young children in Germany. The research is grounded in the Family Stress Model (Masarik & Conger, 2017), which highlights how financial and emotional stressors can affect parenting practices and ultimately influence child development.

To answer the research question, “What are the main stressors and risk factors for single parents of young children, and which protective factors are relevant for them to cope with parental stress and maintain a stimulating home learning environment (HLE) for their children?” a qualitative interview study was conducted. This study involved semi-structured interviews with 11 single parents, gathering rich, in-depth narratives about their experiences, challenges, and coping strategies. The data collection aimed to ensure diversity in backgrounds, including variations in socioeconomic status and migration history, to **capture** a comprehensive understanding of the single-parent experience. Qualitative content analysis (Mayring, 2014) was employed using MAXQDA software for the analysis.

Results indicate that the most significant stressors for the participants include financial burdens and a low perception of their household economic situation, which limit their capacity to provide enriching parent-child interactions and learning activities. Additional stressors identified are time constraints and ineffective co-parenting, both of which exacerbate parental stress and hinder positive interactions. Moreover, the interviews revealed that many parents struggle with feelings of inadequacy and anxiety regarding their ability to meet their children’s educational needs. Conversely, the study also identified several protective factors that enable single parents to navigate their challenges effectively. High parental self-efficacy, active coping strategies, and robust social support networks emerged as critical resources that help mitigate the effects of stress and enhance the HLE. For instance, parents described how they engaged in problem-oriented coping by seeking external support from family and friends, which significantly contributed to their ability to maintain stimulating learning environments for their children.

The findings underscore the importance of understanding the complexities of single-parenting and the multifaceted nature of parental stress. This study highlights the necessity of targeted interventions that address both

the stressors faced by single parents and the protective factors they can leverage. By recognizing the strengths and resources of single-parent families, policymakers and practitioners can develop more effective support mechanisms that promote the well-being of both parents and their children.

In conclusion, this research not only contributes to the academic discourse surrounding parental stress and the HLE in single-parent families but also has practical implications for designing support systems aimed at improving educational outcomes for children in challenging family contexts.

Keywords: single parents, parental stress, protective factors, home learning environment

How parenting self-efficacy develops: Trajectories and influencing factors

Ariane Pickhardt, Yvonne Anders, Theresia Hummel & Gizem Samdan

Children develop through interaction with their immediate environments (Bronfenbrenner, 1996). One crucial developmental context is the home-learning environment, as this is where children spend most of their time. The home-learning-environment framework posits that structural characteristics of the family (e.g., socioeconomic status) and parents' educational beliefs interact and shape the quality of the parent-child interactions (Kluczniok et al., 2013). Parenting Self-Efficacy (PSE) is considered a key educational belief and refers to parents' beliefs in their ability to successfully influence their child's development in a supportive and health-enhancing manner (Eccles & Harold, 1996). This work aims to shed light on factors influencing the development of PSE during the first one and a half years after childbirth, a period characterized by elevated stress and substantial demands, particularly among structurally disadvantaged families, who remain underrepresented in existing research. Using longitudinal data from N = 300 mothers and their newborns living in disadvantaged neighborhoods of a middle-sized city in Germany, we identify distinct trajectories of PSE development and examine how these are shaped by contextual and structural factors (Bandura, 1994), as well as by critical life events. Such events may confront parents with challenging situations while also providing opportunities for successful coping, which may positively influence parenting self-efficacy (Bandura, 1994).

PSE was assessed via the Maternal Confidence Questionnaire (Parker & Zahr, 1985) at two timepoints when the children were 3 and 16 months old. Preliminary regression analyses reveal significant effects of contextual and personal factors on PSE. Higher household income ($\beta = -.12, p < .05$), higher parental distress, assessed via eight self-reported items in a home-based interview ($\alpha = .79$) ($\beta = -.39, p < .05$) and reported utilization of family support programs ($\beta = -.29, p < .05$) were negatively associated with PSE.

Regarding change in PSE across the first 16 months of parenthood, mothers who reported more negative feelings toward motherhood assessed using eight items ($\alpha = .85$) ($\beta = -.25, p < .05$) who were exposed to multiple

contextual stressors ($\beta = -.15, p < .05$), and who perceived these stressors as highly burdensome (e.g., relationship dissolution, financial strain) ($\beta = -.26, p < .05$) experienced a decline in parenting self-efficacy over time.

In the next step, we plan to analyze trajectories of PSE in greater detail, examining their associations with background characteristics (e.g., migration background or educational attainment) and the role of different forms of professional support play in shaping PSE development.

This research is highly relevant in the context of educational equality and early opportunities, as understanding factors that diminish or enhance PSE is essential for identifying mechanisms that contribute to the early reproduction of social and educational inequalities.

Keywords: parenting self-efficacy, family stress, disadvantaged families

Session B: 6

Time: 15.30–17.00

Location: RUU Lucina

Single papers: **Self-regulation and social competence at home and in ECEC**

Chair: Jenni Ruotsalainen, University of Jyväskylä

Supporting self-regulation in preschool children through an app for parents: two RCT studies in England

Fiona Jelley, University of Oxford; Kathy Sylva, University of Oxford

ECEC professionals' emotional regulation and professional-child relationships: their interactions and linkages to children's social competence

Hà Phạm-Đào, University of Jyväskylä; Eija Räikkönen, University of Jyväskylä; Merja Koivula, University of Jyväskylä; Eija Sevón, University of Jyväskylä

Profiles of students' social competence in primary school: Associations with teacher-student relationships and task-avoidance

Dini Rahmawati, University of Jyväskylä; Sanni Pöysä, University of Jyväskylä; Marja-Kristiina Lerkkanen, University of Jyväskylä; Eija Pakarinen, University of Jyväskylä

A systematic review of the effects of tiered interventions with families on children's early literacy, numeracy, socio-emotional and behavioral outcomes

Evdokia Pittas, University of Nicosia; Christophe Dierendonck, University of Luxembourg; Débora Poncelet, University of Luxembourg; Guillaume Viatour, University of Luxembourg

Abstracts

Supporting self-regulation in preschool children through an app for parents: two RCT studies in England

Fiona Jelley & Kathy Sylva

Self-regulation is at the forefront of early childhood education and now features in the curricula of many countries. It enables the child to exert effortful control over attention, thinking, behaviour, social interactions and emotional reactions. Early self-regulation predicts achievement throughout schooling and healthy adjustment in adulthood. Meta-analyses of interventions are mixed, with some studies showing positive effects of preschool programmes while others report null or small effects. There are few interventions delivered by parents and this paper reports two small-scale studies investigating the effects on families and children of an app for parents. The app features games that support self-regulation and are sent weekly to parents to try at home.

Two RCTs are reported, each a proof-of-concept study with early findings on an app-based intervention for parents. The first occurred in a seaside town in England where 150 families in eight children's centres were randomly assigned within centre to intervention or control. Parents completed pre and post questionnaires on parenting self-efficacy and children's self-regulation. A second RCT in a diverse London borough randomised centres at group level. The app was offered to all parents whose children attended the centre family engagement was supported by teachers through conversations during drop-off and text reminders. In the four intervention centres 130 families were supported by the teachers to use the app while 172 families in four control centres were on a waiting list.

The intervention group in Study 1 scored higher on parenting self-efficacy at post-test than the control group, controlling for baseline and relevant covariates (adjusted difference = 0.334, 95% CI [0.038, 0.631], $p=.028$). In Study 2, centre-robust regressions showed higher parent-reported child cognitive self-regulation at post-test in intervention vs control centres ($b = 0.207$, 95% CI [0.109, 0.305], $p = .002$; controlling for baseline and gender) and higher parenting self-efficacy ($b = 0.251$, 95% CI [0.083, 0.418], $p = .009$; controlling for baseline).

Both studies suffered from limitations common to small-scale, proof-of-concept designs. The first study suffered large attrition which unbalanced the two groups at post-test and the second study was under-powered for group randomisation. Post hoc statistical analyses went some way to overcome these limitations (controlling for family language in Study 1 and robust standard errors in Study 2). We conclude that the app shows promising effects but only when delivered as a centre-wide programme with support from teachers ('pod leaders') to encouragement engagement.

The paper closes with consideration of the effectiveness of apps to enhance parenting in 'vulnerable' families. In the second study the centre staff supported app use during conversations during drop-off, posters on the walls and through texts sent to parents. These two studies suggest that motivating vulnerable parents to play games that increase child self-

regulation may require support from teachers or community workers. Recent work by the app developers supports parents to share experiences with other parents in-person or on-line. Peer support orchestrated through local 'pods' may also strengthen commitment, increase enjoyment and lead to positive child outcomes.

Keywords: self-regulation, parents, RCTs, apps

ECEC professionals' emotional regulation and professional-child relationships: their interactions and linkages to children's social competence

Hà Phạm-Đào, Eija Räikkönen, Merja Koivula & Eija Sevón

Children's social competence is likely influenced by professionals' emotional regulation and the quality of their mutual relationships. However, the interactions between early childhood education and care (ECEC) professionals' emotional regulation and professional-child relationships in relation to children's social competence largely have been unknown. Moreover, some aspects of ECEC professionals' emotional regulation have been understudied or underused (Aldrup et al., 2024; Kostøl & Cameron 2021), which limits the effectiveness of pedagogical practices and research related to ECEC professionals' emotional competence. Thus, grounded in the conceptualizations of different theoretical orientations, such as attachment, social learning, emotional regulation and emotional socialization theories (Bandura, 1997; Bowlby, 1978; Denham et al., 2019; Gross & Thompson, 2007), the prosocial classroom model (Greenberg & Jennings, 2009), this study aims to produce new empirical evidence on the relationships among ECEC professional-child relationships, professionals' emotional regulation, and children's social competence. Based on the online survey data reported by ECEC professionals (N = 72) of children (N = 271) from 25 ECEC centers in different parts of Finland in January 2022, structural equation modeling analyses using Mplus software were conducted with latent variables of ECEC professionals' emotional regulation (PERS's 2 subscales, Pereira et al., 2017), ECEC professional-child relationship (STRS-SF, Pianta et al., 2001) and children's social competence (MASCs, Junttila et al., 2006). The results show that professional-child high-quality relationships and one aspect of professionals' emotional regulation, i.e., emotional acceptance, were positively and negatively related to children's social competence, respectively. Moreover, ECEC professionals' low levels of emotional acceptance were positively related to children's more social competence regardless of their relationships' quality while high levels of emotional acceptance were negatively related to children's less social competence, especially when the quality of their relationships was low. Among very few that examined the understudied aspects of ECEC professionals' emotional regulation, their interactions with the quality of professional-child relationships and the associations with children's social competence, this study invites future research to develop our understanding on the interlinkages among these constructs further. Additionally, the practical

implication drawn from the results is the need to develop professional development programs on ECEC professionals' emotional regulation to maintain and foster the quality of their relationships with children and children's social competence.

Keywords: Children's social competence, ECEC professionals' emotional regulation, professional-child relationships

Profiles of students' social competence in primary school: Associations with teacher-student relationships and task-avoidance

*Dini Rahmawati,
Sanni Pöysä, Marja-Kristiina Lerkkanen & Eija Paikari*

Developing social competence in primary school is important for students' academic, social, and long-term outcomes (Caemmerer & Keith, 2015; Jones et al., 2015). Students enter primary school already with a history of social behavioral patterns, shaped by their previous experiences with family, friends, and the preschool settings (Denham et al., 2000). This study utilizes Junttila and colleagues' (2006) framework of social competence, which encompasses two dimensions: prosocial (i.e. cooperative skills, empathy) and antisocial behavior (i.e. impulsivity, disruptiveness). Exploring students' social competence through a person-centered approach, compared to a variable-centered approach, allows investigation of student heterogeneity and how the different student profiles associate with other factors in the classroom.

Moreover, we also investigate how students' social competence profile memberships differ in their association with teacher-student relationship and task-avoidance. Teacher-student relationship (i.e. closeness and conflict) is an important social component of school life that influences various student outcomes, such as adaptation to school and academic achievement (Ansari et al., 2020; Roorda et al., 2011, 2017). Task-avoidance, while typically related to learning-related outcomes, may also be associated with social competence as forms of achievement related to students' motivation, both in learning and social circumstances (Ryan & Shim, 2006). Thus, this study aims to investigate the different profiles of students' social competence, how covariates differentiate the profiles, and how the profiles differ in their associations with teacher-student relationship and task-avoidance.

Latent profile analysis (LPA) was conducted on social competence data of 1,035 primary students (1st and 2nd grade) in Finland taken. Teachers (N = 71) rated students' social competence and teacher-student relationship quality. Additionally, parents (N = 791) rated students' task avoidance. The best fit solution was determined using statistical and interpretability considerations. Multinomial logistical regression using the R3STEP method was conducted to analyze how covariates predict students' profile membership. Auxiliary analysis on distal outcomes using the BCH method was conducted to compare how means in teacher-student relationships and task avoidance differ across the profile groups.

The results identified a four-group profile solution of students' social competence: Socially Average (i.e. average prosocial and antisocial behaviors; 27.15%), Socially Passive (i.e. low prosocial and antisocial behaviors; 24.73%), Socially At-Risk (i.e. low prosocial and very high antisocial behaviors; 11.88%), and Socially Competent (i.e. high prosocial and low antisocial behaviors; 36.23%). Post-hoc tests for pairwise comparisons also indicated distinctive differences between the profiles. The four-profile groups were also differentiated by students' gender and parent's education level. Additionally, auxiliary analysis of distal outcomes indicated significant mean differences in students' profile membership with teacher-student relationship and task-avoidance. Specifically, conflict significantly differed among all pairwise comparisons, while closeness and task-avoidance significantly differed in all but one pairwise comparison. This study contributes to the understanding of students' social competence heterogeneity in primary school and its associations with teacher-student relationship and task avoidance.

Keywords: social competence, latent profile analysis, teacher-student relationships, task-avoidant behavior, primary schools

A systematic review of the effects of tiered interventions with families on children's early literacy, numeracy, socio-emotional and behavioral outcomes

Evdokia Pittas, Christophe Dierendonck, Débora Poncelet & Guillaume Viatour

1. Theoretical background:

Although findings from recent syntheses highlight positive associations between meaningful parental involvement and children's gains in numeracy, literacy and social-emotional and behavioral (SEB) skills, limited evidence is available regarding the impact of MTSS interventions that explicitly include a family or home component. This paper aims to provide a first systematic research overview of the effects of tiered interventions with families on children's early literacy, numeracy, and socio-emotional and behavioral outcomes following the PRISMA statement.

2. Method:

The studies, published between July 2009 and August 2025 were identified through the search of SCOPUS, EBSCO, ProQuest, APA PsycInfo, Web of Science, two preprint-servers related to Education and OSF registries. Additionally, we used hand search strategies by going through the first 150 hits of Google Scholar and websites of organizations that conduct research on MTSS.

2.1. Selection criteria

The selection criteria were defined based on the PICOTS framework. Based on the pre-registered protocol, we included studies that report effect sizes or provide information for calculating the effect size, and studies that report parents'/caregivers' and/or teachers' perspectives. Data was coded in terms of substantive factors, methodological factors, and

extrinsic factors (Neitzel et al., 2021). The exhaustive reading and quality assessment left a final sample of 44 scientific papers.

2.2 Risk of Bias Assessment

The methodological quality of the selected studies was assessed using the National Heart, Lung, and Blood Institute (NHLBI) Quality Assessment tools (2024). The number of records identified, screened, included and excluded at every stage of the process, together with reasons for exclusion, are reported using a PRISMA flowchart flow diagram (Figure 1). The overall inter-rater reliability, measured as percent agreement, equaled 86.6% for the intervention studies, and 90% for the cross-sectional studies. Based on the NHLBI Quality Rating categories (Good, Fair, or Poor), the studies received a rating of “good” meaning that the studies are judged to be at low risk of bias.

3. Findings and educational significance:

The findings support the hypothesis that tiered intervention studies with families have a positive impact on children’s educational outcomes. Studies that engaged parents during coaching sessions/calls yielded stronger effect sizes compared to materials returned/completed, messages sent, or simple participation in decision-making or problem-solving discussions. Additionally, family tiered interventions with longer duration, ranging from 16 to 24 weeks, do not necessarily detect larger effect sizes. Furthermore, it seems that teaching small groups yields stronger results compared to teaching larger groups. Lastly, several interventions that provided one-time training sessions to families, compared to ongoing training, resulted in positive literacy, numeracy and SEB outcomes. Factors including the strength of family engagement and the provision of initial training combined with ongoing support—such as coaching, remote support, continuous guidance—may also exert considerable influence on outcomes. A methodological contribution of this review is that well-designed studies contribute stronger effects. In practice, this review suggests that schools should focus on building meaningful partnerships with families towards the implementation of effective educational practices.

Keywords: tiered interventions; families; numeracy; literacy; socio-emotional and behavioral outcomes

Wednesday 19th of August

Welcome reception

Time: 17.30–19.00

Location: Main building C1 & Lobby

We warmly welcome all participants to the opening reception of the EARLI SIG5 Conference, held at the University's Main Building (C Building). The reception offers an opportunity to meet fellow researchers and begin the conference in a relaxed and inspiring atmosphere while enjoying light snacks and drinks.

The event will begin with a special performance by **Team Sirius**, the representative aesthetic group gymnastics team of Jyväskylän Naisvoimistelijat. After the Sirius' performance opening words will be given by the SIG5 Coordinator *Jenni Salminen*, followed by a toast to celebrate the start of the conference.

The evening continues with free mingling and vibrant discussions. We hope you have a wonderful start to the conference.

[Click for more information](#)

[→Programme→ Read more about the opening session and welcome reception on Wednesday 19th of August]

Thursday 20th of August

Thursday

20th of August
2026



Thursday 20th of August

Thursday 20th of August, 2026

SIG5 Member meeting

Time: 8.00–9.00

Location: RUU Onni

Session C

Session C: 1

Time: 9.00–10.30

Location: RUU Helena

Symposium: Advancing insight in child self-regulation: Assessment and associations between EF and teacher-child interactions at the dyadic and classroom level

Chair: Fren Dieusaert, KU Leuven

Organizer: Fren Dieusaert, KU Leuven

Discussant: No discussant

Children's behavioral self-regulation in Finnish early childhood education and care: Joint contribution of child factors and ECEC quality

Tekla Seppälä, University of Jyväskylä; Jenni Salminen, University of Jyväskylä; Eija Pakarinen, University of Jyväskylä; Niina Rutanen, University of Jyväskylä

Teachers' executive function supporting interactions in pre-school: a new instrument

Fren Dieusaert, KU Leuven; Dieter Baeyens, KU Leuven; Jantine L. Spilt, KU Leuven

Exploring the associations between children's cognitive and emotional regulation and teacher-student relationships in kindergarten

Léa Muller, Université de Lorraine; Nancy, France, Université de Lorraine; Youssef Tazouti, Université de Lorraine

Prosocial behaviour in early childhood: links with closeness in teacher-child relationship and children's self-regulation

Ana Lemos, Center for Psychology at the University of Porto (CPUP); Tiago Ferreira, Center for Psychology at the University of Porto (CPUP); Joana Cadima, Center for Psychology at the University of Porto (CPUP)

Abstracts

Advancing insight in child self-regulation: Assessment and associations between EF and teacher-child interactions at the dyadic and classroom level

Symposium (overarching abstract)

This symposium presents four studies examining the associations of teacher-child interactions, self-regulation and executive functions (EF). Drawing on data from multiple countries and diverse methods (e.g., questionnaires, observational tools), the symposium offers a much needed layered perspective by examining linkages between self-regulation and teacher-child interactions at the dyadic (part 1) and classroom level (part 2).

Part one addresses the dyadic level and explores associations between TCR quality and child regulation. Paper 1 examines the underexplored role of TCR by analysing how closeness interacts with children's self-regulation in predicting children's prosocial behaviour, highlighting the moderating role of self-regulation. Building on this dyadic focus, Paper 2 uses a multi-informant approach (teacher, child, parent) to show how specific EF components relate to TCR conflict, closeness, and dependence.

Part two broadens the scope to the classroom level. Paper 3 examines the role of observed teacher-child interaction quality at the classroom level relative to individual child factors and structural indicators (e.g., child-educator ratio) in predicting children's behavioural self-regulation. Addressing the need for greater measurement precision of teacher-child interactions supporting EF, Paper 4 develops and pilots a new observation scheme, evaluating its validity in assessing domain-specific teacher practices relevant to children's EF growth.

The studies highlight the role dyadic TCRs and teacher-child classroom interactions play in children's EF, self-regulation, and socio-emotional development. Ultimately, this symposium underscores the value of a layered perspective, demonstrating that assessing both dyadic and classroom-level processes is essential for a fuller, richer understanding of the complex dynamics shaping children's self-regulation.

Keywords: self-regulation, executive functions, teacher-child interactions, teacher-child relationships, pre-school

Children's behavioral self-regulation in Finnish early childhood education and care: Joint contribution of child factors and ECEC quality

Presentation as part of a symposium

Tekla Seppälä, Jenni Salmi-nen, Eija Pakarinen & Niina Rutanen

This study seeks to investigate which individual factors (child's age, gender, previous behavioral self-regulation skills) and quality factors in early childhood education and care (ECEC) settings (educator-child interaction, child-educator ratio, educators' work experience) predict children's behavioral self-regulation (BSR). It also examines the reliability (test-retest, internal consistency) and structural validity of the Head Toes Knees Shoulders (HTKS) measure for Finnish 5-6 year olds. The HTKS has been applied across diverse contexts and is considered a valid measure of BSR; however, research in the Nordic countries is still limited, and its validity has not been investigated in Finland. By investigating the psychometric properties of HTKS and predictors of BSR, the study aims to provide a more nuanced understanding of children's self-regulation and support the use of culturally and contextually appropriate assessment tools.

Data were drawn from a Finnish longitudinal study and collected from 61 ECEC classrooms using skill assessments in 2018 (N = 189, Mage = 64.8 months) and 2019 (N = 175, Mage = 70.8 months). Children's BSR skills (cognitive flexibility, inhibitory control, working memory) were assessed with HTKS-measure (Ponitz et al., 2009). Interaction quality was measured using a modified version of the Classroom Assessment Scoring System Pre-K (Pianta et al., 2008). Structural quality (educators' work experience and child-educator ratio) were collected with a questionnaire.

Analyses were conducted in Mplus using the Type = Complex approach to account for clustering of the data. Validity of the HTKS measure was examined with confirmatory factor analysis. Path analyses were used to assess the association between interaction quality and structural quality of ECEC on children's BSR.

The results showed that two-factor solution (HTKS 1, HTKS 2) described children's BSR suggesting that different sections of the HTKS may tap distinct components of executive functioning. Our autoregressive estimates ($\beta = .22-.25^{***}$) align with those reported in Norwegian samples, suggesting similar developmental patterns across Nordic contexts, and these coefficients also reflect the measure's temporal reliability. Path modeling showed that children's age (HTKS 1: $\beta = 0.208^{**}$ and HTKS 2: $\beta = 0.246^{**}$) and previous BSR skills predicted subsequent BSR (HTKS 1: $\beta = .218^{**}$ and HTKS 2: $\beta = .250^{***}$). This highlights the stability of these skills. Girls showed higher BSR compared with boys. Neither the process nor the structural quality factors of ECEC had a statistically significant association with children's BSR.

Our work provided new information on how to conceptualize and operationalize BSR through the HTKS measure. The HTKS measure could be used to recognize children with lower-level BSR skills in the Finnish ECEC context. Children's age, previous BSR skills and gender were more central to child's self-regulation and its development than the quality factors of ECEC examined in this study. These results should be viewed with caution, and the role of ECEC quality should be examined in relation to the broader evidence base. Based on these findings, practical implications point to the need for early identification and targeted support for children with lower initial self-regulation skills within ECEC settings to promote more equitable developmental outcomes.

Keywords: self-regulation, teacher-child interactions, Child characteristics, ECEC quality, Executive function

Teachers' executive function supporting interactions in preschool: a new instrument

Presentation as part of a symposium

Fren Dieusaert, Dieter Baeyens & Jantine L. Spilt

Research on classroom-based interventions targeting executive functions (EF) has grown, highlighting their potential to improve child outcomes (Mattera et al., 2021; Sankalaite et al., 2021). While studies typically evaluate these programs using child outcomes or broad assessments of

instructional support (Goble et al., 2019; Walk et al., 2018), intervention effects on domain-specific teacher strategies remain largely unexamined (Koşkulu-Sancar et al., 2023; Mattera et al., 2021). Crucially, few instruments exist to capture these concrete strategies and they often lack the granularity, focusing on general instructional quality or social-emotional climate instead of key behaviours like parallel talk or stop-think-do support (Moreno et al., 2017; Rojas et al., 2022). Accordingly, this study assesses the validity of a new observation measure for EF-supportive strategies.

The new EF-support measure was conceptualised as a formative observational index, with 11 teacher behaviours (e.g., parallel talk) serving as indicators of EF-support. As these indicators are not interchangeable, internal consistency is of limited interpretive value (Kline, 2023); measurement quality was therefore primarily assessed via inter-rater reliability and criterion validity.

Standardised observations were conducted with 92 children nested within 23 small groups playing two 10-minute games guided by the teacher. Trained coders used a frequency-based approach to assess teachers' EF-support. Inter-rater reliability was excellent ($ICC=.90$). Child EF was assessed using the BRIEF-P (van der Heijden et al., 2013) and the Corsi working memory task (Corsi, 1972). Psychosocial problems (peer relationship problems, prosocial behaviour) were assessed using the SDQ (Goodman, 1997). Both BRIEF-P ($\alpha=.91$) and SDQ ($.60 \leq \alpha \leq .87$) were completed by the classroom teacher.

We evaluated concurrent (BRIEF-P, CORSI) and discriminant validity (SDQ) using Mplus. Variance was analysed at child level to avoid power reduction associated with partitioning variance in small samples, but group clustering was accounted for using TYPE=COMPLEX, while using FIML to handle missing data.

First, regarding concurrent validity, analysis revealed a negative association between EF-support and working memory ($r=-.21$, $p=.009$), suggesting teachers employ more strategies in groups with lower working memory capacity. Second, we found a negative association with prosocial behaviour ($r=-.33$, $p=.004$). The Prosocial subscale captures active behaviours (e.g., offering help) that likely place higher demands on EF, suggesting teachers specifically increase EF-support for students struggling with these active regulatory skills. Third, discriminant validity was supported by a lack of association with Peer relationship problems (e.g., being bullied) ($p>.70$). This confirms that the instrument specifically captures teacher strategies related to cognitive and social-behavioural regulation, distinct from broad measures of peer conflict. Finally, descriptive analyses revealed floor effects for specific items (e.g., feigning ignorance to stimulate solutions), indicating that these strategies occurred infrequently.

These findings provide preliminary evidence for the instrument's utility in capturing proximal, domain-specific teacher strategies targeting child EF. However, given the floor effects observed for specific items, further research should explore how specific task demands (e.g., game complexity)

elicit or suppress specific strategies. Optimisation of the instrument may be needed to capture the full range of EF-support across different classroom activities. We present the instrument's development, psychometrics, and its new adaptation (currently piloting).

Keywords: executive functions, teacher-child interactions, measurement, pre-school, teacher strategies

Exploring the associations between children's cognitive and emotional regulation and teacher-student relationships in kindergarten

Presentation as part of a symposium

Léa Muller, Blandine Hubert
& Youssef Tazouti

Within an attachment perspective, Teacher-Student Relationships (TSR) are described at the dyadic level in terms of three central constructs (Pianta, 1992, 2001; Spilt et al., 2022): closeness (i.e., a warm and an affectionate relationship), conflict (i.e., hostility, unpredictability, and unreliability), and dependency (i.e., possessive and clingy behaviors). According to Diamond (2013), cognitive and emotional self-regulation is supported by higher-order cognitive processes known as Executive Functions (EF), including inhibitory control, cognitive flexibility, and working memory. Inhibition is most strongly associated with externalizing behavior problems, and children exhibiting such difficulties tend to have poorer TSR (e.g., Breeman et al., 2015; Schoemaker et al., 2013). In the present study, we focus specifically on inhibition and cognitive flexibility, as they play a central role in self-regulation. Moreover, recent meta-analyses and systematic reviews have shown that TSR is associated with EF (Cumming et al., 2019; Vandenbroucke et al., 2018; Xu et al., 2024). However, several limitations remain, and recommendations have been made to extend these findings: including both performance-based and rating measures of EF, assessing both cognitive and emotional aspects of self-regulation, generating data specific to the French context, and combining both teachers' and students' perspectives on TSR. The current study addresses these gaps. Thus, we aim to investigate the associations between EF (i.e., inhibition, cognitive flexibility, and emotional control, as assessed by children, parents, and teachers) and TSR (teachers' and students' reports) in a French kindergarten sample. For TSR, teachers and students completed the STRS (Pianta, 2001) and CARTS (Vervoort et al., 2015) scales, respectively. For EF, HTKS (Hubert et al., 2020; McClelland et al., 2014) was administered to children, while teachers and parents completed the BRIEF subscales (Gioia et al., 2014) assessing inhibition, cognitive flexibility, and emotional control. Regarding students' perspectives on TSR, preliminary results indicated that inhibition and emotional control (parent reports) are negatively correlated with closeness ($r = -.34$, $p < .05$; $r = -.39$, $p < .05$, respectively). Inhibition is positively correlated with conflict, as reported by teachers and parents ($r = .55$, $p < .05$; $r = .33$, $p < .05$, respectively). Cognitive flexibility is positively correlated with conflict, as reported by teachers ($r = .46$, $p < .05$). Emotional control is also positively correlated with conflict, as reported by teachers and parents ($r = .54$, $p < .05$; $r = .36$, $p < .05$, respectively). Inhibition (students'

performance) and emotional control (teacher reports) are negatively correlated with dependency ($r = -.44, p < .01$; $r = -.48, p < .05$, respectively). Finally, children's cognitive and emotional regulation is negatively correlated with closeness and positively correlated with conflict, as assessed by teachers. These correlations are moderate to strong and are all significant. More detailed results will be presented at the conference. Regarding practical significance, promoting self-regulation skills at school is important, as low levels have been shown to predict conflictual TSR, whereas positive and close TSR can, in turn, mitigate cognitive difficulties (Portilla et al., 2014; Sankalaite et al., 2021).

Keywords: teacher-student relationships; attachment perspective; cognitive and emotional self-regulation; executive functioning; kindergarten

Prosocial behaviour in early childhood: links with closeness in teacher-child relationship and children's self-regulation

Presentation as part of a symposium

*Ana Lemos, Tiago Ferreira &
Joana Cadima*

Background. Prosocial behaviour emerges early in childhood, with evidence indicating that children engage in prosocial actions from as early as two years of age (Dunfield et al., 2011). Despite the tendency to conceptualize prosocial behaviour as a unitary construct, Dunfield and Kuhlmeier (2013) proposed a theoretical framework distinguishing three forms of prosocial behaviour—helping, sharing, and comforting—suggesting that these behaviours rely on partially distinct underlying skills and developmental trajectories (Dunfield, 2014). Previous research has documented associations between teacher-child relationship quality and children's prosocial behaviour (Ferreira et al., 2016), as well as between children's self-regulation and prosociality (Williams & Berthelsen, 2017). However, few studies have examined these associations by operationalizing prosocial behaviour in its distinct forms.

Aims. The present study aims to examine the independent and interactive associations of teacher-child closeness and children's self-regulation with the three distinct types of prosocial behavior in early childhood.

Methods. Participants. 194 children participated in this study (50,5% girls, $n = 98$) with a mean age of 45.7 months ($SD = 3.85$).

Instruments. Preschool teachers reported on children's prosocial behavior through the Early Prosocial Behavior Questionnaire (EPBQ) (Torrens & Kärtner, 2017), on children's self-regulation through the Child Behavior Rating Scale (CBRS) (Bronson et al., 1990), and on the closeness in their relationship with the children through the Student Teacher Relationship Scale (STRS) (Pianta, 2001).

Analysis. Linear mixed-effects models were conducted to examine associations between teacher-child closeness, children's self-regulation, and each form of prosocial behaviour, accounting for the nesting of children within teachers. Interaction terms were included to test whether

children's self-regulation moderated associations between teacher-child closeness and prosocial behaviour.

Results. Linear mixed-effects models accounting for the nesting of children within teachers showed that teacher-child closeness was positively associated with helping ($B = 0.53$, $SE = 0.14$, $p < .001$), sharing ($B = 0.53$, $SE = 0.15$, $p < .001$), and comforting behaviors ($B = 0.98$, $SE = 0.16$, $p < .001$). Children's self-regulation was also positively associated with helping ($B = 0.88$, $SE = 0.10$, $p < .001$), sharing ($B = 0.79$, $SE = 0.10$, $p < .001$), and comforting ($B = 0.57$, $SE = 0.11$, $p < .001$). A significant interaction between teacher-child closeness and children's self-regulation emerged for comforting ($B = 0.33$, $SE = 0.16$, $p = .041$), suggesting that the association between teacher-child closeness and comforting behaviour was stronger for children with higher levels of self-regulation. These patterns were consistent across child gender.

Theoretical and practical significance. While the cross-sectional nature of these findings calls for cautious interpretation, they contribute to the existing literature by examining associations between teacher-child closeness and distinct forms of prosocial behaviour, while also considering the role of children's self-regulation. The results highlight the importance of fostering close teacher-child relationships and supporting children's self-regulatory skills in early childhood education and care settings, with implications for teachers' practices that will be further discussed in this presentation.

Keywords: ECEC; social competence; prosocial behaviour (PB); teacher-child closeness; self-regulation

Session C: 2

Time: 9.00–10.30

Location: RUU Lucina

Symposium: Looking through the teachers' and children's eyes: Mobile eye tracking in early childhood education

Chair: Thibaut Duthois, Ghent University, Belgium

Organizer: Thibaut Duthois, Universiteit Gent

Discussant: No discussant

The role of teacher gaze in inequitable interaction opportunities in early childhood education: a multimodal conversation analysis

Thibaut Duthois, Universiteit Gent; Maribel Montero-Perez, Universiteit Gent; Piet Van Avermaet, Universiteit Gent; Ruben Vanderlinde, Universiteit Gent; Ymke Taillieu, Universiteit Gent

ECE teachers' visual gaze behavior during pedagogical interaction in under three-year-old children's groups

Susanna Isotalo, University of Helsinki

Possibilities of eye-tracking method on reflecting teachers expertise in early childhood education and care

Tuulikki Ukkonen-Mikkola, University of Helsinki; Susanna

Isotalo, University of Jyväskylä; Niina Rutanen, University of Jyväskylä

Child gaze during free play: A pilot eye-tracking study

Saswati Chaudhuri, University of Jyväskylä; Niina Rutanen, University of Jyväskylä; Susanna Isotalo, University of Helsinki; Tuulikki Ukkonen-Mikkola, University of Helsinki

Abstracts

Looking through the teachers' and children's eyes: Mobile eye tracking in early childhood education

Symposium (overarching abstract)

The theoretical premise that perception precedes pedagogical decision-making and teacher behaviour is well established in educational research (Vantieghem et al., 2020). Consequently, mobile eye-tracking technology (i.e. glasses that capture visual fixations) has gained traction as a methodological tool. However, early childhood education (ECE) remains markedly underrepresented in this line of inquiry. Moreover, although perception and eye contact constitute a bidirectional process, learners' visual experiences continue to receive limited scholarly attention, particularly in ECE settings.

Paradoxically, mobile eye tracking may be especially valuable in ECE (Isotalo et al., 2024; Ukkonen-Mikkola et al., 2024). Prior studies show that such technology not only reveals where teachers direct their attention but also which children they engage with (Chaudhuri et al., 2022). This is crucial in ECE, where equal learning opportunities cannot be assumed: instructional support is not distributed through whole-class materials such as textbooks or slides but arises primarily through brief, often incidental, one-to-one interactions (Peleman et al., 2020). Children's learning opportunities are therefore shaped by continuous micro-decisions of both teachers and children (Duthois et al., 2026). Mixed-methods mobile eye-tracking research can illuminate this decision-making "black box" by visualising the interplay of intentional and unintentional perceptions, while also offering a new, clear perspective on children's own visual experiences.

This symposium brings together the researchers applying mobile eye tracking in ECE classrooms and addresses a central question: what can teachers' and children's eye movements reveal about classroom dynamics and interaction opportunities?

Keywords: Mobile eye tracking, interactions, professional vision

The role of teacher gaze in inequitable interaction opportunities in early childhood education: a multimodal conversation analysis

Presentation as part of a symposium

Thibaut Duthois, Maribel Montero-Perez, Piet Van Avermaet, Ruben Vanderlinde & Ymke Taillieu

Eye gaze is foregrounded as a central interactional resource, as it signals participation and positions individuals as speakers or bystanders (Degutyte & Astell, 2021). Yet in early childhood education (ECE), where participation is a prerequisite for language development, research on eye gaze remains scarce. Insight into teachers' perspectives would nevertheless be valuable for understanding how children become differentially involved in interactions. Children with limited proficiency in the

instructional language or reduced exposure to that language at home tend to benefit less from interaction-rich instructional approaches than peers with stronger language skills or monolingual backgrounds (Olpińska-Szkiełko & Patera, 2025; Vanparys et al., 2024). One plausible explanation for this widening developmental gap lies in unequal access to high-quality interaction opportunities within their classrooms (Duthois & Van Oss, 2025).

This study examines children's visual involvement and the variation in their involvement during interactive book-reading activities, and analyses how teachers shape these conversational dynamics. Using negative binomial models on the full sample and Epistemic Network Analysis, alongside eye-tracking-informed quantitative and qualitative conversation analyses within a multiple case study, the study provides a fine-grained account of teacher gaze and turn-taking during interactive book reading.

First, across a large sample ($n = 80$ teachers and 575 children), results show that not every child is visually involved by their teacher to the same extent. A negative binomial model revealed three significant relationships between children's characteristics and the amount of attention they received (i.e., dwell time). Linguistically vulnerable children, defined as those with low speaking confidence, limited language skills, and a multilingual background, receive less teacher attention.

Second, in the in-depth multiple-case study across six sessions ($n = 6$ teachers and 30 children), the findings show a strong relationship between teachers' fixations and both teachers' and children's speaking turns, underscoring the central importance of gaze in conversational dynamics. Conversation analysis further indicates that children's participation is largely teacher-driven, with most child turns initiated by teachers.

Overall, the results point to interactional inequalities in early childhood education. Teachers, through unintentional processes embedded in expectations and habitual patterns, reinforce unequal involvement in teacher-child interactions and inadvertently position the linguistically vulnerable children as bystanders within their classrooms, which implies fewer opportunities for language development (Dorme et al. 2025; Rowe and Snow 2020). This study, through the use of mobile eye tracking, succeeds in opening the black box and uncovering these hidden but decisive conversational patterns in the pursuit of more equitable language-stimulating environments for every child.

Keywords: Mobile eye tracking, conversation analysis, book reading, interactions, language development

ECE teachers' visual gaze behavior during pedagogical interaction in under three-year-old children's groups

Presentation as part of a symposium

Susanna Isotalo

The purpose of the study was to better understand early childhood education (ECE) teachers' visual gaze behavior during pedagogical teacher-child interaction in under three-year-old children's groups. Teachers' visual gaze behavior plays an essential part in pedagogical interaction, both in gathering and in producing information. However, research focusing on ECE teachers' visual gaze is still relatively new area and there is no comprehensive research that informs how teachers focus their visual gaze on children during interactions in ECE. The data of the study were collected using mobile eye-tracking glasses, which provide information on focus and movements of visual gaze. The data consisted of six ECE teachers' eye-tracking video recordings, one from guided activity, and one from play from each teacher. To meet the overall purpose of the study two more specific aims were formed. First, aim was to examine teachers' visual gaze behavior toward toddlers in pedagogical interaction, and second aim was to explore the variation on expert and novice teachers' visual gaze behavior. To answer the aims of the study three sub-studies were executed. These three sub-studies combine video analysis of teachers' eye-tracking video recordings to understand the nature of teacher-child interaction and to identify children's roles in interaction. Moreover, descriptive statistics of teachers' gaze metrics were exploited to identify teachers' visual gaze. In addition, epistemic network analysis (ENA) of teachers' visual gaze behavior was utilized to examine if teachers' visual gaze behavior varied during pedagogical interactions between two different activities (guided activity), between interaction initiations (teacher and child-initiated) or between teachers with different amounts of work experience (experts and novices). Results show that interaction context, experience and interaction initiations are associated with teachers' visual gaze behavior. Moreover, during play, teachers use gaze to detect and respond to children's initiations, while in guided activities, gaze is used to monitor motivation, participation, and learning. Thus, results of this study demonstrate that teachers' visual gaze is highly situational and plays an important role in supporting child-initiated interaction, engagement, and the unique interaction dynamics of toddler groups. Study advances theoretical understanding of ECE teachers' visual gaze by showing how gaze is used to seek and share information in diverse, especially play-based, teacher-child interactions with toddlers. Practically, the findings help ECE teachers reflect on and improve the warmth, supportive, and effectiveness of their interactions by recognizing how gaze functions moment by moment across different pedagogical contexts. Understanding these differences between contexts and aims of interaction, associating their visual gaze behavior can help teachers support children's engagement and learning. Methodologically, the study introduces eye-tracking combined with qualitative analysis and network-based approaches as a novel and robust way to investigate authentic teacher-child interactions in early childhood settings, expanding research beyond structured school contexts.

Keywords: visual gaze behavior, interaction, early childhood education teacher, under three-year-old children, eye-tracking

Possibilities of eye-tracking method on reflecting teachers expertise in early childhood education and care

Presentation as part of a symposium

*Tuulikki Ukkonen-Mikkola,
Susanna Isotalo & Niina Ru-
tanen*

Teachers' visual gaze plays an important role in conducting pedagogy and interaction in ECEC. Particularly in groups of young children, teachers visually focus on both verbal and non-verbal interactions, forming the foundation of their visual gaze-related expertise. The aim of our study was to explore ECEC teachers' reflections as possibilities of eye-tracking method on teachers' expertise in Early Childhood Education and Care (ECEC). In this study, knowledge-based reasoning was examined from three domains: describing, explaining, and prediction. Combining exploration of visual gaze with think-aloud method, teachers' reflections of cognitive processes behind their gaze can be studied. Video observation has been stated to be an effective way for teachers to return and learn from their actions. Participants were six ECEC teachers from groups of children under three-year-old, who had participated in data collection implemented with eye-tracking glasses in pedagogical activities. The data includes 12 semi-structured interviews (two per teacher). Interviews were accompanied by visual observation of teachers' own eye-tracking videos, combining retrospective thinking aloud method. In analysis, discourse analysis was used. From data, three discourses, following three domains of knowledge-based reasoning, were identified: validating, advancing, and expanding expertise. Discourses demonstrate how teachers interpret toddlers' communicative behaviors and align their visual attention and reasoning with children's developmental needs. The integration of eye-tracking technology and reflective methods highlights the value of visual gaze in enhancing teachers' expertise and collaborative practice in ECEC. Theoretically, by revealing detailed reflections of ECEC teachers' visual attention and cognitive processing, this study offers valuable insights for teacher education and expertise development in ECEC. Thus, enabling more concrete statements about the cognitive structures underlying ECEC teachers' professional vision. Methodologically, the study contributes to validating the use of visual observation through eye-tracking video recordings, integrated with the think-aloud method, as a means of investigating professional vision in ECEC contexts. In practice, although eye-tracking technology may not be widely accessible, the study highlights the critical role of visual gaze in ECEC teachers' professional development and expertise. By acknowledging this, teachers can become more aware of their visual attention and thereby enhance their observational skills. Furthermore, these findings can inform the design of professional development practices that foster adaptive expertise and support teachers' observation and decision-making in ECEC settings.

Keywords: eye tracking, early childhood education

Child gaze during free play: A pilot eye-tracking study

Presentation as part of a symposium

*Saswati Chaudhuri, Niina Ru-
tanen, Susanna Isotalo & Tuu-
likki Ukkonen-Mikkola*

Currently, little is known about children's gaze in relation to their social interactions in naturalistic settings. Previously, a mobile eye-tracking case study has showed a 10-year-old child's very specific viewpoint into the setting and learning contexts, surrounding objects and people in a museum (Jung et al., 2018). Moreover, most eye-tracking studies with children have been conducted to investigate children's visual attention in relation to autism spectrum disorders in clinical settings (Sasson & Elison, 2012). Previous research with children aged 5-7 years showed the way different children responded to threat stimuli in naturalistic settings (Gunther et al., 2022). In the present pilot study, we will examine how young children (3-6-year-olds) interact with their social and material environment during free play. During free play, children will have the autonomy to decide how they would like to interact with the objects and people surrounding them. We will pilot this study with 5 children (aged 3-6 years) who will be selected based on word-of-mouth and snowball style recruitment. The pilot study plan will be submitted to the ethics review process to the Ethics Committee of University of Jyväskylä. In addition to formal procedural ethics and related informed consent procedures from children's guardians, careful attention will be paid to in-situ negotiations and ethics-in-action while conducting the study with children. Participating children will first get familiar with the Pupil labs eye-tracking glasses and then if they feel comfortable, they will wear the glasses that will be used to record eye-tracking video data. During data collection, each child wearing eye-tracking glasses will be invited to a free play session with two to three other children who will be without eye-tracking glasses to ensure more free movement and feasibility. After the eye-tracking video recording the children will be showed their own eye-tracking video recordings and their reflections and comments about the glasses will be recorded. The children without the eye-tracking glasses will also get a chance to share their experiences. Data analysis will be conducted using Pupil Labs' own analysis software. This pilot will give important knowledge on children's reactions to new eye-tracking technology, some preliminary understanding on children's gaze in free play sessions, and also, provide important insights for reflection on research ethics with young children and wearable eye-tracking technology.

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Keywords: Gaze, Eye-tracking, Social interactions, Free-play

Session C: 3

Time: 9.00–10.30

Location: RUU Juho

Symposium: **Strengthening language rich early childhood education: Insights from interventions, dialogic reading, and teacher-child interventions**

Chair: **Saskia Bruyninckx**

Organizer: **Saskia Bruyninckx, KU Leuven**

Discussant: **Jenni Ruotsalainen, University of Jyväskylä**

What can we learn from successful language interventions in ECE? A common elements analysis

Helena Taelman, ODISEE; Sven Sierens, Universiteit Gent; Kathleen Bodvin, KDG hogeschool; Jantine Spilt, KU Leuven; Bénédicte Vanblaere, Arteveldehogeschool; Pieter Verachtert, Thomas More

Children's individual differences and teachers' language-stimulating practices: exploring meaningful associations in early childhood education

Saskia Bruyninckx, KU Leuven; Helena Taelman, Odisee University College; Victoria Van Oss, Vrije Universiteit Brussel; Wendelien Vantieghem, Ghent University; Jantine Spilt, KU Leuven

Promoting language comprehension skills in at-risk children: How does the quality of teacher-child interaction matter?

Tiia Lindfors, University of Turku; Anu Kajamies, University of Turku; Anne Sorariutta, University of Turku; Mikko Haavisto, University of Turku; Aino Mattinen, University of Turku; Janne Lepola, University of Turku

Abstracts

Strengthening language rich early childhood education: Insights from interventions, dialogic reading, and teacher-child interventions

Symposium (overarching abstract)

High-quality language support in early childhood education (ECE) is foundational to children's later academic and social development (Pace et al., 2019). However, many classrooms struggle to provide consistently rich language-learning opportunities, particularly for at-risk children (Franco et al., 2019). This challenge remains a central priority for researchers, practitioners, and policymakers (OECD, 2019). Despite substantial progress in developing language interventions and documenting their effects, important gaps remain in understanding which instructional features matter most, how evidence-based practices unfold in real classrooms, and how teachers adapt their language-stimulating practices to diverse learners.

Thursday 20th of August

Addressing these gaps is essential for designing equitable and effective language-rich environments in ECE.

This symposium presents research from Finland and Belgium, bringing together three complementary studies that deepen our understanding of how to strengthen language-rich environments. First, a systematic review of common elements of effective language interventions identifies shared instructional features that characterize effective programs. Secondly, an intervention study on dialogic reading demonstrates how this practice supports children's comprehension and strengthens interaction quality. Finally, observational research on teachers' language-stimulating practices shows how children's individual differences predict the type and amount of language support they receive. Across these contributions, the symposium highlights both the core features of effective language support and the interactional processes through which such support is provided and adapted for diverse learners. An expert discussant will synthesize the presenters' findings and open a broader discussion on future research and implications for intervention and teacher professional development.

Keywords: Early childhood education, language-rich environment, teacher-child interactions, language interventions

What can we learn from successful language interventions in ECE? A common elements analysis

Presentation as part of a symposium

Helena Taelman, Sven Sierens, Kathleen Bodvin, Jantine Spilt, Bénédicte Vanblaere, Pieter Verachtert & Thomas More

Aim

Good language skills are crucial for later school success (Pace et al., 2019). Therefore, an important task for Early Childhood Education (ECE) is to support children at risk of language delays. However, the quality of language stimulation in ECE classrooms is often low to mediocre, particularly for vulnerable children (Franco et al., 2019; Peleman et al., 2020; Wright & Neuman, 2014). As a result, numerous research initiatives worldwide have aimed to improve language learning opportunities in ECE settings. The present study aims to conduct a common elements analysis of language interventions that are both effective and feasible, in order to translate research findings into practice-oriented recommendations for the field (Chorpita et al., 2005).

Method

A systematic search was conducted to identify recent successful language interventions in ECE settings published between 2015 and 2023. Ten inclusion criteria were applied to ensure that the selected interventions (1) were feasible for long-term implementation in regular classrooms in OECD countries and (2) were supported by high methodological quality research (e.g., sample size > 250), providing evidence of both implementation fidelity and effectiveness. Additionally, the intervention had to be described in sufficient detail in publications, or the intervention manual had to be accessible to the research team. The selected interventions were analysed using a generic analysis template designed to identify the main building blocks of each intervention (goals and activities; features of interaction quality; organization and support). Based on this analysis, common elements present in the majority

of interventions were identified, compiled, distilled, and interpreted by two domain experts (following Chorpita et al., 2005).

Results

The systematic search and selection process resulted in the identification of nine language interventions: Blueprint for Early Literacy (Turner et al., 2020), Read it Again (Mashburn et al., 2016), Structured Preschool Efforts in Language and Literacy (Bleses et al., 2018a), Structured Preschool Efforts in Language and Literacy (Bleses et al., 2018b), Story Talk (Wasik & Hindman, 2020), Story Champs (Petersen et al., 2022), Nuffield Early Language Intervention (West et al., 2021), Språkforståelse i barnehagen (Hagen et al., 2017), and Language in Motion (Phillips et al., 2021).

In total, 54 common elements were identified, including general teaching strategies (11), promotion of oral language (5), vocabulary development (9), narrative skills (7), early literacy (12), and implementation quality (10). Proven-effective interventions typically employ strategies that optimize both implicit and explicit language learning. They often implement extended thematic units lasting several weeks and emphasize interactive reading, complemented by playful activities that allow room for child initiative. At the same time, these interventions follow a clearly defined scope and sequence and promote modelling and scaffolding strategies. Additionally, these interventions provide goal-oriented professional development and support ECE professionals with high-quality curriculum materials, such as structured scope and sequence guidelines, soft-scripted activity plans, and monitoring tools. Practical implications will be discussed with reference to common European holistic approaches.

Keywords: language, common elements analysis, interventions

Children's individual differences and teachers' language-stimulating practices: exploring meaningful associations in early childhood education

Presentation as part of a symposium

Saskia Bruyninckx, Helena Taelman, Victoria Van Oss, Wendelien Vantieghem & Jantine Spilt

Early childhood education (ECE) teachers play a central role in supporting children's language development, yet relatively little is known about how children's individual differences shape the interactions through which this support unfolds. While prior research has focused largely on effects of teacher instructional support on children's outcomes (e.g., Cabell et al., 2013), theoretical perspectives such as evocative effects and bioecological models emphasize that different children may elicit different instructional responses from adults (Bronfenbrenner & Morris, 1998; Hartup & Laurson, 1991). Empirical work indicates that child-level factors such as language proficiency and social behavior and dyadic processes such as teacher-child relationship quality are associated with variation in teachers' practices (Justice et al., 2013; Soininen et al., 2023; Li et al., 2022). However, these factors have rarely been examined simultaneously, particularly in relation to language-stimulating (LS) practices in ECE classrooms. This study investigates how children's home language, language proficiency,

social behaviors, and teacher-child relationship quality are associated with teachers' LS practices during small-group activities.

Participants were 179 ECE teachers and 716 children in the second and third years of ECE in [country]. Teachers were videotaped during three common activities with 4 children (shared reading, snack moment, STEM activity). Twelve LS practices were coded using the LSAT, which was based on the TIRLS (Girolametto et al., 2000) (ICC = .31-.76). Teachers rated each child's language proficiency, social behavior, and teacher-child relationship ($\alpha = .72-.97$). Because LS practices were often observed infrequent and zero-inflated, regression analyses used Tweedie generalized linear mixed-effects models with children nested within teachers (Brooks et al., 2017). All predictors were included in the same model to assess unique associations with LS practices, controlling for teacher experience.

Significant associations were found between several child-level factors and teachers' LS practices. Children who spoke a home language other than the instructional language received more language-inducing feedback and language support (β 's = $-.76$ to $-.27$, $p < .05$). Children with lower language proficiency received more language support and were more often actively involved in conversations (β 's = $-.48$ to $-.27$, $p < .05$), yet received fewer open-ended questions and expansions (β 's = $.21$ -. $.13$, $p < .05$). Children who showed more shy behavior received less language-inducing feedback, multimodal support, and self/parallel talk (β 's = $-.94$ to $-.20$, $p < .01$), although teachers more often actively involved them in conversations ($\beta = .17$, $p < .001$). Prosocial behavior was linked only to less scaffolding ($\beta = -.42$, $p < .01$), whereas antisocial behavior showed no significant associations. Children whom teachers felt close to received more multimodal support and recasts (β 's = $.16$ -. $.12$, $p < .05$). Taken together, the results tentatively indicate more support for children with lower language proficiency or another home language, less language support for children showing more shy behavior, and modest benefits associated with closer relationships.

These findings highlight that teachers' LS practices are not uniformly distributed across children but occur within dynamic teacher-child interactions. Further research using moment-to-moment analyses may clarify how language support emerges from contributions of the child, teacher, and group and whether teachers' responses reflect conscious adjustments or more implicit processes.

Keywords: Early childhood education, teacher-child interactions, language support, children's individual differences

Promoting language comprehension skills in at-risk children: How does the quality of teacher-child interaction matter?

Presentation as part of a symposium

*Tiia Lindfors, Anu Kajamies,
Anne Sorariutta, Mikko Haavisto, Aino Mattinen &
Janne Lepola*

1. Aims

This intervention study investigates the effects of a listening comprehension program using dialogic reading (DR) on language comprehension in 4-year-old at-risk children and on teacher-child interaction quality based on the Teaching through Interaction framework (Hamre et al., 2013). The study advances the pedagogy of Early Childhood Education and Care by showing the potential of one-year-long intervention in terms of fostering children's language comprehension.

DR has been shown to support children's foundational language skills (Mol et al., 2009). However, limited research has examined its effectiveness on children's language comprehension skills (Grolig et al., 2020), particularly for children at risk of language development difficulties (Pillinger & Vardy, 2022). Intervention programs that support teachers' professional development are crucial for enhancing teacher-child interaction quality (Girolametto et al., 2003; Authors et al., 2019). In addition, previous research has found that children are responsive to explicit teaching of narrative comprehension strategies that support their language comprehension skills (Authors et al., 2023; Paris & Paris, 2007).

2. Methods

The data consist of intervention and control groups from a one-year DR program. Pretest identified 92 of 170 four-year-old Finnish-speaking children with below-average listening comprehension scores. Half were assigned to the intervention group and participated in 20 DR sessions, while the other half continued conventional reading as the control group. The program included professional development sessions for 21 intervention teachers.

Children's language comprehension skills were assessed through expressive vocabulary, narrative picture book comprehension, and listening comprehension measures at four time points, including a follow-up assessment six months post-intervention.

The effectiveness of the program on children's language comprehension skills was analyzed using hierarchical mixed modeling. Teacher-child interaction quality was assessed with CLASS observation tool (Pianta et al., 2008).

3. Results

DR program significantly enhanced at-risk children's language comprehension compared to the control group. The intervention group showed significantly faster development in expressive vocabulary, listening, and narrative comprehension at the posttest ($\Delta R^2_{\text{mar}} = .009-.028$, $p < .018$) and maintained gains in expressive vocabulary and narrative comprehension at follow-up ($\Delta R^2_{\text{mar}} = .014-.027$, $p < .01$). However, the effect on listening comprehension diminished at follow-up.

The quality of teacher-child interaction in the intervention group demonstrated moderate quality ($M = 3.91-5.31$, scale: 1-2 = low, 3-5 = moderate, 6-7 = high) in each three domains of the CLASS (Pianta et al., 2008).

Emotional support and classroom organization nearly reached high quality ($M = 5.21-5.33$). DR sessions with supportive and well-organized interactions facilitates meaningful language exchanges with at-risk children. Results are discussed in more detail in the presentation.

4. Practical significance of the study

Compared to conventional shared reading the current study demonstrated the effectiveness of the listening comprehension program using DR in promoting at-risk children's language comprehension assessed via visual and auditory learning modalities. The targeted interventions are important for teachers to build their pedagogical expertise in order to support children's language comprehension during high-quality interactions. Addressing children's language comprehension difficulties in early childhood is essential for later achievements in school (Silva & Cain, 2015).

Keywords: Intervention, Language comprehension skills, Teacher-child interaction

Session C: 4

Time: 9.00–10.30

Location: RUU Aino

Single papers: **Early literacy and reading development in ECEC and primary education**

Chair: **Dini Rahmawati,**
University of Jyväskylä

Language development in deaf and hard-of-hearing children aged 0 to 2

Loes Wauters, Radboud University & Royal Kentalis; Rosanne van der Zee, Tilburg University & Dutch Foundation for the Deaf and Hard-of-Hearing Child; Evelien Dirks, Tilburg University & Dutch Foundation for the Deaf and Hard-of-Hearing Child

Reading anxiety's longitudinal associations with reading skills and reading interest from second to third grade

Shengyun Cui, University of Jyväskylä; Daria Khanolainen, University of Jyväskylä; Tuire Koponen, University of Jyväskylä; Jenni Salminen, University of Jyväskylä; Minna Torppa, University of Jyväskylä

Exploring associations between teacher-rated and individual assessments of language skills in Norwegian ECEC classrooms

Elise Øksendal, University of Oslo; Veslemøy Rydland, University of Oslo; Ratib Lekhal, University of Oslo

Abstracts

Language development in deaf and hard-of-hearing children aged 0 to 2

*Loes Wauters, Rosanne van
der Zee & Evelien Dirks*

Introduction

In the Dutch nationwide longitudinal study Hello20 (Hearing loss and longitudinal outcomes) we follow deaf and hard-of-hearing (DHH) children from birth to the age of 20 (www.hello20.nl). This study aims to investigate various developmental aspects over time and identify factors predicting DHH children's development, well-being, and school performance.

For the presentation at the SIG5 conference with the theme Creating a hopeful future for every child, the focus will be on the early language development in DHH children in their first two years of life in relation to auditory development. To create equal opportunities, it is important to know which factors influence DHH children's development. Factors that have been previously identified in the language development of young DHH children are severity of hearing loss, age at fitting of hearing aids or cochlear implantation, presence of additional disabilities, and maternal education level (Ching et al., 2013; 2018, 2025; Tomblin et al., 2015, 2020).

Methods

Children and their parents are recruited as soon as they enroll in family centered early intervention (within the first year of life). Recruitment is ongoing; currently, 40 children and their parents are included. Mean age at enrollment is 9 months (sd = 5.85). Data on auditory, language, social-emotional and cognitive skills are collected at multiple stages using various parental questionnaires and child tasks. This prospective study gathers data at 18 different intervals over the course of 20 years. The presentation will focus on the language development in relation to the auditory development between the ages of 9 and 24 months.

Parents have filled out questionnaires at the ages of 9, 12, 18, and 24 months about their child's spoken language development (LENA snapshot, Gilkerson & Richards, 2008) and their auditory development (Lit-tlEars, MED-EL). In addition, data on degree of hearing loss and use of hearing devices are collected.

Results

Preliminary results of the first 33 participants (14 girls) show a significant increase in the children's language skills between the ages of 9 and 24 months. The variance in the group also increases with age. Interestingly, although the mean scores were below hearing children's scores, the growth in language skills was similar to that in hearing children (Gilkerson et al., 2016).

As expected, the measurements of language development at the different ages correlated with each other. In addition, auditory development and degree of hearing loss were related to language development at all ages. Moreover, auditory development at younger ages correlated with language development at older ages.

Differences between hearing aid users and cochlear implant users were only found at 9 and 12 months of age.

Conclusion

Data from this longitudinal study show a relation between auditory and language skills in the early stages of language development in DHH children. Further investigation within this study will focus on the role of parents and the home environment in DHH children's development.

Keywords: language, deaf, hard-of-hearing, development

Reading anxiety's longitudinal associations with reading skills and reading interest from second to third grade

Shengyun Cui, Daria Khanolainen, Tuire Koponen, Jenni Salminen & Minna Torppa

To support literacy acquisition, abundant research has focused on cognitive predictors. However, reading processes also involve affective factors. Grounded in the control-value theory of achievement emotions, this study examines a largely overlooked yet critical topic- reading anxiety and its longitudinal associations with reading skills and reading interest. Following up a Finnish sample (N=790), the 2-wave assessments administered in the school classrooms included children self-reported reading anxiety and interest, followed by reading skills tests in Grade 2 and Grade 3, respectively. Self-reports have many advantages for measuring subjective perceptions. Children's reading anxiety (i.e., uneasy feelings and body tensions in reading situations) and reading interest (i.e., valuing reading tasks as they are interesting) have been shown to be validly measured by short self-report scales with pictorial assistance. The high transparency of Finnish orthography and systematic phonics instruction support most children in mastering reading accuracy in Grade 1, and thus, reading fluency was used as the reading skill measure. Latent cross-lagged path modeling showed that poorer reading fluency in Grade 2 related to higher reading anxiety and lower reading interest in Grade 3. Multigroup analysis and Wald tests found that reading interest supported girls against developing reading anxiety. The findings developed the control-value theory's perspective of reading-related anxiety's longitudinal associations with reading skills and interest in early elementary school grades. Situated in the Finnish context featuring learning to read in a highly transparent orthography with systematic phonics instruction, no examinations in lower-elementary grades, and peer competitions being explicitly discouraged, the study suggests that the developmental associations between reading skills, interest, and anxiety emerge early on and that to prevent reading anxiety, both reading skills and interest can be useful targets.

Keywords: reading anxiety, reading skills, reading interest, control-value theory, early elementary school

Exploring associations between teacher-rated and individual assessments of language skills in Norwegian ECEC classrooms

Elise Øksendal, Veslemøy Rydland & Ratib Lekhal

Background:

Timely, accurate assessment informs intervention and supports early detection of language delays, which requires instruments with demonstrated predictive validity (Williams, 2006). Teacher assessments offer advantages because they draw on classroom observations and provide a naturalistic, contextualized view of children's skills (Vitiello et al., 2021). They may also prompt teachers to reflect on individual children's abilities and to provide tailored instruction or refer children for further evaluation when needed (Vitiello et al., 2021; Eik & Steinnes, 2019). Furthermore, teacher assessment may be especially valuable for mapping children who are difficult to assess with standardized tests (Hansén-Larson et al., 2021). However, the reliability of teacher assessment is not without question (Vitiello et al., 2021). Evaluation of children's language abilities could be influenced by teacher education and teacher experience (Antoniazzi et al., 2010), and teacher assessment can be biased by child characteristics such as ethnicity and gender (Campbell, 2015). Furthermore, the link between teacher assessments and individualized outcomes has not been thoroughly investigated in preschool settings (Vitiello et al., 2021), which is important because assessment reliability could vary depending on the child's age (Williams, 2006).

Research aims:

This study examines associations between TRAS (Tidlig registrering av språkkompetanse; Espenakk, 2011), an ecological mapping instrument developed for Norwegian Early Childhood Education and Care (ECEC) teachers, and individual language assessments. We evaluate four TRAS domains (language comprehension, linguistic awareness, word production, sentence production) measured at three time points (T1: Nov 2021; T2: May 2022; T3: May 2023). Using multiple individual language assessments (BPVS – receptive vocabulary; TROG – grammatical understanding; WPPSI – receptive and expressive vocabulary; BUS Story – expressive vocabulary), we test whether TRAS ratings predict individual child outcomes and whether associations differ by child and teacher characteristics.

Research questions:

1. Do teacher ratings predict children's individual language assessments?
2. Are these potential associations moderated by child gender and dual language learner (DLL) status for children in toddler and pre-kindergarten classrooms?
3. Are these potential associations moderated by teachers' education and experience?

Sample:

Thursday 20th of August

Data was collected from ECEC centers across five city districts in the municipality of Oslo. In the first wave, 887 children (62% DLL and 49% boys) and 324 teachers from 214 classrooms (89 toddler and 125 pre-kindergarten) in 56 ECEC centers were recruited.

Analyses:

We will estimate concurrent associations between each TRAS domain and each individual child language outcome measure at all time points (BPVS, TROG, WPPSI, and BUS Story). Analyses will be adjusted for age in months. Moderation analysis will be done to investigate the potential differences in these associations by gender and DLL status (within toddler and pre-kindergarten classrooms) and teacher characteristics (education, experience and gender).

Keywords: Teacher assessment, predictive validity, early childhood education and care, language development

Session C: 5

Time: 9.00–10.30

Location: RUU Katri

Single papers: **Early mathematics learning and development**

Chair: **Há Pham, University of Jyväskylä**

Arithmetic skill, perceived inclusion and learning mindset – cluster analysis of grade 2 students

Liina Malva, Tallinn University, Tiina Kaal, Tallinn University; Kairiine Jõesaar, Tallinn University

Linking cognitive and regulatory growth: Interrelations between numeracy, mathematical problem-solving, engineering thinking, and self-regulation in early childhood

Ornit Spektor-Levy, Bar Ilan University, Rivki Gurevich, Bar Ilan University; Taly Shechter, Bar Ilan University; Nurit Paz Baruch, Bar Ilan University

Reciprocal development of numeracy, mathematical language, and general language skills from age 2½ to 4 years

Nadine Besser, Otto-Friedrich-University of Bamberg; Sabine Weinert, Otto-Friedrich-University of Bamberg; Dorothea Dornheim, Otto-Friedrich-University of Bamberg; Simone Lehl, University of Education Weingarten

Abstracts

Arithmetic skill, perceived inclusion and learning mindset – cluster analysis of grade 2 students

Liina Malva, Tiina Kaal & Kairiine Jõesaar

In this study we focus on perceived inclusion that taps into emotion and academic self-concept. While the former considers the sense of well-being during learning, the latter focuses on learner's belief of being able to

solve difficult problems. Coping with difficulties can also affect learner's mindset. Based on Dweck (2006) a person with a fixed mindset believes that learning and development is not possible despite the effort, while a growth mindset presents the opposite. Barroso et al. (2023) have also introduced a mixed mindset. The aim of the study was to identify clusters of students considering their arithmetic skill, emotional inclusion, and academic self-concept, and explore learning mindset in regards to these clusters.

RQ1: How can grade 2 students be clustered in terms of their arithmetic skill, perceived emotional inclusion, and academic self-concept?

RQ2: Which mindsets do these students hold?

Sample. The sample consisted of 208 grade 2 students (mean age=8.2 years; 47% boys) from seven schools and 10 learning groups.

Data collection. Perception of Inclusion Questionnaire (PIQ; DeVries, 2018) subscales of emotional inclusion (3 items) and academic self-concept (3 items) were used. 4 items were adapted from the Multidimensional Mindset Scale (Ortiz Alvarado et al., 2024). Arithmetic skills were evaluated with a curriculum based 2-minute test.

Data analysis. The PIQ subscales were normally distributed, Cronbach's alpha values were .828 and .641. Sum score was calculated for the arithmetic test. K-Means Cluster Analysis with standardized means was used for clustering.

Results. A three-cluster distribution was confirmed. The first cluster included 31% of students (57% boys) who have above average arithmetic skill ($m=27.1$; $SD=4.9$), they believe they can tackle complicated mathematics problems ($m=2.8$; $SD=0.3$), and they enjoy mathematics ($m=2.9$; $SD=0.4$). The second cluster consisted of 15% of students (45% boys) whose arithmetic skill is below average ($m=15.7$; $SD=4.9$), they do not believe in their mathematics skills ($m=1.6$; $SD=0.5$), and they do not like mathematics ($m=1.5$; $SD=0.4$). The third cluster included 53% of students (41% boys) whose arithmetic skill is similar to second cluster ($m=15.8$; $SD=3.9$), but their academic self-concept is closer to average ($m=2.3$; $SD=0.5$) and emotional inclusion above average ($m=2.8$; $SD=0.2$).

In regards to learning mindset, majority of students in cluster 1 hold a growth mindset (85%) and none have a fixed mindset. Similarly, the proportion of students with a growth mindset is high in cluster 3 (78%). In cluster 2, half of the students hold a growth mindset (48%) and 10% fixed mindset. Cluster 2 also has the biggest proportion of mixed mindset (42%) compared to cluster 1 (12%) and cluster 3 (17%).

In addition to other nuances of the results, our study revealed that half of the grade 2 students have less than average arithmetic skill, but still feel some emotional and academic inclusion. That group stood out with a high proportion of growth and low proportion of mixed mindset. It can be assumed that despite lower arithmetic skill, the growth mindset supports their motivation to learn mathematics (Dong et al., 2023).

Keywords: arithmetic skill, mathematics, emotional inclusion, academic self-concept, learning mindset

Linking cognitive and regulatory growth: Interrelations between numeracy, mathematical problem-solving, engineering thinking, and self-regulation in early childhood

Ornit Spektor-Levy, Rivki
Gurevich, Taly Shechter & Nu-
rit Paz Baruch

This study investigated the interrelations among preschoolers' early numeracy skills, mathematical problem-solving abilities, engineering skills, metacognitive strategic awareness, and self-regulation during guided, play-based model-building. Although early STEM education is increasingly emphasized, limited empirical research has examined how foundational mathematical competencies and regulatory processes jointly operate within authentic engineering-related play contexts. Grounded in an integrative framework that conceptualizes early STEM competence as the convergence of domain knowledge, problem-solving processes, and regulatory mechanisms, this study aimed to (a) document preschoolers' engineering and regulatory behaviors during construction play, (b) examine correlations among numeracy, mathematical problem-solving, engineering performance, and self-regulation, and (c) test whether mathematical problem-solving mediates the relationships between numeracy and self-regulatory capacities.

Participants were 56 preschool children (aged 5–6 years) from mainstream classrooms. Children completed an individually administered Mathematical Capabilities Test assessing number recognition, counting, and mathematical problem-solving. Engineering skills, metacognitive strategic awareness, and self-regulation (regulation of cognition and regulation of emotions) were measured during a model-building guided play, in which the child was asked to reproduce several LEGO® models according to pre-defined diagrams. The children attempted to build the models, starting with the one deemed easy and gradually progressing in difficulty. Children's interactions with materials and diagrams were video-recorded and coded using a validated micro-analysis procedure. Engineering performance was indexed by model complexity, time on task, and construction quality. Correlational and mediation analyses (PROCESS Model 4), controlling for age and nonverbal intelligence, were conducted.

Findings revealed rich evidence of interactions, engineering skills, and mathematical skills. Number recognition and counting skills correlated only with regulation of emotions, while mathematical problem-solving skills correlated with engineering skills, metacognitive strategic awareness, and self-regulation. Mathematical problem-solving skills significantly mediated the effect of number recognition on the regulation of cognition and regulation of emotions. However, they did not mediate the effects of counting skills, engineering skills, and metacognitive strategic awareness. These results suggest that mathematical problem-solving serves as a pivotal mechanism linking foundational numeracy to self-regulatory development.

Theoretically, this study advances an integrative perspective on early STEM learning by demonstrating that young children's mathematical problem-solving functions as a bridge between domain-specific knowledge and domain-general regulatory processes. Rather than operating independently, early numeracy, engineering engagement, and self-regulation appear embedded within a dynamic developmental network. The findings contribute to emerging scholarship on engineering thinking in early childhood by providing direct observational evidence of regulatory and cognitive processes enacted during guided construction play.

Practically, the results underscore the importance of embedding mathematical problem-solving experiences and play-based engineering contexts in preschool settings. By engaging children in guided construction tasks that require interpretation of representations, iterative problem-solving, and reflection, educators may simultaneously foster mathematical thinking and self-regulatory capacities essential for long-term STEM success. Designing early learning environments that intentionally integrate problem-solving with opportunities for planning, monitoring, and emotional persistence may thus strengthen foundational competencies that support later academic achievement and STEM readiness.

Keywords: preschool, numeracy skills, mathematical problem-solving, engineering skills, self-regulation

Reciprocal development of numeracy, mathematical language, and general language skills from age 2½ to 4 years

Nadine Besser, Sabine Weinert, Dorothea Dornheim & Simone Lehl

Aims. The development of early numeracy skills is closely linked to other cognitive areas, particularly general and mathematical language (e.g., Peng et al., 2020). However, it is unclear (1) whether these relations are already present in very young age groups and (2) how they mutually develop over time, while controlling for further influences. This study therefore examines the reciprocal relations between numeracy skills and mathematical and general language skills, in children aged two-and-a-half to four years.

Methods. The present analyses use data (N = 389 children) from three measurement points (spring (T1) and summer (T2) of early childcare and one year later (T3)). At T1, the children were on average M = 31.46 months old (SD = 3.34, range = 24-39 months; 52.8 % male). One teacher per center was assigned to one of three intervention groups and received either two days of training in math-specific (MIG) or global (GIG) interaction quality or a short information session (CG). Children's numeracy skills were indicated by four tasks (sum score) on verbal counting, counting objects, point-to-X-task (Wynn, 1992), and give-a-number-task (Sarnecka & Carey, 2008; Wynn, 1990). Mathematical language skills were assessed using an adapted short-version of the Preschool Assessment of the Language of Mathematics (PALM; Purpura & Logan, 2015) and general language skills using an adapted version of the Test for Reception of Grammar

(TROG-D; Fox, 2020; Bishop, 2003) with additional items suitable for younger children aged two (Grimm, 2016).

A cross-lagged panel model (CLPM), controlling for children's age, basic nonverbal cognitive functioning, home language and intervention group assignment was conducted in R, to examine how children's numeracy and mathematical language skills are related in their development. Next, we added general language to the model, to cross-check whether the relations found might be attributable to general language.

Results. In the first model mathematical language skills predicted numeracy skill development both between T1 and T2 ($\beta=.17$, $p<.010$) and between T2 and T3 ($\beta=.38$, $p<.001$) and vice versa (T1–T2: $\beta=.18$, $p<.001$; T2–T3: $\beta=.19$, $p<.010$). Adding general language to the model revealed a different pattern: Between T1 and T2 general language predicted both the development of numeracy skills ($\beta=.25$, $p<.001$) and mathematical language ($\beta=.18$, $p<.010$). Numeracy skills at T1 were predictive of the development in both mathematical ($\beta=.16$, $p<.001$) and general language skills ($\beta=.19$, $p<.001$). At T2 numeracy skills predicted the development of mathematical language ($\beta=.19$, $p<.010$), but not general language skills and mathematical language was significantly associated with both the development of numeracy skills ($\beta=.21$, $p<.050$) and general language skills ($\beta=.32$, $p<.001$) from T2 to T3.

Study significance. The study expands on existing knowledge by including younger ages and simultaneously considering general and mathematical language in a model with numeracy skills. The results indicate that general language skills form an important basis for the development of numeracy and mathematical language skills as early as two-and-a-half years of age, while mathematical language appears to be particularly important for the development of numeracy skills from around the age of three.

Keywords: numeracy, mathematical language, general language, toddlers, reciprocal development

Session C: 6

Time: 9.00–10.30

Location: RUU Onni

Single papers: **Well-being in ECEC and home environments**

Chair: **Valtteri Eskola,**
University of Jyväskylä

How and when emotional demands at work lead to home-life conflict in early childhood education teachers? Examining emotional energy as mediator and self-efficacy as moderator

Yu Xu, The Education University of Hong Kong; Jin Sun, University of Macau; Jian-Bin Li, The Education of Hong Kong

Teachers' occupational well-being in the Finnish two-year pre-primary education trial: A person-oriented approach

Hilla Villanen, University of Jyväskylä; Heli Muhonen, University of Jyväskylä; Eija Sevón, University of Jyväskylä; Maarit

Alasuutari, University of Jyväskylä, Marja-Kristiina Lerkkanen, University of Jyväskylä

Kindergarten teachers' pedagogical and managerial work during wartime: Challenges and resilience

Anat Ben Shabat, Beit Berl College; Sigalit Aviram Brill, Beit Berl college; Yael Kesner Baruch, Beit Berl College

Parental burnout and parental self-efficacy in early childhood: Implications for the family learning environment and children's behavior

Anastasia Vatou, International Hellenic University; Ioanna Patrinou, International Hellenic University; Katerina Krouso-rati, International Hellenic University; Lila Kossyvaki, International Hellenic University

Abstracts

How and when emotional demands at work lead to home-life conflict in early childhood education teachers? Examining emotional energy as mediator and self-efficacy as moderator

Yu Xu, Jin Sun & Jian-Bin Li

Early childhood education (ECE) teachers are central to promoting children's healthy development, not only through instructional quality but also through their emotional availability and sensitivity in daily interactions. In kindergartens, teachers encounter high emotional demands, such as continuously managing young children's intense and fluctuating emotions and responding to parents' high expectations regarding learning and care. These ongoing emotional demands act as a chronic stressor that can gradually deplete ECE teachers' emotional energy, which may then spill over into their private lives and heighten work-life conflict. Within the work-home resources model, such spillover can be explained by changes in volatile personal resources (e.g., time, mood, and energy), whereas relatively stable key resources, such as self-efficacy, are proposed to help individuals cope more effectively with emotionally demanding work and better enable them to preserve or replenish their resources. Despite growing recognition of ECE teachers' emotional demands, empirical research rarely examines how these demands link to home outcomes over time. Most studies adopt cross-sectional or daily diary designs focused on general stress or burnout, capturing short-term daily effects but obscuring how sustained emotional demands deplete resources and impair long-term outcomes. Moreover, few have tested emotional energy as a proximal mediator. Another gap concerns the role of personal key resources: while the theory suggests that resources, such as self-efficacy, may buffer the impact of emotional demands on resource depletion, there is still little longitudinal evidence on whether self-efficacy alters the pathway from emotional demands to emotional energy among ECE teachers.

To address these gaps, this two-wave longitudinal study examined how emotional demands, emotional energy, and work–life conflict unfolded among ECE teachers.

A total of 562 ECE teachers participated in this two-wave longitudinal study conducted in October–December 2021 (Time 1) and October–December 2022 (Time 2). At both time points, participants reported their emotional demands at work, self-efficacy, emotional energy, and work–life conflict. Mplus was used to test the hypothesized moderated mediation model. The results showed that after controlling for work experience, T1 emotional energy, and T1 work–life conflict, T1 emotional demands negatively predicted T2 emotional energy, which in turn was associated with higher T2 work–life conflict. Moreover, T1 self-efficacy significantly moderated the path from T1 emotional demands to T2 emotional energy, such that emotional demands were more strongly related to lower emotional energy among teachers with lower self-efficacy. Correspondingly, the indirect effect of T1 emotional demands on T2 work–life conflict via T2 emotional energy was significant only for teachers with lower self-efficacy (95% CI [0.04, 0.15]), but not for those with high self-efficacy (95% CI [-0.04, 0.05]).

In conclusion, the current findings demonstrate that ECE teachers' emotional demands intensify subsequent work–life conflict through reducing emotional energy, but only for those with lower self-efficacy. Given that emotional demands are inherent to the ECE profession, enhancing teachers' self-efficacy and emotional energy emerges as a key strategy to buffer emotional resource depletion and work–life balance.

Keywords: emotional demands, work–life conflict, self-efficacy, preschool teachers, work–home resources model

Teachers' occupational well-being in the Finnish two-year pre-primary education trial: A person-oriented approach

Hilla Villanen, Heli Muhonen,
Eija Sevón, Alasuutari &
Marja-Kristiina Lerkkanen

Teachers' occupational well-being has become a prominent topic in early childhood education and care (ECEC) as the sector faces various challenges such as high staff turnover and heavy workloads. In recent years, many countries have implemented educational reforms aimed at improving the quality of ECEC. However, there is still limited knowledge about how teachers experience their well-being during such reforms. Utilising the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017; Demerouti et al., 2001) and prior research on occupational well-being in education (e.g. Hascher & Waber, 2021; Holmström et al., 2023), our study focused on occupational well-being among ECEC teachers (n = 409) participating in Finland's two-year pre-primary education trial (2021–2024). We examined teachers' occupational well-being through both its negative (workload, stress and burnout) and positive (engagement) aspects. The following research questions (RQs) guided our study:

1) What kinds of occupational well-being profiles can be identified among ECEC teachers participating in the two-year pre-primary education trial?; and 2) To what extent do the identified profiles differ with respect to teacher factors (qualification for pre-primary education, work experience) and contextual factors (distribution of responsibility within the personnel team, staff turnover, received support, age distribution in the child group, and number of children in need of support)?

Based on latent profile analysis of teachers' questionnaire responses, three profiles were identified: thriving teachers ($n = 250$), with low burn-out and high engagement, balanced teachers ($n = 133$), with average burn-out and engagement, and burdened teachers ($n = 26$), with high burnout and low engagement. Further studies with One-way ANOVA and Pearson chi-square tests indicated that burdened teachers were negatively affected by staff turnover, while balanced teachers had more children in need of support compared to thriving teachers. Thriving teachers received more support from their peers and meetings organised by the ECEC centre director during the trial than the two other groups.

Since the link between educational reforms and teacher well-being remains understudied, this study expands our understanding of factors that should be considered in ECEC reforms. Our results are promising because most teachers belonged to the high well-being profile of thriving teachers on their second year of the trial, emphasising the need for further research regarding educational reforms and how demands and resources change over time. Our findings suggest that during educational reforms, teachers may experience their well-being differently. Varying demands and resources can either promote or hinder occupational well-being and should therefore be carefully considered in policy implementation. Supporting teachers, stabilising staff, and managing the number of children requiring support can promote better occupational well-being during educational reforms.

Keywords: teachers' well-being, early childhood education and care, pre-primary education, educational reform, person-oriented approach

Kindergarten teachers' pedagogical and managerial work during wartime: Challenges and resilience

Anat Ben Shabat, Sigalit Aviram Brill & Yael Kesner Baruch

Kindergarten constitutes a significant educational framework in children's early years and plays a critical role in shaping their development. The quality of educational processes within kindergartens depends on human capital, interactions among staff, children, and parents, and pedagogical and managerial practices. In times of crisis, early childhood educators are expected to be a source of emotional stability and to support the whole kindergarten community in building and sustaining resilience under challenging conditions.

The events of October 7, 2023, and the subsequent war affected nearly every Israeli household, compelling early childhood educators to manage

overlapping professional and personal challenges while sustaining a sense of purpose under conditions of sustained uncertainty.

This study examined changes in pedagogical practices, managerial challenges, and coping resources among kindergarten teachers in Israel throughout the October 7th war, using a mixed-methods design. Data were collected at two time points: at the onset of the war (T1; N = 102) and approximately one year later (T2; N = 120). Participants completed an online questionnaire with closed- and open-ended items addressing pedagogical changes and resilience resources used for coping.

Findings indicate meaningful shifts in both coping strategies and professional functioning patterns of kindergarten teachers over the course of the war. At T1, an intensive response to the emergency was evident, characterized by substantial changes in environmental organization and daily routines, alongside a high prevalence of cross-domain difficulties related to work with children, parents, managerial responsibilities, and personal well-being. This period was also marked by extensive use of coping resources, as reflected in the activation of multiple coping dimensions described by the BASIC-PH model (Lahad et al., 2013). In contrast, at T2 there was a decline in the frequency of pedagogical changes and in difficulties related to parents, management, and personal aspects. Difficulties involving staff remained relatively stable, while challenges related to working with children increased. Concurrently, the use of resilience dimensions persisted—particularly social, physical, cognitive, and emotional dimensions—although the proportion of teachers reporting the use of multiple resilience dimensions decreased. Retrospective evaluations of managerial functioning indicate a perceived decline in functioning at the onset of the war compared to the pre-war period, followed by recovery and more positive self-assessments approximately one year later. These later evaluations were accompanied by resilience-related expressions emphasizing meaning, self-efficacy, and professional strength.

The findings extend current knowledge on kindergarten teachers' functioning in crises, indicating a shift from an intensive acute response (T1) marked by widespread organizational adjustments and multiple reported difficulties to more stable functioning over time (T2). However, the increase in difficulties in working with children may reflect cumulative effects of prolonged stress on both children and teachers, posing ongoing pedagogical challenges, particularly in sustaining emotionally responsive and developmentally appropriate educational practices.

Findings emphasize the importance of personal and community resilience resources in coping with war-related challenges. The study underscores the importance of targeted professional development that promotes resilience-enhancing practices during crises, alongside ongoing professional support that addresses risks of secondary trauma, compassion fatigue and professional burnout among early childhood educators.

Keywords: Resilience, Kindergarten teachers, Wartime

Parental burnout and parental self-efficacy in early childhood: Implications for the family learning environment and children's behavior

Anastasia Vatou, Ioanna Patrinou, Katerina Krousorati & Lila Kossyvaki

Parental burnout has emerged as a critical psychological condition characterized by overwhelming exhaustion related to the parenting role, emotional distancing from children, and a perceived loss of parental efficacy. In early childhood, when parental involvement is central to children's learning and socio-emotional development, parental burnout may substantially undermine the quality of the family learning environment and contribute to the emergence of behavioral difficulties. Closely related to this phenomenon is parental self-efficacy, defined as parents' beliefs in their ability to effectively manage parenting tasks, support children's development, and respond to behavioral challenges. The present study aims to examine the relationship between parental burnout and parental self-efficacy, and to explore how these constructs jointly influence the family learning environment and children's behavioral outcomes in early childhood.

A quantitative, cross-sectional research design was employed. The sample consisted of parents of preschool-aged children who completed self-report measures assessing parental burnout, parental self-efficacy, characteristics of the family learning environment, and children's behavioral difficulties. Parental burnout was conceptualized as a multidimensional construct encompassing emotional exhaustion, emotional distancing, and contrast with the previous parental self. Parental self-efficacy was examined in relation to key parenting domains, including discipline, emotional support, and daily routines. Data were analyzed using correlational analyses and regression models to investigate predictive relationships among the study variables.

The findings indicate that higher levels of parental burnout are significantly associated with lower parental self-efficacy, particularly in managing children's behavior and maintaining consistent parenting practices. Parents experiencing elevated burnout reported reduced confidence in handling behavioral problems, which in turn was linked to a less supportive and more chaotic family learning environment. Moreover, parental burnout emerged as a significant predictor of children's externalizing behavior problems, with parental self-efficacy partially mediating this relationship. Parents with stronger self-efficacy beliefs appeared more resilient to the negative effects of burnout, demonstrating more positive interactions and more effective engagement in learning-related activities with their children.

These results highlight the protective role of parental self-efficacy in mitigating the detrimental impact of parental burnout on both the family learning environment and children's behavior. From a theoretical perspective, the findings support socio-cognitive models that emphasize the interplay between parental psychological well-being and self-beliefs in shaping parenting practices. From a practical standpoint, the study underscores the need for early intervention and parent-focused support programs that aim to prevent parental burnout and strengthen parental self-efficacy. Enhancing parents' confidence and coping resources may contribute to healthier

Thursday 20th of August

family learning environments and promote children's socio-emotional adjustment during the critical preschool years.

Keywords: Parental burnout; Parental self-efficacy; Home learning environment; Early childhood; Child behavior problems

Poster session

Time: 14.30-15.30

Location: RUU 2nd floor lobby

Chair: Jenni Ruotsalainen, University of Jyväskylä

1. Playing and learning for equal opportunities and success in ECEC (PLEOS)

Nikoleta Ntola, University of Graz; Eleni Sotiropoulou, University of West Attica; Konstantinos Petrogiannis, University of West Attica; Thomas Moser, University of Stavanger; Tone Nilssen, University of Stavanger; Catharina von Trijp, University of Stavanger; Barbora Loudová Stralczynská, Charles University Prague; Petra Ristić, Charles University Prague; Silke Vögel, University of Graz; Eva Pölzl-Stefanec, University of Graz

2. Antecedents of turnover intention in early childhood educators: A three-level meta-analysis

Shuxian Lai, The Education University of Hong Kong; Juan Yan, The Education University of Hong Kong; Jianbin Li, The Education University of Hong Kong

3. Understanding teachers' willingness to enact new curriculum: Development and results of the teachers' orientation towards structured literacy reform survey

Jeanne Sinclair, Memorial University of Newfoundland; Andrew Coombs, Memorial University of Newfoundland; Tracy Critch, Memorial University of Newfoundland; Jian Song, Memorial University of Newfoundland; Mara Shaughnessy, Memorial University of Newfoundland

4. Identifying language support needs in ECEC: Potentials of a validated criterion based on observational questionnaires

Felix Hafner, University of Bamberg; Yvonne Anders, University of Bamberg

~~5. Dissertation research about the discourses constructed by early childhood education professionals about children's diversity and social inclusion.~~

Candelled

~~*Jasmin Hautsalo, University of Jyväskylä*~~

6. Physical activity during an armed conflict: a longitudinal study

Gal Elias, Bar-Ilan University; Esther Adi-Japha, Bar-Ilan University

7. Making expertise visible: Competence recognition and organizing work in interprofessional ECEC teams

Annu Göös, University of Jyväskylä; Jenni Salminen, University of Jyväskylä; Merja Koivula, University of Jyväskylä; Kaisu Peltoperä, University of Jyväskylä; Pessi Lyyra, University of Jyväskylä; Janniina Vlasov, Finnish Education Evaluation Centre (FINEEC)

8. Emergent AI literacy in early primary school: The potential of pretend play.

Marius Vogt, St.Gallen University of Teacher Education; Franziska Vogt, St.Gallen University of Teacher Education; Lena Hollenstein, St.Gallen University of Teacher Education

9. Supporting absolute beginners in early childhood education: Teachers' perceived needs and interactional challenges

Helena Taelman, Odisee Hogeschool; Esther Gheysens, Odisee Homeschool

10. Development and testing of a movement concept for the promotion of motor competence of elementary school children

Alena Seehuber, University of Innsbruck; Michaela Cocca, University of Ostrava; Martin Kopp, University of Innsbruck; Armando Cocca, University of Ostrava

Abstracts

1. Playing and learning for equal opportunities and success in ECEC (PLEOS)

Nikoleta Ntola, Eleni Sotiropoulou, Konstantinos Petrogiannis, Thomas Moser, Tone Nilsen, Catharina von Trijp, Barbora Loudová Stralczynská, Petra Ristić, Silke Vögel & Eva Pözl-Stefanec

Early Childhood Education and Care (ECEC) plays a crucial role in children's cognitive, social, and emotional development (Melhuish et al., 2015). However, access to high-quality ECEC is often limited to socially and economically advantaged communities. These inequities reinforce structural disadvantages and hinder equal opportunities, particularly for children from less privileged cultural and socio-economic backgrounds (OECD, 2025). The project Playing and Learning for Equal Opportunities and Success in Early Childhood Education (PLEOS) addresses this challenge by strengthening ECEC systems through an equity-oriented, inclusive, and diversity-sensitive perspective. Implemented across Austria, the Czech Republic, Greece, and Norway, PLEOS adopts a mixed-methods research design (Creswell & Creswell, 2022), combining an international literature review with empirical data from semi-structured interviews with key ECEC stakeholders, focus groups with early childhood educators, and an online questionnaire administered across participating countries. These data are used to inform the development of a strategy paper and to guide the design of Open Educational Resources (OER) and a blended-learning platform piloted for the professional development of early childhood educators. The project focuses on identifying key framework conditions, everyday practices, and professional support needs that shape inclusive, play-based learning in ECEC. By systematically capturing perspectives from early childhood educators and policy stakeholders across diverse national contexts, PLEOS provides a structured analytical framework for examining how inclusive play is supported or constrained within current ECEC systems. The poster presents the project's conceptual and methodological design, research instruments, and preliminary analytical dimensions, illustrating how empirical insights will be translated into professional learning resources and policy-relevant guidance materials. In doing so, PLEOS contributes to the ongoing professionalisation of inclusive, play-based ECEC across Europe.

Keywords: Early Childhood Education and Care, equity, professionalization, diversity, play-based learning

2. Antecedents of turnover intention in early childhood educators: A Three-level meta-analysis

Shuxian Lai, Juan Yan & Jianbin Li

High turnover among early childhood educators (ECEs) has become a global concern, as it compromises educational quality and increases operational costs. Reducing ECEs' turnover is critical for workforce stability and child outcomes. Since actual turnover is difficult to measure directly, research commonly focus on its strongest predictor turnover intention. Identifying the determinants of turnover intention is therefore crucial for designing effective interventions to reduce turnover rates. Although studies have widely examined different factors associated with turnover intention among ECEs, existing findings are fragmented and inconsistent. To take stock of literature, this study applied a three-level meta-analysis to estimate the association between antecedents and turnover intention and to examine factors that explain the heterogeneity. Given the wide range of factors, a more flexible model JOINT (Job, Organization, Individual, National and inTerpersonal) was used to categorize various factors instead of relying on a specific theoretical framework which often cannot cover all the factors examined in literature.

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. A systematic literature search was conducted in four electronic databases (PsychINFO, Web of Science, ERIC, and ProQuest Dissertations & Theses Global) with two sets of keywords, one related to early childhood educators (e.g., preschool teacher*) and the other related to turnover intention (e.g., turnover*, quit*). A total of 1,494 unique records were identified, and 29 articles from 26 independent studies that met the inclusion criteria were included for analysis. Based on 220 effect sizes ($N=28,841$), the antecedents were categorized into job-level factors (i.e., job demands, perceived inequality, work-family conflict), organizational-level factors (i.e., organizational culture, organizational support), and individual-level factors (i.e., demographics, commitment, coping, efficacy, emotional labor, professional identity, mindfulness, motivation, well-being, work competence, SES).

The results indicated that at the job-level, work-family conflict ($r=.282$, $p=.030$), job demands ($r=.313$, $p<.001$), and perceived inequality ($r=.407$, $p=.002$) were significantly associated with turnover intention. At the organizational-level, organizational support ($r=-.357$, $p<.001$), organizational culture (stability and control dimension; $r=-.281$, $p=.002$) and organizational culture (flexibility and discretion dimension; $r=-.410$, $p<.001$) were significantly associated with turnover intention. At the individual-level, age ($r=-.139$, $p<.001$), teaching experience ($r=-.080$, $p=.029$), commitment ($r=-.405$, $p<.001$), efficacy ($r=-.234$, $p<.001$), professional identity ($r=-.307$, $p<.001$), mindfulness ($r=-.296$, $p<.001$), well-being ($r=-.389$, $p<.001$), work competence ($r=-.344$, $p<.001$), and emotional labor ($r=.223$, $p=.029$) were significantly associated with turnover intention. However, educational level ($r=-.030$, $p=.370$), gender ($r=-.003$, $p=.817$), monthly income ($r=-.050$, $p=.560$), coping ($r=-.028$, $p=.268$), and SES ($r=-.062$, $p=.082$) were not. Results of individual moderator analyses found

that age, teaching experience, and income weakened the negative association between commitment and turnover intention, but only age and income persisted as robust moderators in the multiple moderator model.

This study integrates fragmented evidence into a systematic framework. The findings inform actionable intervention at multiple levels, providing an empirical foundation for developing retention strategies, supporting workforce stability, and improving quality in early childhood education.

Keywords: Turnover Intention, Antecedents, Early Childhood Educators, Meta-analysis

3. Understanding teachers' willingness to enact new curriculum: Development and results of the teachers' orientation towards structured literacy reform survey

Jeanne Sinclair, Andrew
Coombs, Tracy Critch, Jian Song
& Mara Shaughnessy

Introduction

High-quality literacy instruction in early childhood supports children's educational positive trajectories, while ineffective instruction can result in persistent learning gaps. The Canadian province of Newfoundland and Labrador (NL) is currently undergoing significant changes to K-6 literacy instruction, from a serendipitous, implicit approach to a structured, explicit approach. In 2025, the kindergarten reading curriculum was updated with increased emphasis on foundational skills and formative assessment. This year, grades 1 and 2 are piloting, with older grades planned for Fall 2026 onward. To support these changes, the province is providing professional learning and new materials and assessments.

Previous qualitative research suggests teachers' sensemaking and enactment of policy reforms are shaped by prior knowledge, social and professional contexts, and connection to the intent of the reform (Coburn, 2005; Spillane et al., 2002). This study is framed by these factors, overlaid with Ajzen's (1991) planned behaviour framework, which describes how personal attitudes, subjective norms, and personal control beliefs predict intention and willingness to act (Fasching et al., 2025; Yin et al., 2011). The present mixed-methods study operationalizes these factors through a multimeasure teacher questionnaire to understand each factor's explanatory power in predicting willingness to enact the new curriculum, for teachers of different grade levels and thus at different stages of sensemaking.

Methods

Development of the Teachers' Orientation Towards Structured Literacy Reform (TOTSLR) consisted of identifying and revising relevant scales and pilot testing. A targeted literature review of existing scales measuring constructs included within Coburn's (2005) sensemaking framework was completed. These constructs included: willingness to enact reform, teachers self-efficacy, perceived knowledge and expertise, orientation for literacy instruction, well-being, locus of control, and organizational climate. Items were modified to align with the specific literacy curriculum reform

taking place in NL. After revision, a small-scale pilot test of the entire survey will occur (February 2026).

The TOTSLR will be sent out to all K-6 teachers in NL (n=2000) via email with support from the NL Teachers' Association (April 2026). Confirmatory factor analysis will be conducted to identify the measurement model prior to structural equation modeling to estimate the direct/indirect associations among constructs. Model fit will be evaluated using standard fit indices, and parameter estimates will be examined to determine the strength and significance of relationships. Semi-structured interviews with teachers (n=12) who completed the survey, recruited according to a range of responses across the measure, will be used to elucidate perceived causal relationships among examined constructs.

Significance

Previous research has highlighted prior knowledge, orientations toward reform, and social context as key factors influencing teachers' willingness to enact curriculum reform. This project integrates these within the planned behaviour framework, operationalizes them through the TOTSLR survey, and models them through structural equation modelling to explore their interrelationships. The qualitative phase can augment the quantitative findings through thick description of teachers' perceptions and orientations toward the reform. Theoretically, this study can lend new understandings to the intricacy of teachers' curriculum adoption, while offering practical insights about potential avenues for professional support during educational reform.

Keywords: early literacy; literacy curriculum reform; structured literacy; teachers' sensemaking; survey research

4. Identifying language support needs in ECEC: Potentials of a validated criterion based on observational questionnaires

Felix Hafner & Yvonne Anders

Language competencies of children in Germany have been widely discussed over the last decades. Cross-sectional studies indicate a decline in language competencies among children in primary and secondary education over the past twenty years (e.g., McElvany et al., 2023; OECD, 2023). Longitudinal evidence further shows that competence differences already emerge in early childhood and increase rapidly after school entry (Skopek & Passaretta, 2021). Consequently, early childhood education and care (ECEC) institutions play a crucial role in fostering language development, particularly for disadvantaged children.

Effective language support requires systematic language assessment, as preschool teachers' intuitive judgments alone are not sufficient to reliably identify children's language support needs (e.g., Wolf et al., 2015). Beyond informing individual support measures, assessment results can also support fair and needs-based resource allocation at the organizational level.

This project aimed to develop and validate a language support needs criterion for the German language observation instrument BaSiK (Zimmer, 2019). Based on theoretical considerations and empirical findings, non-linguistic subscales were excluded. The resulting criterion counts the number of linguistic domains (morphosyntax, phonetics/phonology, lexicon, and language comprehension) in which a child scores below newly developed cut-off values.

The criterion was validated using data from over 100 kindergartens and more than 1,900 children from the organization Fröbel e.V. Consistent with previous research, boys, multilingual speakers, children receiving speech therapy, children with disabilities, and younger children showed higher levels of language support needs than their respective counterparts. Moreover, higher levels of linguistic stimulation quality in kindergartens were associated with lower language support needs.

Additional qualitative interviews with preschool teachers and center managers provide insight into potential challenges associated with teacher-based observations. The findings indicate misunderstandings as well as inconsistent use of the instrument. Moreover, preschool teachers reported concerns regarding language diagnostics, which may contribute to bias in observational data and highlight the importance of clear criteria and implementation guidance.

The proposed criterion extends the use of BaSiK by enabling both individual diagnostics and organizational decision-making. It offers a novel approach for needs-based resource distribution, allowing kindergartens with comparatively high levels of language support needs to receive targeted support and thereby contribute to more equitable language learning opportunities and improved language development in early childhood.

Keywords: language support needs, early childhood education and care, diagnostics, observational tools

5. Dissertation research about the discourses constructed by early childhood education professionals about children's diversity and social inclusion

Jasmin Hautsalo

Diversity has increased in Finland and in Finnish early childhood education and care in recent years. We know that early childhood education and care are important for children's growth and development and for example social inclusion. Therefore, the need to study diversity and social inclusion is more relevant than ever. However, there is only limited research on the topic.

This doctoral research is part of the SITES (Social inclusion and diversity in early childhood education and care) –project. The research is about the discourses constructed by early childhood education professionals about children's diversity and social inclusion. The data collection method will

be interviews, and the data will be analyzed using discourse analysis. The aim is to obtain research information on the speech patterns of early childhood education professionals in relation to children's diversity and social inclusion.

Early childhood education professionals play a major role in the everyday life of early childhood education. The way they speak is part of the everyday life of early childhood education and care, and through this process they also shape pedagogy and the quality of early childhood education and care. The information we gain from research allows us to critically examine early childhood education and participate in its development, as well as promote children's opportunities for social inclusion in the early childhood education context. This research is part of creating a hopeful future for every child.

Keywords: diversity, social inclusion, early childhood education

6. Physical activity during an armed conflict: a longitudinal study

Gal Elias & Esther Adi-Japha

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure, and it is widely recognized as essential for children's physical, cognitive, and psychosocial health. Yet, children's physical activity levels remain insufficient worldwide, and crisis events such as wars or armed conflicts may further reduce opportunities for active play and organized movement. Evidence on children's activity during crises is limited, and longitudinal research spanning periods of varying conflict intensity is especially scarce. The present three-wave longitudinal study examined how changes in armed conflict intensity relate to young children's physical activity over time, while accounting for child demographics and contextual factors such as screen time, home opportunities for physical activity, and parents' perceived danger in the home environment.

Israeli parents (N = 512 at baseline) participated across three measurement points: T1 (January 2024; moderate conflict intensity), T2 (July–August 2024; low conflict intensity), and T3 (October–November 2024; high conflict intensity). Retention remained high across waves (T2: n = 392; T3: n = 386). Children were aged 3–8 years, with mean ages of 5.8 (T1), 6.2 (T2), and 6.4 (T3). Parents reported children's physical activity via a 7-day recall proxy measure. Conflict intensity was operationalized using objective alarm data from the national emergency portal, calculated as the average number of alarms in participants' residential areas during the 30 days prior to each survey. Repeated-measures ANOVA tested time effects across key variables, followed by Bonferroni-corrected post hoc comparisons. Multilevel modeling further examined predictors of physical activity, including gender and home physical activity opportunities.

Repeated-measures ANOVA indicated significant time effects for physical activity, screen time, perceived danger, and alarm frequency. No significant time effect emerged for the home physical activity environment.

Multilevel modeling showed a main effect of time, reflecting a significant increase in physical activity at both T2 (low intensity) and T3 (high intensity) relative to T1 (moderate intensity), with no significant difference between T2 and T3. Gender was a significant predictor, with boys reported as more physically active than girls. Importantly, higher home physical activity opportunities predicted higher child physical activity levels, underscoring the role of supportive environments even under challenging circumstances.

Overall, children's physical activity did not decline as conflict intensity increased; instead, activity rose from the initial wave and then stabilized, suggesting possible adaptation over time. Findings highlight the importance of monitoring children's movement behaviors during armed conflict and point to actionable targets for intervention. Policies and parenting practices that create safe, accessible opportunities for play at home and in nearby environments may help sustain children's physical activity, and tailored efforts are particularly needed to promote girls' participation in physical activity and sport during prolonged periods of instability.

Keywords: Physical activity, Screen time, Parental concern

7. Making expertise visible: Competence recognition and organizing work in interprofessional ECEC teams

*Annu Göös, Jenni Salminen,
Merja Koivula, Kaisu Peltoperä,
Pessi Lyyra & Janniina Vlasov*

Interprofessional collaboration is a key quality factor in early childhood education and care (ECEC) (Campbell-Barr, 2018; Fabbruzzo, 2024; Oberhuemer et al., 2023). A central precondition is recognizing staff competences and expertise (Duhn et al., 2016; Sinai-Gavrilov et al., 2019). Although interprofessionalism has been widely examined in relation to roles, division of labour, and cross-boundary cooperation (Oberhuemer et al., 2023; Sun et al., 2025), less is known about how the competences of differently educated professionals are recognized in everyday team practice—a gap that is timely given recurring role conflicts and team-dynamics challenges (Anderson, 2013; Kahila et al., 2023, 2024). This study examines how competence recognition is constructed in interprofessional ECEC teams and how it links to pedagogical and organizational practices.

Competence recognition presupposes a psychologically safe, appreciative climate enabling professionals to make expertise visible (Cooper, 2023; Duhn et al., 2016; Ooms et al., 2026). Under such conditions collaboration strengthens, professional growth is supported, and division of labour clarifies (Kumpulainen et al., 2023; Oberhuemer et al., 2023; Ranta & Uusiautti, 2022). We draw on relational expertise, conceptualizing expertise as built through dialogue, reflection, and recognizing others' knowledge (Edwards, 2005, 2011). Dialogic professional conversation produces shared pedagogical understanding (Edwards, 2011; Nuttall,

2013), aligning otherwise fragmented pedagogical conceptions in ECEC (Anderson, 2013; Valkonen et al., 2024).

Research questions:

How is competence recognition constructed in interprofessional ECEC teams?

- a) How do team climate and professional conversation influence the visibility of competence?
- b) How is competence recognition linked with shared pedagogy and division of labour?

Data were collected via the Finnish Education Evaluation Centre's Valssi digital system from ECEC professionals. The measurement model was estimated using ordinal CFA (ULSMV, Mplus 8.11), with fit evaluated by RMSEA, SRMR, CFI, and TLI (Alavi et al., 2020; Chen, 2007; Myers et al., 2011). After theory-driven modifications, the validated measurement model informed a structural path model (SEM). Hypothesized paths were: (a) appreciative, trusting climate → professional conversation; (b) professional conversation → shared pedagogical understanding and competence recognition; (c) competence recognition → clearer division of labour.

Results

Both the measurement and path models showed excellent fit (e.g., RMSEA ≈ .07; CFI ≈ .98; TLI ≈ .97; SRMR ≈ .03). Findings showed a clear progression:

- psychologically safe climate predicted professional conversation;
- professional conversation increased shared pedagogical understanding and competence recognition;
- competence recognition predicted clearer division of labour.

Professional conversation acted as a central mediator, linking climate to pedagogical and organizational outcomes. Competence recognition emerged as an interactional, relational process, rather than an individual attribute.

Competence recognition in ECEC is a social process built through interaction, dialogue, and shared reflection. Dialogic professional conversation links team climate with shared pedagogy and role clarity. The findings support the relational nature of expertise in ECEC and organize earlier interprofessional challenges through the lens of relational expertise. Beyond describing challenges, this study offers operationalizable tools by framing them as processes of interaction, dialogue, and making expertise visible -showing why supporting these processes is essential for strengthening collaboration and pedagogical quality in interprofessional ECEC teams.

Keywords: interprofessional collaboration, relational expertise

8. Emergent AI literacy in early primary school: The potential of pretend play.

Marius Vogt, Franziska Vogt &
Lena Hollenstein

Artificial intelligence (AI) literacy is increasingly regarded as an essential competence for the 21st century that should be fostered from early childhood onwards (Su et al., 2023). AI literacy involves a basic comprehension of how AI works and what the underlying are and the ability to engage with AI technologies in a responsible and human-centred way (Ng et al., 2021). Little is yet known about teaching and learning approaches to AI literacy, which are developmentally appropriate for early years education. Considering the pivotal role of play in early years education (Zosh et al., 2017), a play based approach to AI literacy is seen as potentially effective.

Prior research suggests that concepts of digital transformation can be explored in kindergarten through guided pretend play (ANON. 2024). Building on this, the present pilot study investigates how AI literacy can be supported through pretend playing activities in early primary school. The study addresses two research questions: (1) Which concepts of AI do children explore during pretend play? and (2) How do teachers guide and scaffold the pretend play on the topic of AI?

A pretend play scenario was developed for guided play on the topic of AI and implemented in grade 1 and 2 primary classes. The pilot study examines videos from pretend play in three classes using multimodal interaction analysis (Knoblauch & Tuma, 2019), focusing on the concepts children explore and the teachers' guidance of the pretend play. In addition, qualitative feedback from participating teachers was collected to reflect on feasibility, perceived learning potentials, and challenges in practice. Data collection of the pilot study and analysis are ongoing, a total sample of six classes is foreseen. The pilot study led to a refinement of the pretend play scenario. Regarding the two research questions, preliminary findings indicate that pretend play can trigger both interest in AI and emergent critical understanding of AI driven systems, while the depth of learning opportunities depends also on teachers' play guidance. The poster will discuss the challenges and potential of pretend play on AI in the first grades of primary school. Additionally, conclusions are drawn for the professional development required for teachers to implement and guide pretend play on AI in primary school.

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Keywords: early digital education, pretend play, AI literacy, multimodal interaction analysis, guided play

9. Supporting absolute beginners in early childhood education: Teachers' perceived needs and interactional challenges

Helena Taelman & Esther Gheysens

In Flanders, 29% of all young children in early childhood education are multilingual learners, often entering ECE with little or no proficiency in the language of schooling (Statistiek Vlaanderen, 2026). During the first months of schooling, many of these children experience a so-called silent period, characterised by limited spoken language production. Although research shows that both comprehension and production skills in the societal language progress considerably during this phase, classroom studies suggest that absolute beginners often encounter restricted opportunities for participation and interaction (Kan et al., 2025).

The Absolute Beginners Project aims to develop a professionalization intervention for teachers to better support early multilingual learners (aged 2.5–4 years) during this initial phase of schooling. This conference contribution will report on the analysis phase of the design-based research study. Drawing on systematic classroom observations and semi-structured interviews with ECE teachers, current practices and needs of teachers in supporting these learners were identified (RQ1), as well as the interactional and instructional challenges they experience in daily classroom practice (RQ2).

Semi-structured interviews explored teachers' perspectives on children's engagement, participation, and language development, as well as their own pedagogical strategies and experienced needs (n=16). Systematic observations were conducted in 11 classrooms, using the The Language Interaction Snapshot (LISn, Atkins-Burnett et al., 2020) as an interaction-focused observation framework to document patterns of participation, interactional quality and instructional support. Observations focused on three focal children in each classroom (n=33) during key activities, including arrival routines, shared book reading, play, and early mathematics activities.

The findings reveal a nuanced interactional landscape. Teachers report a strong emphasis on emotional security, predictable routines, and relationship-building as prerequisites for participation. Multimodal communication is widely employed to support engagement, preferably in small-group settings during play, but teachers struggle with whole-group settings, especially during book reading and conversations. Interviews also reveal tensions between providing sufficient repetition and concreteness for

absolute beginners while maintaining cognitive challenge for more advanced peers. A perceived lack of child communication frustrates teachers, while visible language progress is highly satisfying.

Observations show relatively few child-initiated interactions, limited peer interaction, and scarce sustained teacher–child conversations, especially in whole-group settings. Language input is often brief and functional, with limited use of scaffolding strategies such as expansions, recasts, or focused repetition of target vocabulary. Circle time activities such as the welcome routine and book reading are often associated with reduced engagement and participation among absolute beginners, probably because of the reliance on verbal participation. In contrast, guided play, dialogic book reading in small groups and hands-on mathematics activities show higher levels of engagement and participation, even when verbal output remains limited, probably because of the enhanced multimodal support.

These findings illustrate how interactional quality, participation opportunities, and instructional design intersect in classrooms with young starting multilingual learners. They highlight the importance of making teachers' perceived needs explicit as a foundation for designing professional support that strengthens intentional interactional strategies while safeguarding engagement and emotional safety.

Keywords: Absolute beginner multilingual learners; Interactional quality; Design-based research

10. Development and testing of a movement concept for the promotion of motor competence of elementary school children

Alena Seehuber, Michaela Cocca, Martin Kopp & Armando Cocca

Latest data from active habits in youth highlight a negative trend, weekly physical activity (PA) having dropped significantly in children during the last decades. This trend was further aggravated after the COVID-19 pandemic, leading to a drop in motor skill development, as well as a rise in obesity and other physical, mental, and social issues among youth. Strategies to promote active behaviors in children are necessary, since literature has widely demonstrated the strong link between PA and improved motor skills, cognitive function, or academic performance, among several positive effects. These strategies should be implemented from early childhood, which is a critical period for establishing lifelong healthy habits. In this sense, the roles of schools and physical education (PE) are crucial because, differently than out-of-school PA, educational centers provide a safe environment and offer opportunities to be active to all kids regardless of their predisposition to sports or their family's resources. This study aimed to evaluate the effect of a 20-week movement program on changes in motor skills and body mass index (BMI). A quasi-experimental design was used, involving an intervention group and a control group (CG) formed from a sample of 127 primary school children (IG = 62; CG = 65) aged between 6 and 8 years. Data was collected using the German Motor Skills Test (DMT), a standardized and scientifically

validated battery of tests for children that includes sub-tests measuring speed (20m sprint), balance (walking backwards on a beam), coordination (consecutive sideways jumps) strength (standing long jump), and flexibility (flexion of torso). Additionally, objective height and weight were measured using stadiometer and scale. The 20-week program, carried out during regular PE classes with a frequency of twice/week, incorporated nine different fantasy-based movement worlds designed to develop motor skills by means of promoting autonomous task resolution based on imaginative stories. The CG carried out regular PE lessons as originally planned in the school curriculum. At post-test, significant improvements were observed for the IG in coordination, flexibility and strength. Results for the CG showed no changes. After controlling for pre-test variance, significant differences were found between the IG and CG in all measured variables. The findings suggest that PE programs integrating autonomous task resolution and creative environments may help improve motor skills in primary school children. Future studies may test the effect of such programs on students' perceived in-class climate and motivation towards PE and PA, which may further strengthen the promotion of active habits among children. The study contributes to the body of knowledge by confirming the links between autonomy support in PE and motor skill development in sensitive developmental phases. Additionally, it offers a direct, practical strategy to address the documented public health problem of childhood inactivity. Finally, it provides evidence for school administrators and policymakers to justify the development of PE curricula to counteract sedentary behaviors and their associated negative outcomes.

Keywords: Physical Education, Health, Intervention Program, Motor Skills

Conference dinner

Time: 18:00-23:00

Departure from Jyväskylä Harbour at 18:00. Registered participants are encouraged to arrive at the harbour 15 minutes before the departure time.

Pre-registration is required for the conference dinner!

The conference dinner ticket includes a cruise with the historic steamship S/S Suomi and a dinner at Juurikkasaari, a beautifully situated lakeside restaurant.

Alongside dinner, live music will be performed by Evelina Stolp.

Thursday 20th of August

Buses to the city center depart from Juurikkasaari at 10:30PM and 11:00PM. The bus will make two stops on the way back (Mattilanniemi/Hotel Alba and Jyväskylä city center).

Click for more information

[→ [Programme](#) → Conference dinner, Thursday the 20th of August]

Friday 21th of August

Friday

21th of August
2026

Friday 21st of August 2026

Session D

Session D: 1

Time: 9.15–10.45

Location: RUU Helena

Symposium: **Home and children's language and literacy development**

Chair: **Minna Torppa, University of Jyväskylä**

Organizer: **Minna Torppa, University of Jyväskylä**

Discussant: **No discussant**

Why do some children become avid readers while others do not? Predictors of leisure reading profiles

Emmi Ulvinen, University of Jyväskylä; Maria Psyridou, University of Oslo; Marja-Kristiina Lerkkanen, University of Jyväskylä; Minna Torppa, University of Jyväskylä

Pathways to literacy development in Grade 2: Examining the role of parental and home literacy environment factors in a low-income context

Deepti Bora, University of Jyväskylä; Jenni Ruotsalainen, University of Jyväskylä; Anna-Maija Poikkeus, University of Jyväskylä; Minna Torppa, University of Jyväskylä

Reading comprehension in Grade 4: The role of pre-reading skills, home literacy environment, parental education, and gender

Mari Manu, University of Jyväskylä; Minna Torppa, University of Jyväskylä; Marja-Kristiina Lerkkanen, University of Jyväskylä; Kati Vasalampi, University of Jyväskylä; Pekka Niemi, University of Turku

Can print exposure mitigate the effect of digital exposure on language and literacy skills via attention in young children?

Eliane Segers, Radboud University; Jenni Salminen, University of Jyväskylä; Jenni Ruotsalainen, University of Jyväskylä; Tuire Koponen, University of Jyväskylä; Marja-Kristiina Lerkkanen, University of Jyväskylä; Minna Torppa, University of Jyväskylä

Abstracts

Home and children's language and literacy development

Symposium (overarching abstract)

Friday 21th of August

Children’s language and literacy development emerges from interactions between individual skills, home literacy environments, parental factors, and broader sociocultural and technological contexts. This symposium brings together four empirical studies that trace these pathways from early childhood onwards, across diverse linguistic, socioeconomic, and media environments.

The first paper examines whether exposure to print materials can buffer potential negative effects of digital media exposure on young children’s language and literacy skills, focusing on attention as a key underlying mechanism. The second paper investigates literacy development among Grade 2 children from low-income families in India, highlighting how parental education, parents’ English literacy, and specific home literacy practices support English language and early literacy skills in a context where home and school languages differ. The third paper uses longitudinal Finnish data to examine how early language and literacy skills, parental education, parental reading skills, and home literacy environment from toddlerhood onwards predict reading comprehension. The fourth paper explores preschool predictors of leisure reading profiles at school age. The predictors include early language and literacy skills, attention, home literacy practices, and parental factors.

Together, the four longitudinal studies examine the role of home literacy environments in early language and pre-reading skills as well as reading skills at school-age. The symposium considers implications for research, educational practice, and policy aimed at fostering equitable and lasting literacy development.

Why do some children become avid readers while others do not? Predictors of leisure reading profiles
Presentation as part of a symposium

<i>Emmi Ulvinen, Maria Psyridou, Marja-Kristiina Lerkkanen & Minna Torppa</i>	Purpose
	The importance of leisure reading for the development of reading skills is well recognized, and the declining time children and adolescents use for leisure reading is a growing concern. More information is needed about what predicts different types of active leisure reading or the absence of it. In this study, our aim was to explore predictors of leisure reading profiles. Predictors included kindergarten skills (emerging literacy and oral language skills) and attention, home literacy practices (shared reading, library visits, access to books), and parental factors (parents’ reading difficulties and education). Profiles were identified based on the frequency of reading different materials in Grades 1–9 (ages 7–15) and named after their most prominent feature: Book readers, Comic readers, Online readers and Non-readers (Ulvinen et al., 2024). We also studied whether predictors were similar among boys and girls.
	Method
	Multinomial logistic regression was used to identify the predictors for leisure reading profiles derived from data of 2365 Finnish speaking participants.
	Results
	Emerging literacy skills and library visits were the most consistent predictors across profile comparisons, distinguishing Non-readers from other profiles, and Book readers from Comic and Online readers (emerging literacy skills) or only from Comic readers (library visits). Poorer vocabulary and listening comprehension skills predicted uniquely Non-readers profile, whereas more

frequent shared reading in the family uniquely predicted the membership of Book readers. The effect of parental reading difficulties was specific to comparison between Comic and Non-readers, more difficulties predicting belonging to Non-readers. Parental education was not significant predictor in any comparison. Online and Comic readers did not differ according to their predictors. Overall, the most significant predictors included both reading-related skills and home literacy practices.

Conclusion

Informing and motivating parents about the gains of supportive home literacy practices, as well as facilitating access to libraries and books, are vital strategies for supporting home literacy practices. As well important is the early support of pre-reading skills.

References

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Keywords: leisure reading, predictors, pre-reading skills, home literacy practices

Pathways to literacy development in Grade 2: Examining the role of parental and home literacy environment factors in a low-income context

Presentation as part of a symposium

Deepti Bora, Jenni Ruotsalainen, Anna-Maija Poikkeus & Minna Torppa

It is well established that home literacy environment (HLE) is associated with children's language and literacy skills. However, with most evidence stemming from developed and educated countries, there is a need to examine HLE in economically and culturally diverse contexts. Based in India, our study is in the context of children growing up in low-income families with limited formal education and learning English as a second or third language. Studying in English-medium public schools, these children face disconnect between home and school language and lack English language-rich environment. In this backdrop, the study examines associations between parental factors, literacy environment factors, and students' language and literacy skills.

Data were collected from 60 parents (paternal and maternal formal education and English literacy level) including HLE factors (book access at home, shared reading in English, shared reading in mother tongue, reading instruction at home, and tuition instruction) and their 60 children's (mean age = 6.7 years) skills in vocabulary, letter knowledge, phonological awareness, and reading skills in English were tested individually.

Path models indicated associations between parental factors, HLE factors, and children's skills. In particular, more reading instruction at

home were associated with children’s better phonological awareness, letter knowledge, and oral vocabulary skills. Joint parent-child shared reading in English was directly associated with reading skills but not with oral vocabulary skills. Private tutoring was directly predictive of children’s phonological awareness. Further, in the final model, higher level of mother’s education was associated with children’s oral language and early literacy skills. Father’s literacy in English was associated with children’s oral language skills only. Additionally, significant indirect paths emerged from mother’s education level to reading skills and oral vocabulary via shared reading and reading instruction in English.

The study indicates the role of HLE and parental factors in supporting English as a second language in a low-income context in India, thereby extending prior understanding of the associations between HLE and children’s language and literacy skills. The findings build our understanding of parental role in aiding language and literacy growth in bilingual context, especially where the home and school language are distinct. Furthermore, the findings underline the significance of joint parent-child reading instruction and shared-reading activities in enabling children’s home literacy environment. Finally, even with small sample size and correlational design of the study, its findings extend the scope of HLE factors examined in high-income countries to low-income contexts.

Keywords: home literacy environment, low-income families, English as a second language, reading skills

Reading comprehension in Grade 4: The role of pre-reading skills, home literacy environment, parental education, and gender
Presentation as part of a symposium

Mari Manu, Minna Torppa, Kristiina Lerkkanen, Kati Vasala lampi & Pekka Niemi	Background Individual differences in reading comprehension are large in Finland, as shown by international large-scale reading assessments such as PIRLS and PISA. Furthermore, a statistically significant gender difference in favor of girls exists from kindergarten onwards. To better understand both the individual and gender differences in reading comprehension, this study examines the predictive roles of children’s pre-reading skills and reading fluency, as well as parental education, parental reading skills, and home literacy environment from toddlerhood to Grade 4. Method We analyze longitudinal data involving a Finnish sample followed between Grades 1–4 (N=701), with a sub-sample followed from age 2 onwards (N=227). Children’s reading skills were assessed across Grades 1–4 and their language and pre-reading skills at ages 2, 3, 5, and 6 (vocabulary, print knowledge, letter knowledge, working memory, phonological awareness, and word reading accuracy). Additionally, parents responded questionnaires (parental education, home literacy environment, parental reading skills)
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when the children were 2 and 5 years old, and in Grades 1–4. Structural equation models are run to identify early predictors of reading comprehension and processes leading to the gender difference.

Results

Preliminary findings of children's reading performance in school-age suggested a significant gender difference as well as correlations between reading comprehension in Grade 4 and the predictors including children's skills, home environment factors, and parental skills. The predictive models will reveal the developmental associations of the predictors and their unique effects on reading comprehension.

Keywords: pre-reading skills, reading comprehension, shared reading

Can print exposure mitigate the effect of digital exposure on language and literacy skills via attention in young children?

Presentation as part of a symposium

Eliane Segers, Jenni Salminen, Jenni Ruotsalainen, Tuire Koponen, Marja-Kristiina Lerkkanen & Minna Torppa

Background

Negative effects of screen time on language and academic development have often been shown. Such effects may be mediated by attention. A recent systematic review (Jourdain et al., 2023) on 10 longitudinal studies showed six to find a negative effect of screen time on attention and four not. Interestingly, the review described that only one study examined directionality, and results seemed to indicate a path from media use to attention, and not the other way around. Levels of attention and other executive functions (EF), in turn, have been related to early language and literacy level. As reading activities at home are shown to positively predict language and literacy development, we propose that print exposure may serve as a protective factor, mitigating possible negative effects of digital exposure via EF on language and literacy.

Methods

We use the longitudinal VUOKKO dataset to examine our hypothesis in two age-groups: from waves 1 to 2 (2,5 n=227 to 3,5, n=204), and/or from waves 3 to 4 (5,5 n= 188 to 6,0, n=175). Home environment data was collected via parental questionnaires with 2 items on digital exposure, 7 on print exposure with parent and 3 on print exposure independently. Children's levels of EF (selective visual attention, working memory, behavioral self regulation, inhibitory control), language (vocabulary PPVT, and literacy skills including letter knowledge, print awareness, phonological processing, and recognition) were assessed individually, and EF also via a teacher questionnaire on self regulation.

Preliminary results

Digital exposure at T1 was positively related to vocabulary at T1-T4. Digital exposure at T3 was negatively related to letter knowledge at T1. These effects do not seem to be mediated by EF or self-regulations, as the

Friday 21th of August

correlations with digital exposure were all non-significant, except for a positive correlation between digital exposure T1 and teacher rating of self-regulation on T4. However, there were overall positive relations between EF and self-regulation, as well as between print exposure and language and literacy skills. The longitudinal associations between the constructs will be next examined using structural equation modeling.

Theoretical and practical significance

The current results add to the literature, as often, in prediction of skills, the autoregressor is not taken into account, so it is not clear whether digital exposure actually predicts development; those analyses will be conducted before the SIG5 meeting. Second, we look at print exposure as a protective factor. Overall, first results do not support negative effects of screen time, but positive effects of home environment and executive functioning on language and literacy.

Jourdren, M., Bucaille, A., & Ropars, J. (2023). The impact of screen exposure on attention abilities in young children: a systematic review. *Pediatric Neurology*, 142, 76-88. <https://doi.org/10.1016/j.pediatrneurol.2023.01.005>

Keywords: Language, Literacy, Home Environment, Screen time, Attention

Session D: 2

Time: 9.15–10.45

Location: RUU Juho

Symposium: Contemporary challenges in ECEC staff conditions and quality: Perspectives from Portugal and Sweden

Chair: Ana Lemos, Center for Psychology at the University of Porto (CPUP)

Everyday teaching in preschool: Associations between staffing conditions, language composition, and children's engagement

Lena Almqvist, Mälardalen university; Johannes Finnman, Mälardalen university

Organizer: Ana Lemos, Center for Psychology at the University of Porto (CPUP)

Developmentally appropriate practices (DAP) in ECEC: associations with work-related satisfaction and professional development among preschool teachers and assistants

Ana Lemos, Center for Psychology at the University of Porto (CPUP); Tiago Ferreira, Center for Psychology at the University of Porto (CPUP); Eva Björck, School of Education and Communication, Jönköping University, Jönköping, Sweden; Joana Cadima, Center for Psychology at the University of Porto (CPUP)

Discussant: Susanne Kuger (LMU Munich)

Beyond “more of everything”: L2-dense preschool groups, psychosocial working conditions, and staff work attitudes in Swedish ECEC

Johannes Finnman, Mälardalen university; Lena Almqvist, Mälardalen university; Jonas Welander, Mälardalen university

Abstracts

Contemporary challenges in ECEC staff conditions and quality: Perspectives from Portugal and Sweden

Symposium (overarching abstract)

High-quality early childhood education and care (ECEC) relies on the interplay between structural conditions, staff working conditions, and pedagogical practices shaping children's learning and wellbeing. Workforce challenges, including recruitment difficulties, role differentiation, and increasing diversity in child populations, underscore the need for research examining how staff conditions influence professional practice and children's experiences. Addressing this need, this symposium brings together three empirical studies linking working conditions, professional roles, psychosocial environments, and children's engagement.

The first paper examines workforce role differentiation in Portuguese ECEC settings by comparing teachers and assistants in their attitudes and beliefs about developmentally appropriate practices (DAP). It investigates how work-related need satisfaction and participation in professional development contribute to DAP, broadening understandings of workforce development and process quality. The second paper focuses on psychosocial working conditions in Swedish preschools. Drawing on the Job Demands-Resources framework, it examines whether L2-dense child groups function as risk or resource contexts and analyzes how structural characteristics relate to job demands, job resources, work engagement, and organizational commitment, with particular attention to the roles of leadership and collegial support. The third paper extends the focus from staff conditions to children's everyday experiences in Swedish preschools, by investigating how staffing stability and classroom language composition are associated with proximal classroom processes and children's engagement. Together, these contributions provide a multi-layered understanding of how working conditions operate across levels, linking professional perspectives and psychosocial environments to everyday teaching and children's engagement, and identifying actionable levers for sustainable working environments and developmentally supportive classrooms.

Keywords: ECEC; staff; work conditions; process quality; child engagement

Everyday teaching in preschool: Associations between staffing conditions, language composition, and children's engagement

Presentation as part of a symposium

Lena Almqvist & Johannes Finnman

Background. Children's engagement in everyday activity settings is central to teaching and learning in early childhood education and care (ECEC) and an important indicator of process quality. Engagement reflects children's active involvement in pedagogical activities and is associated with learning and wellbeing. It develops through interactions with peers, teachers, and materials and relies on consistent pedagogical support, responsiveness, and familiarity. When continuity is disrupted, opportunities for sustained engagement may be reduced. Many preschools face staff shortages, increasing

reliance on temporary staff. These conditions may also co-occur with contextual factors such as classroom language composition.

Aims. This study examines how classroom language composition and temporary staffing are associated with staff activity (e.g., instruction, administration), and how these relate to proximal classroom processes (e.g., teacher proximity, transitions, child-directed talk) and how they connect to children's engagement across activity settings.

Methods.

Participants. Observational data were collected during full preschool days in publicly funded Swedish preschools. The sample comprised 148 children aged 3–5 years in 11 classrooms differing in staffing composition and proportion of children with a first language other than Swedish.

Measures. Children were observed using the Child Observation in Preschool (COP), a validated time-sampling tool capturing engagement in pedagogical activities. Analyses focus on learning-related settings (free play, small-group, whole-group). Engagement was defined through the involvement dimension in COP, reflecting sustained attention, persistence, and active participation. Classroom data included child group composition and the presence of temporary staff.

Analysis. Path analysis tested a theoretically ordered network of associations among staffing conditions, classroom practices, and children's engagement. Both direct and indirect paths were estimated while accounting for covariation among predictors.

Results. Preliminary analyses suggest that temporary staffing is systematically related to how staff time and attention are distributed. Greater reliance on substitutes was associated with more instructional work and observing of children, while administrative and caring activities were lower. No direct association with children's high engagement was found, suggesting indirect pathways via staff activity. Classroom language composition (L2-density) related to both staff activity and engagement, with higher L2-density linked to more administrative work, less observing, and lower engagement. Administrative activity showed the most consistent positive association with engagement. A plausible interpretation is reverse directionality: when children are highly engaged, staff may gain greater opportunity for conduct planning, documentation, and coordination.

Theoretical and practical significance. By focusing on everyday pedagogical activity settings, the study links staffing conditions and classroom language composition to children's engagement as an indicator of learning opportunities and wellbeing. The findings inform discussions on stable and inclusive teaching conditions in linguistically diverse preschool classrooms.

Keywords: *Early Childhood Education and Care (ECEC), child engagement, teaching and learning, staffing stability, classroom language composition*

Developmentally appropriate practices (DAP) in ECEC: associations with work-related satisfaction and professional development among preschool teachers and assistants

Presentation as part of a symposium

Ana Lemos, Tiago Ferreira, Eva Björck & Joana Cadima

Background.

Improving staff working conditions and ensuring meaningful professional development (PD) opportunities in early childhood education and care (ECEC) have been associated with more positive attitudes and beliefs regarding developmentally appropriate practices (DAP). In turn, DAP are linked to higher process quality in ECEC, particularly through warm, responsive, and reciprocal interactions between children and adults. However, most research has focused on lead teachers, overlooking teaching assistants despite their critical contributions to daily pedagogical practices, caregiving, and school-family partnerships.

Aims.

This study examines differences between teachers' and assistants' attitudes and beliefs regarding DAP and explores whether work-related basic psychological need satisfaction and PD attendance are associated with these perspectives.

Methods.

Participants. Participants were 79 assistants (98.7% female, $n = 78$) and 80 teachers (100% female) working in northern Portugal. Assistants had a mean age of 48.32 years ($SD = 9.58$) and an average of 16.48 years ($SD = 10.85$) of experience as assistants, whereas teachers' mean age was 54.12 years ($SD = 8.45$), with an average of 29.66 years ($SD = 10.18$) of teaching experience.

Measures. Attitudes and beliefs about DAP were assessed using the Attitudes about Development Scale. Work-related basic psychological need satisfaction was measured with the Work-related Basic Need Satisfaction Scale. Attendance to PD was assessed using the Professional Development Questionnaire from OECD TALIS Starting Strong 2018 survey.

Analysis. Differences between teachers and assistants were examined using linear mixed-effects models, accounting for professionals' nesting within schools. Moderation analyses tested whether basic psychological need satisfaction and PD attendance altered associations between professional role and DAP dimensions.

Results.

Compared to teachers, assistants reported fewer child-centered attitudes ($B = -0.66$, $SE = 0.10$, $p < .001$) and lower-quality family-related beliefs ($B = -0.21$, $SE = 0.10$, $p = .034$). Conversely, assistants reported higher levels of teacher-directed attitudes ($B = 0.24$, $SE = 0.09$, $p = .013$), more strict and inadequate behavior management beliefs ($B = 0.88$, $SE = 0.16$, $p < .001$), and more inadequate equity-related beliefs ($B = 1.01$, $SE = 0.17$, $p < .001$). Competence support, a dimension of work-related need satisfaction, moderated the

association between role and family-related beliefs ($B=0.52$, $SE=0.20$, $p=.009$), attenuating role differences, and between role and behavior management beliefs ($B=0.73$, $SE=0.33$, $p=.030$), amplifying differences between assistants and teachers. In contrast, PD attendance was associated with lower teacher-directed attitudes across roles ($B=-0.007$, $SE=0.003$, $p=.009$).

Theoretical and practical significance.

Findings highlight professional role as a robust predictor of DAP-related attitudes and beliefs in ECEC, while underscoring the distinct roles of perceived competence and PD experiences. Results support the need for PD opportunities that explicitly include assistants to promote developmentally appropriate practices and workforce sustainability in ECEC.

Keywords: ECEC; assistants; teachers; developmentally appropriate practices (DAP); work conditions; professional development

Beyond “more of everything”: L2-dense preschool groups, psychosocial working conditions, and staff work attitudes in Swedish ECEC

Presentation as part of a symposium

Johannes Finnman, Lena
Almqvist & Jonas We-
lander

Background. Swedish early childhood education and care (ECEC) is a universal, curriculum-driven educare system where care, play, and teaching are interwoven in fast-paced, relationally dense everyday work. At the same time, the sector faces workforce strain and rising turnover, and many units now educate highly multilingual cohorts with substantial shares of children learning Swedish as an additional language. Despite policy emphasis on multilingualism as a resource, integrated evidence is limited on whether L2-dense group composition is linked to staff psychosocial working conditions and work attitudes.

Aims. Guided by the Job Demands–Resources (JD–R) model, this study tests whether two structural indicators (child group size and the proportion of L2 learners) are associated with staff job demands (quantitative demands, qualitative demands, role conflicts) and job resources (openness/voice, principal support, co-worker support), and how these in turn relate to work engagement and organizational commitment.

Methods.

Participants. Survey data were collected in autumn 2022 from 221 staff members in 66 preschool units across 18 preschools in central Sweden (urban and rural).

Measures. Principals provided unit-level structural information; staff completed validated multi-item questionnaires.

Analysis. Two path models were estimated with robust maximum likelihood and full information maximum likelihood for missing data. Indirect effects were evaluated with bootstrap confidence intervals.

Results. Child group size was not uniquely related to demands, resources, or outcomes. A higher proportion of L2 learners was associated with higher qualitative demands (greater perceived complexity and challenge) and with stronger perceived principal support. In the final work engagement model, quantitative demands were negatively related to engagement ($\beta = -.24$), whereas principal support ($\beta = .24$) and co-worker support ($\beta = .18$) were positively related ($R^2 = .19$). The proportion of L2 learners showed a small positive indirect association with engagement via principal support ($\beta_{\text{indirect}} \approx .04$), with no direct association. In the final organizational commitment model, openness/voice ($\beta = .37$) and principal support ($\beta = .33$) were positively related to commitment ($R^2 \approx .42$), while job demands showed no unique direct effects. The proportion of L2 learners was indirectly associated with commitment via principal support ($\beta_{\text{indirect}} \approx .06$).

Theoretical and practical significance. Overall, the findings suggest that L2-dense groups do not operate as a simple risk factor for staff work attitudes. Instead, they appear to come with heightened qualitative demands alongside increased leadership-related resources. Theoretically, the pattern supports JD-R propositions that resources are central for sustaining engagement and organizational attachment under demanding conditions. Practically, the results point to actionable levers in multilingual preschools: reducing quantitative overload, ensuring visible and responsive principal support, and building structured routines for staff voice and collegial support.

Keywords: ECEC, multilingual classrooms, Job Demands-Resources, work engagement, organisational commitment

Session D: 3

Time: 9.15–10.45

Location: RUU Lucina

Single papers: **Home and ECEC supporting the child**

Chair: Jenni Salminen, University of Jyväskylä

When everything falls into place: A case study of a support system in Finnish early childhood education and care
Eva Staffans, Åbo Akademi and Karlstad University; Katri Hansell, Åbo Akademi; Christel Sundqvist, Åbo Akademi and Karlstad University

Child participation in parent-teacher conferences in kindergarten
Philippe Schild, Universität Bern, PH-Institut NMS Bern, Switzerland; Tina Hascher, Universität Bern

Extending beyond interaction quality: evaluating the quality of after-school care in the Netherlands
Merel Bredeveld, Utrecht University; Bodine Romijn, Utrecht University; Ruben Fukkink, University of Amsterdam; Pauline Slot, Utrecht University

Abstracts

When everything falls into place: A case study of a support system in Finnish early childhood education and care

Eva Staffans, Katri Hansell & Christel Sundqvist

Usually, we hear about things that are inadequate or concerning in early childhood education and care (ECEC), children that do not receive the support they have the right to, or lack of educated personnel. But what if we turn it around and turn our focus from shortcomings to success stories? This case-study aims illuminate how municipal governance and practice can interact to create effective support for children with special educational needs (SEN) in ECEC. To address this overarching aim, the study is guided by the following research questions: 1) How is effective support constructed in municipal policy documents?, 2) How do professionals experience the conditions for providing support?, 3) How do parents experience the support offered to their children?, and (4) What factors emerge as common across these levels?

This study is grounded in the frame factor theory (Lundgren, 1999), emphasizing how different levels; legal, external and internal interact to shape conditions for children's support (Staffans, 2023, Öberg, 2019). In this study, the theory is used to examine how governance, resources and institutional constraints enable or limit the ways in which support for children is organised and enacted.

The study employs a case-study design (Yin, 2017) in which a Finnish ECEC centre constitutes the case. An in-depth understanding of the case is searched for by relaying on three different kinds of data from one municipality: municipality documents related to support for children with SEN in ECEC, an interview with a leader and special education teacher and an interview with parents. This triangulated approach strengthens the credibility of the findings by integrating policy, professional, and parental viewpoints. Data are analyzed thematically (Braun & Clark, 2021) with attention to both structural and relational dimensions of support.

Preliminary results indicate that a clear communicated structure at the municipal level are essential for establishing coherent support practices. The mutual trust between leader and special education teacher is crucial, especially regarding coherent collaboration. From parent's point of view, central aspects are a trust in the competence in the personnel, feeling of that their child's needs are taken into consideration and the relation connected between personal and parents. Overall, the findings indicate that both a well-defined and communicated structure at all levels and interpersonal connections are equally important. By highlighting examples of functioning support systems, this study contributes knowledge that might guide other municipalities in their effort of developing more coherent support structures. The results contribute to understanding the conditions under which support becomes both feasible and successful.

Keywords: special education, support, collaboration

Child participation in parent-teacher conferences in kindergarten

Philippe Schild, & Tina Hascher

Cooperation between school and family is important for a child's development and school career (Her-tel, 2009; Killus & Paseka, 2022; Sheridan et al., 2019). In parent-teacher cooperation, the importance of child participation is increasingly acknowledged, as studies show that child participation has positive effects on life skills, self-esteem and motivation to learn (Bonanati, 2018; Kücherer et al., 2023; Mager & Nowak, 2012; Sauerwein, 2019). However, research also indicates that children still have limited participation rights in these conferences and often act solely as informants instead of communication partners (Bonanati, 2018; Betz et al., 2019; Kücherer et al., 2022; Munthe & Westergård, 2023).

In the Swiss education system, child participation in the context of school-family cooperation is already envisaged from the early years. More specifically, kindergarten teachers are expected to include children in the annual parent-teacher conferences. This inclusion is seen as an important form of child participation (Deutschschweizer Erziehungsdirektoren-Konferenz, 2016). However, child participation strongly impacts teacher-parent conferences and comes with new challenges and requirements for teacher skills and abilities to lead a conference (Hauser & Mundwiler, 2015; Schild, 2023). For example, teachers determine the opportunities for child participation during the conference (Bonanati, 2018; Hauser & Mundwiler, 2015). However, there is hardly any empirical study on teachers' experiences and practices, specifically how kindergarten teachers implement child participation in early child education (children between 4 and 6 years of age).

The aim of our empirical study was to address this research gap and to give teachers a voice. We aimed to identify teacher practices and their experiences of conditions for success in conducting parent-teacher conferences with the participation of kindergarten children. Applying a qualitative design with twelve guided interviews with kindergarten teachers (N=12), experiences of child participation in parent-teacher conferences were identified. The interviews were audiotaped, transcribed and analyzed using the focused interview analysis method developed by Kuckartz and Rädiker (2020).

The results show that kindergarten teachers generally appreciate the opportunity for child participation in parent-teacher conferences. They aim for high levels of participation by allowing children to contribute to the communication in various ways, e.g., by showing and commenting their learning products. However, kindergarten teachers also experience challenges such as sharing attention among the communication partners (child, parent) and switching the focus between child needs and parent expectation and school topics. This study provides an initial insight into the practices of parent-teacher conferences in early childhood education.

Keywords: child participation, parent-teacher conferences, kindergarten, teacher practices

Extending beyond interaction quality: evaluating the quality of after-school care in the Netherlands

Merel Bredevelde, Bodine Romijn, Ruben Fukkink & Pauline Slot

In 2024 about 550.000 children between the age of 4 and 12 years went to after-school care in the Netherlands, though this concerns especially children from 4 to 8 years. While relaxation and social development are considered important goals of after-school care by different stakeholders, knowledge about the quality of after-school care and what contributes to positive outcomes is relatively limited. Quality is a multifaceted construct. While process quality is considered the proximal determinant of child outcomes, the environmental quality is important as well. Process quality refers to children's daily experiences in the classroom while interacting with professionals, peers and the material environment. Environmental quality captures the furnishing of the classroom and the available materials. The aim of this study is to explore which quality profiles can be distinguished and, consequently, how these are related to structural classroom characteristics, curriculum of activities, and children's well-being and behavior in Dutch after-school care.

Process quality was assessed with the CLASS Pre-K and environmental quality was measured with a scale that was specifically developed for after-school care in the Netherlands, based on the commonly used Environmental Rating Scales (ERS), in 253 classrooms. Additionally, professionals filled out a questionnaire on structural quality and activities (N = 349). Teacher interaction, peer interaction, task orientation, and behavior regulation of individual children were coded from video materials using the inCLASS (N = 1694). K-means cluster analysis was conducted to explore and compare different after-school care profiles.

The cluster analysis identified four different quality profiles in classrooms: 1) low interactions and mid on environmental quality; 2) mid/high interactions and low on environmental quality; 3) overall mid quality; 4) overall high quality. Further, preliminary analyses revealed that after-school care groups in profile 4 were larger in group size. Also, there were less 4-year-olds in these groups. In addition, individual observations showed that children in these groups had more positive interactions with teachers, less conflicts with teachers and peers, and these children showed higher engagement. After-school care groups of generally lower quality provided relatively little activities focused on play, math (e.g., boardgames) and citizenship. At the same time, the variety and amount of activities offered in after-school care have depleted over the last years, based on self-reports by teachers and observations.

These preliminary results provide an initial holistic view on quality extending beyond the quality of interaction. These results also indicate that the way age groups in after-school care are organized, might play a role in the quality of after school care. After school care focused on relaxation may meet the needs of the youngest, while older children may need a balance of relaxation and stimulation of competencies. Further research is needed to explore the

Friday 21th of August

interplay of different quality aspects and their relation with (child) outcomes to increase our understanding of what constitutes high quality in after-school care.

Keywords: After-school care, Process quality, Structural quality

Session D:4

Time: 9.15–10.45

Location: RUU Katri

Single papers: **Career entry and professional development in ECEC**

Chair: **Dini Rahmawati, University of Jyväskylä**

Can we professionally develop early childhood education teachers' visual attention?

Thibaut Duthois, Universiteit Gent; Maribel Montero-Perez, Universiteit Gent; Piet Van Avermaet, Universiteit Gent; Ruben Vanderlinde, Universiteit Gent

Career entry of young professionals in preschools – The role of personality

Hanna Lorenzin, University of Innsbruck

Cancelled

~~**How preschool teachers' retrospective parental upbringing experiences shape process quality through orientations considering child characteristics**~~

~~*Nicole Voss, Freie Universität Berlin; John Sideris, University of Southern California; Katharina Kluczniok, Freie Universität Berlin*~~

Lasting effects of professional development interventions in toddler classrooms on child outcomes: the mediating role of interaction quality

Simone Lehl, Educational University Weingarten; Marina Kammermeier, Educational University Weingarten; Nadine Besser, University of Bamberg; Anja Linberg, German Youth Institute; Julia Zuber, German Youth Institute; Hans-Guenther Rossbach, University of Bamberg; Sabine Weinert, University of Bamberg

Abstracts

Can we professionally develop early childhood education teachers' visual attention?

Thibaut Duthois, Maribel Montero-Perez, Piet Van Avermaet & Ruben Vanderlinde

Teacher noticing, refers to teachers' ability to attend to and interpret relevant events in instructional contexts (Larison et al., 2025). Advances in mobile eye-tracking technology have expanded methodological possibilities in this field. However, early childhood education (ECE) remains notably

underrepresented, with limited research on both teacher noticing and eye-tracking applications (Isotalo et al., 2024; Keskin et al., 2024).

Prior research by the authors revealed unequal attention distribution, showing that linguistically vulnerable children those with low speaking confidence, multilingual backgrounds, and limited language development received less teacher gaze (Authors, 2025). Across educational contexts, research consistently demonstrates inequalities in how teachers distribute their attention over children (Chaudhuri et al., 2022; Cortina et al., 2015; Isotalo et al., 2024). Yet, to date, no studies have examined whether or how professional development might alter these attention patterns.

This study employed mobile eye-tracking in a quasi-experimental design to examine the effects of a video-based professional development intervention (PDI) on teachers' noticing during language-stimulating interactions (LSI). Specifically, it addressed two research questions:

1. What is the effect of a video-based PDI on ECE teachers' noticing during LSI?
2. What is the effect of teachers' participation in the PDI on children's received attention?

A large-scale dataset was collected, comprising 80 teachers, 575 children, and 2,300 minutes of gaze data. Forty-nine teachers participated in a six-month blended video-based PDI with pre- and post-intervention eye-tracking; 31 teachers formed the control group with mobile eye tracking during the post data collection. Eye tracking was conducted using Tobii Pro Glasses 3 during 20-minute sessions in a one-on-five setting. Teachers rated each child's speaking confidence, language development, social skills, and socio-economic background using a four-color-coded scale.

For Research Question 1, paired- and independent-samples t-tests compared pre- and post-intervention data and group differences (i.e. experiment and control group) using the Gini coefficient, a measure of (in)equality (0 = perfectly equal distribution, 1= total unequal distribution). For Research Question 2, negative binomial models were used to predict children's received attention (dwell time) based on their individual characteristics and the interaction of these characteristics with teachers' participation in the professional development (experimental vs. control condition).

Results showed a significant post-intervention decrease in Gini coefficients among experimental teachers, indicating a more equal distribution of attention. Comparisons with the control group suggested that this change was attributable to the PDI. Significant interaction effects within the negative binomial model revealed that, among teachers who completed the PDI, the influence of children's speaking confidence and home language on received attention was significantly reduced. Thus, the mechanism of inequity identified in the authors' earlier research appeared to reduce as a result of the intervention, which wasn't the case in the control group.

These findings demonstrate that video-based professional development can foster greater equity in teachers' noticing during language-stimulating interactions. However, these insights go further: it demonstrates, for the first

time, that intensive professional development can impact the teachers' visual attention, previously considered largely unconscious (Goldberg et al., 2021) and therefore potentially not amenable to professional development.

Keywords: Teacher noticing, equity, language development, professional development

Career entry of young professionals in preschools – The role of personality

Hanna Lorenzin

A key component for creating a hopeful future for every child is ensuring a skilled workforce in early childhood education institutions. However, two thirds of the European countries struggle with a shortage of skilled workers in the sector of early childhood education and care (ECEC) and have trouble recruiting and retaining staff (Oberhuemer & Schreyer, 2025). For example, in Austria the number of young people in vocational training has increased in the last twenty years, but currently only 42.8% of those trainees intend to work in the ECEC sector. This low transition rate contributes to the skill shortages in Austria (Löffler et al., 2022). The initial professional education for preschool teachers in Austria takes place at vocational colleges for early childhood pedagogy ("Bildungsanstalt für Elementarpädagogik", BAfEP; Eichen & Krenn-Wache, 2020). Against this backdrop, this dissertation project aims to investigate which career paths are chosen by students in their final year of school at the BAfEP and which factors influence these decisions. Drawing on the vocational interest theory by Holland (1997), personality traits, such as vocational interests, are examined closely. The vocational interest theory explains how the match between personal characteristics and characteristics of the vocational environment (person-environment fit) are leading to satisfying career decisions, career success and stable career paths (Holland, 1997). However, career paths and career entries are not only affected by those characteristics, but also by the preschool teams that the professionals join. A preschool team can support the professional for example through meeting their individual demands for help or by being open for their new ideas. Yet, a team can also be challenging when conflicts occur or disagreements on pedagogical issues arise (Nachtigall et al., 2021; Welzer, 1993).

Therefore, further research questions are as follows:

- How do personality traits of professionals influence their career entry into the ECEC sector?
- How do interactions and dynamics within the preschool team influence professionals career entry into the ECEC sector?

A mixed-methods design is planned for this project, consisting of two quantitative surveys and one qualitative survey (Kaiser-Kratzmann, 2025). During the first wave (02-03/2026), students in their final year of school at the BAfEP in Austria are asked to complete a paper-pencil questionnaire focusing on vocational interests, selected personality traits and career aspirations. The results of the first wave will be presented at the conference, answering the research question on the desired career paths and the influence of various factors on this decision of future preschool teachers. The second

quantitative survey (winter 2026/27) will take place six to nine months after the previously surveyed graduates have started their careers. Those who have not started working in the ECEC sector will also be surveyed. In the final qualitative survey (summer 2027), guided interviews will be conducted with selected young professionals in order to gain a more detailed picture of their experiences with challenges and achievements at the start of their careers in the ECEC sector.

Keywords: career entry, personality, vocational interests, team, preschool

How preschool teachers' retrospective parental upbringing experiences shape process quality through orientations considering child characteristics

Nicole Voss, John Sideris
& Katharina Kluczniok

While structural, orientational, and process quality are well-researched, preschool teachers' biographical experiences especially their self-witnessed parental upbringing have received little attention despite their potential relevance for understanding quality in Early Childhood Education and Care (ECEC). High quality in pedagogical action and in pedagogical orientation are conceptualized as interplay between private and professional experiences (Voss & Kluczniok, 2025). From this perspective, preschool teachers' self-witnessed upbringing experiences become conceptually relevant in ECEC quality research and preschool teachers' professionalization. Furthermore, former study results show the importance of children's characteristics as being predictive of better quality in classrooms (i.a., Paschall et al., 2022). Voss and Kluczniok's (2025) revised structural-process model of quality in ECEC is used as an analytical guide. Aims: This paper examines a) the associations between preschool teachers' retrospective upbringing experiences, orientations about punitive rearing and their provided quality at the Target-Child Level, while b) taking into account child characteristics (gender and language at home) as additional predictors of process quality at Target-Child Level. Methods: A Multilevel Structural-Equation Model (MSEM) was analyzed, using data from Germany (n = 145 professionals from 24 child care centers). Process quality was assessed using Aqua-Zk (Process Quality at Target-Child Level; Kluczniok, Resa & Voss, 2024) to measure quality in ECEC in the domains of language and social-emotional support at the target-child level. Based on existing instruments (i.a. Reitzle et al., 2001; Schumacher et al., 2000;) we developed a novel measure of preschool teacher's parental upbringing (REff- Retrospective Upbringing Experience of Early Childhood Professionals Scale) with three distinct but correlated factors (warmth, control, and hostility). Initial measure of the quantified biographical data on these three factors suggest at least a good model fit (CFA: $X^2 = 61.68$, df 51, $p = .15$; CFI = .98; RMSEA = .05; SRMR = .05). Results: Preliminary findings suggest significant direct associations between nearly all three dimensions (e.g., control – quality $\beta = -.51$, $p < 0.01$; punitive orientations – quality $\beta = -.308$, $p = .07$; warmth – punitive orientations $\beta = .24$, $p = .009$). Child characteristics are associated with less quality for boys ($\beta = -.12$, $p < .01$) and better quality for German speaking children at home ($\beta = .20$, $p < .01$). The MSEM model shows a very good fit (MSEM: $X^2 = 37.27$, df 41, $p = .64$; CFI = 1.00; TLI = 1.00; RMSEA = .00; SRMR Within = .00, SRMR Between =

.064). The study demonstrates the potential of preschool teachers' parental upbringing experiences as an overlooked predictor of current orientations and pedagogical processes and their links to ECEC quality research. Practical significance: Preschool teachers' parental upbringing represents a distal but influential factor explaining variability in classroom quality. Further research should examine when this influence supports or hinders interaction quality. Guided biographical reflection in training—a recognized ECEC professional competency—may help teachers gain awareness of these influences, though benefits and risks require investigation. Preschool teachers' parental upbringing warrants systematic inclusion in future ECEC quality research to understand how biographical background shapes teacher-child interaction quality.

Keywords: ECEC quality, biographical experiences, preschool teachers upbringing, self-reflective practice

Lasting effects of professional development interventions in toddler classrooms on child outcomes: the mediating role of interaction quality

Simone Lehl, Marina Kammermeier, Nadine Besser, Anja Linberg, Julia Zuber, Hans-Guenther Rossbach & Sabine Weinert

Aims. Research consistently indicates that high-quality early childhood education and care (ECEC) contributes to long-term positive developmental outcomes for children. Although the quality of ECEC settings varies considerably, targeted professional development for early childhood educators has proven a powerful strategy for enhancing process quality and improving children's learning and development. However, empirical evidence remains limited for the toddler age range, and only few studies have employed longitudinal designs. Moreover, there is some indication that initial intervention effects may diminish over time. This study examines (1) the lasting effects of general and domain-specific professional development interventions in toddler classrooms on children's development between ages two and six years, and (2) the mediating role of general and domain-specific interaction quality.

Methods. Within a longitudinal intervention study, we assessed numeracy and language skills of $N = 389$ children who were $M = 31.46$ months ($SD = 3.34$, range: 24–39 months) old at T1 (53.8% boys) at four measurement points up to age six via standardized tests (give-a-number, verbal counting, mathematical language, vocabulary, grammar reception). Teachers (one per center) were assigned to one of two intervention groups, receiving two days of intensive training on math-specific (MIG) or general (GIG) interaction quality, or to the control group (CG). Interaction quality was assessed via video coding of a semi-standardized play and book-reading session of the caregiver with up to three children in the domains "responsive learning support" ($\alpha T1: .84$; $\alpha T2: .87$), "language support" ($\alpha T1: .86$; $\alpha T2: .89$) and "math support" ($\alpha T1: .75$; $\alpha T2: .86$). To examine whether the relation between intervention group and changes in children's outcomes over time is mediated by interaction quality, structural equation models with mediation analyses were conducted.

Results. Linear mixed models for each child outcome, controlling for age, revealed significant interaction effects of intervention group and time point for numeracy skills, mathematical competencies and mathematical language. Children in the MIG showed higher numeracy skills than the CG at T2 and T3, better mathematical competencies than the CG and GIG at T3, and better mathematical language than the CG and GIG at T2. For receptive grammar and vocabulary, only main effects of time point were found. No intervention effects emerged at T4.

Structural equation modelling for each child outcome, including each interaction quality indicator as mediator in separate models, revealed an indirect effect only for receptive grammar at T2. While the GIG had a direct effect on receptive grammar at T2, the effect of the MIG was mediated via “math support”. Moreover, the effect of the GIG on children’s receptive grammar at T3 was mediated via language competencies at T2.

Study Significance. Findings suggest domain-specific effects, with math-focused professional development primarily improving math-related child outcomes. However, mediation through interaction quality was only partially supported and emerged mainly in the language domain. Results highlight targeted benefits but limited evidence for sustained or fully mediated intervention mechanisms.

Keywords: professional development, interaction quality, numeracy, toddler classroom, longitudinal study

Session D:5

Time: 9.15–10.45

Location: RUU Aino

Single papers: **Learning and problem-solving**

Chair: **Hilla Villanen, University of Jyväskylä**

How children coordinate talk, action, and attention: A process-oriented study of collaborative problem solving

Timo Reuter, RPTU University Kaiserslautern-Landau; Michelle Gäckle, RPTU University Kaiserslautern-Landau; Jonas Schäfer, University of Education Schwäbisch Gmünd; Miriam Leuchter, RPTU University Kaiserslautern-Landau

Mapping the landscape of research on early problem solving: A bibliometric review

Joris Van Elsen, University of Antwerp; Lieven Verschaffel, KU Leuven; Sven De Maeyer, University of Antwerp; Joke Torbeyns, KU Leuven

The role of executive functions in children’s use of private speech during early problem-solving

Michelle Gäckle, RPTU University Kaiserslautern-Landau; Jonas Schäfer, University of Education Schwäbisch Gmünd; Miriam

Leuchter, RPTU University Kaiserslautern-Landau; Timo Reuter, RPTU University Kaiserslautern-Landau

Abstracts

How children coordinate talk, action, and attention: A process-oriented study of collaborative problem solving

Timo Reuter, Michelle Gäckle, Jonas Schäfer & Miriam Leuchter

Aims

Collaborative problem solving in early childhood can be understood as a co-ordinated, inherently multimodal form of social interaction in which children align talk, action, and attention toward a shared goal. However, much of the existing research operationalizes collaboration primarily through verbal indicators, potentially underestimating collaborative competence in young children, whose thinking and interaction are strongly grounded in embodied and material engagement. Moreover, collaboration is often treated as stable characteristic, despite theoretical accounts emphasizing its dynamic and processual nature. The present study adopts a fine-grained, time-sensitive perspective to examine (a) the prevalence and dimensions of collaboration, (b) its temporal development, and (c) its relation to task solutions.

Methods

Participants were 86 dyads of first- and second-grade children ($M_{age}=7.30$, $SD=0.74$; 52% male). Dyads worked on two construction-based problem-solving tasks: (a) building a bridge from wooden blocks that fully spans a river and allows a ship to pass underneath, and (b) constructing a gear system that makes two propellers rotate at different speeds and in opposite directions. In each task, children received complementary pieces of task-relevant information and materials, creating interdependence. Tasks were administered in classrooms by trained research assistants; task order was counterbalanced, and each task lasted up to ten minutes. Dyadic interactions were video-recorded, segmented into 10-second intervals, and rated on three dimensions of coordinated interaction – verbal, action-based (coordination of object-related actions), and gaze/attention coordination – using an ordinal scale (0 = no interaction, 1 = one-sided or weakly coordinated interaction, 2 = coordinated interaction). Three trained coders achieved good interrater reliability (Cronbach's $\alpha > .70$). Solution quality was coded at task completion using ordinal task-specific criteria. Analyses focused on descriptive distributions, temporal patterns across task phases, and associations between collaboration and solution quality at the dyadic level.

Results

First, coordinated interaction occurred frequently but differed markedly across dimensions and tasks. Verbal collaboration was most prevalent (bridge: 44% of intervals; gears: 49%), whereas coordinated action (12%;19%) and gaze (8%;14%) were less frequent. Second, analyses of temporal dynamics revealed systematic process patterns. When considering the

three dimensions of coordinated interaction in total, the proportion of intervals with coordinated collaboration was highest during early phases (bridge: 54%; gears: 62%) and declined gradually over time in both tasks (bridge: 47% of late-phase intervals; gears: 51%). Third, no association of coordinated interaction with solution quality was found for the bridge task. For the gear task, a small positive trend emerged ($p=.17$, $p=.12$), indicating that groups engaging in more coordinated interaction tended to produce higher-quality solutions.

Significance

Our findings highlight collaboration as a multimodal, task-specific, and dynamic process rather than a uniform or linearly effective factor in problem solving. They suggest that the functional role of collaboration in early childhood depends less on its overall amount and underscore the importance of considering collaboration as a process that varies across tasks and over time. For educational practice, this implies that children's collaborative competence should not be inferred from performance in a single task or moment, but requires task- and process-sensitive perspectives.

Keywords: Collaborative problem solving, Multimodal interaction, Process-oriented analysis, Early elementary education, Construction-based tasks

Mapping the landscape of research on early problem solving: A bibliometric review

Joris Van Elsen, Sven De Maeyer & Joke Torbeyns

Aims

Problem solving is an important 21st century skill with early childhood providing a critical window to support the development of problem-solving competencies. However, most theoretical and empirical studies on problem solving focus on older students. Research on problem solving in children from pre-primary education through Grade 3 (3-8 years old) has received considerably less attention. Moreover, the existing research is fragmented across different research fields.

The presented bibliometric review aims to provide a comprehensive overview of early problem-solving research across disciplines by mapping the research fields in which it is studied, examining sample diversity, and identifying the types and dimensions of early problem solving.

Methods

To map scientific publications on early problem solving, a systematic search was conducted in Scopus, Web of Science, ERIC, PubMed, and Sociological Abstracts. Records including "problem solving" in title or author keywords were screened with ASReview and eligible sources were classified using a document-level global mapping approach based on the OpenAlex classification system. Age and diversity of the samples and target population were charted manually. Types of problem solving were extracted from titles, keywords, abstracts, and full texts. These types were subsequently analysed and coded.

Results

We identified 1480 publications on early problem solving, published between 1928 and 2025. We found that early problem solving is most often studied within the fields of Psychology, Mathematics, Social Sciences: Education, Computer Science, and Health Professions. Across these fields, early problem solving is investigated within a broad range of topics. We also found that early problem solving is studied more frequently in the first years of primary education than in pre-primary education, and that nearly one in five publications specifically targets diverse learners. In total, 168 types of early problem solving were identified, which were subsequently grouped into four clusters: Mathematical problem solving, Social problem solving, Creative problem solving, and Collaborative problem solving. Finally, we identified five dimensions of problem solving within these early problem-solving types: problem type, problem topic, problem-solving skills, problem-solving process, and problem-solving context.

Theoretical and practical significance

This bibliometric review highlights the fragmented nature of research on early problem solving. The presented map of the scientific literature enhances the discoverability and accessibility of research outputs, enabling scholars to position their work within the broader research landscape and to identify relevant research beyond their own field. Awareness of the types and dimensions of early problem solving can help researchers delineate the scope of their studies and guide them in selecting appropriate keywords to enhance discoverability of their work.

This study provides a foundation for future research by emphasising the need for conceptual studies on commonalities and differences in how early problem solving is theorised, conceptualised, and operationalised across research fields. Our bibliometric review also helps researchers to identify gaps, such as the need for systematic reviews on intervention effects, developmental aspects, and measurements. We conclude by presenting the Early Problem-Solving Compass, a freely accessible digital application that enables researchers to explore the literature on early problem solving.

(<https://earlyproblemsolvingcompass.shinyapps.io/EarlyProblemSolvingCompass/>)

Keywords: Problem solving; preschool education; Bibliometric review; Science mapping; Cross-disciplinary research

The role of executive functions in children's use of private speech during early problem-solving

Michelle Gäckle, Jonas Schäfer, Miriam Leuchter & Timo Reuter

Aims.

Private speech, also referred to as self-talk, is widely regarded as an important self-regulatory resource in early childhood, particularly in cognitively demanding contexts, such as problem-solving. However, empirical

findings regarding its functional role remain inconsistent, with studies reporting positive, null, or even negative relations between different categories of private speech and problem-solving performance. One potential reason for these mixed findings is that prior research has focused primarily on outcome-based measures, providing limited insight into how private speech operates during the problem-solving process itself.

A process-oriented perspective is particularly relevant in engineering-related problem-solving contexts, where iterative cycles of planning, testing and optimizing are central to successful performance. In such contexts, planning-related private speech may be especially relevant, because it can accompany systematic testing and optimizing.

At the same time, executive functions support the planning, monitoring, and flexible adjustment of actions during problem-solving and are also associated with children's use of private speech. Research suggests that children with lower executive functions tend to produce more overt private speech, as a compensatory self-regulatory strategy. Yet, it remains unexplored how executive functions shape the functional role of private speech during process-oriented, iterative problem-solving.

The present study therefore examined whether executive functions mediate the relation between planning-related private speech and preschool children's testing and optimizing behavior during an engineering problem-solving task.

Method.

A sample of 339 preschool children (Mage = 5.73 years, SD = 0.51; 165 girls) completed a tablet-based task assessing engineering problem-solving with gears. Testing and optimizing behavior, as an indicator for the problem-solving process and functionally differentiated categories of private speech were coded from video data. Executive functions were assessed using standardized measures of working memory, inhibitory control, and cognitive flexibility that were modeled as a latent factor. Structural equation modeling was used to examine whether executive functions mediate the relation between planning-related private speech and children's testing and optimizing behavior. Indirect effects were tested using bootstrapping to account for the non-normal distribution of mediation effects.

Results.

Correlational analyses revealed a significant positive association between planning-related private speech and testing and optimizing ($r = .12^*$), as well as a significant negative association between planning-related private speech and executive functions ($r = -.13^*$). Structural equation modeling confirmed a significant association between executive functions and planning-related private speech. However, the indirect effect of executive functions on testing and optimizing via planning-related private speech (mediation) was not significant.

Theoretical and practical significance.

The findings highlight that executive functions might enable children to act goal-directed in early problem-solving, while other children might compensate for their lower executive functions through self-regulatory private speech. By shifting the focus from outcome-based measures to testing and optimizing as central process indicators, our study advances a process-oriented understanding of private speech and problem-solving in early childhood. Through the explicit consideration of both the cognitive and behavioral level, our findings provide important insights into the interplay of private speech, executive functions and children's engagement in testing and optimizing, thereby refining current accounts of self-regulation in early learning contexts.

Keywords: Problem-solving, Executive functions, Private speech

Session D: 6

Time: 9.15–10.45

Location: RUU Onni

Single papers: **Wellbeing of teachers and children**

Chair: **Matilda Hamara, University of Jyväskylä**

Teacher wellbeing and readiness to support student mental health in primary education

Vasilis Grammatikopoulos, International Hellenic University; Eleni Laskaraki, International Hellenic University; Lila Kossyvaki, International Hellenic University; Maria Evangelou-Tsitiridou, International Hellenic University; Evridiki Zachopoulou, International Hellenic University; Theodore Goutas, International Hellenic University; Anastasia Vatou, International Hellenic University

Exploring the relationship between children's subjective experience of well-being in ECEC, the observed quality of their group and staff well-being – A feasibility study

Thomas Moser, University of Stavanger; Ragnhild Lenes, University of Stavanger; Rasmus Kleppe, Kanvas Foundation

Teachers' occupational well being and teacher–student interactions in early primary classrooms: Insights from two sub studies of a doctoral thesis

Sze Wah Chan, University of Jyväskylä

Abstracts

Teacher wellbeing and readiness to support student mental health in primary education

Vasilis Grammatikopoulos, Eleni Laskaraki, Lila Kossyvaki, Maria

Schools are increasingly recognised as key settings for the promotion of mental health and wellbeing. Within this context, teachers play a pivotal role in fostering supportive learning environments and responding to students'

Friday 21th of August

*Evangelou-Tsitiridou,
Evridiki Zachopoulou,
Theodore Goutas, &
Anastasia Vatou*

mental health needs, while simultaneously managing the demands of their own professional wellbeing. Understanding how teachers' stress, wellbeing, and job satisfaction relate to their perceived readiness to address student mental health is essential for the development of effective, whole-school approaches to mental health promotion.

This study examines primary school teachers' levels of occupational stress, subjective wellbeing, and job satisfaction, alongside their knowledge, beliefs, and perceived preparedness in supporting student mental health. The research adopts a cross-sectional survey design and draws on data collected from teachers working in public primary schools. Participants completed an anonymous online questionnaire assessing work-related stress, wellbeing, and job satisfaction, as well as perceptions of mental health-related procedures in schools, including awareness of student mental health needs, beliefs about school responsibility, and adequacy of initial and in-service training. This study is conducted within the framework of a Key Action 3 (KA3) Erasmus+ programme aimed at informing policy development and strengthening systemic approaches to mental health and wellbeing in schools.

The findings indicate that teachers experience moderate levels of occupational stress, alongside generally positive levels of wellbeing and job satisfaction. Stress was found to be negatively associated with both wellbeing and job satisfaction, while job satisfaction showed a strong positive relationship with wellbeing, highlighting the interdependence of these dimensions of teachers' professional experience. Teachers demonstrated high awareness of the impact of mental health difficulties on students' learning, academic performance, and school engagement. However, a notable gap emerged between awareness and perceived preparedness, as many teachers reported limited confidence in their ability to effectively address student mental health concerns in everyday school practice. While participants strongly endorsed the view that supporting student mental health is a shared responsibility of schools and teachers, they reported insufficient preparation through initial teacher education and limited access to recent professional development opportunities focused on mental health and wellbeing. Differences in perceived preparedness were observed across professional characteristics, suggesting that access to training and experience may shape teachers' confidence in this area.

The results highlight the importance of addressing teacher wellbeing as a foundational component of sustainable school-based mental health promotion. From a practical perspective, the study underscores the need for targeted, practice-oriented professional development that bridges the gap between awareness and action, equipping teachers with concrete strategies to support student mental health within the classroom and the wider school environment. Theoretically, the findings support integrative models that conceptualise teacher wellbeing, job satisfaction, and mental health readiness as interconnected elements of thriving school systems.

Keywords: Teacher wellbeing; student mental health; job satisfaction; primary education

Exploring the relationship between children's subjective experience of well-being in ECEC, the observed quality of their group and staff well-being – A feasibility study

Thomas Moser, Ragnhild Lenes & Rasmus Kleppe

Objectives and Research Questions: This study is part of the project Children's Well-being in ECEC, funded by the Norwegian Directorate of Education, and was conducted in close collaboration between the University of Stavanger (Learning Environment Centre) and the Kanvas Foundation, which operates 70 ECEC institutions. The primary objective of this study is to validate a dialogue-based Norwegian instrument for children's self-assessments of their well-being in ECEC and to assess its feasibility for use in everyday ECEC practice. The secondary objective is to examine (1) the relationship between children's well-being and ECEC quality and (2) staff well-being.

Methods: Children's well-being was measured using the revised Well-being Monitor (EQUAL-Child, Moe et al., 2026, in press), which involved structured conversations with children about 18 items across five dimensions (Relations with staff; Harassment/Bullying; Physical environment and play; What children like; Children's experience of adults). ECEC quality was assessed using the observational quality assessment tool A better Kindergarten for All (EBBA, Eliassen, Kleppe & Norheim, 2025, <https://www.ebba.app/>).

Staff Well-being was operationalised using subscales from The Working Conditions Survey for Government Agencies (MUST, <https://stami.no/en/advisory-work/the-working-conditions-survey-for-government-agencies-must/>). The data for this part of the study have not yet been analysed, but will be presented at the conference.

The participants comprised 235 children aged 4–5 years across 14 Kanvas kindergartens (27 departments/groups). Data collection was conducted by 34 pedagogical leaders and 6 managers, who served as co-researchers.

Preliminary Findings: The five-dimensional factor structure of the EQUAL-Child could be sufficiently replicated in our data set, suggesting the instrument is robust for practical use. Preliminary analyses revealed generally weak correlations between the children's self-reported well-being and the observed quality scores (EBBA). However, some interesting patterns emerged; "Total well-being" showed significant positive correlations with the EBBA sub-scales for "Caring behaviour" (Omsorgsfull væremåte) (.31) and "Group management" (.26). Final results will be presented at the conference.

Preliminary Conclusion: The findings indicate that children's self-assessments of their well-being offer a distinct perspective. With a few exceptions, EBBA's quality measures show weak overall correlations with children's well-being, underscoring the need to include children's subjective voices in quality development work. Staff feedback indicates that the Well-being Monitor

Friday 21th of August

is a feasible tool for gaining insight into the child's perspective in everyday ECEC practice.

Keywords: Child well-being, ECEC quality, staff well-being

Teachers' occupational well being and teacher–student interactions in early primary classrooms: Insights from two sub studies of a doctoral thesis

Sze Wah Chan

This presentation draws on a doctoral thesis, which consists of three sub studies examining teachers' occupational well being in relation to the quality of teacher–student interactions across school levels. For the EARLI SIG 5 context, the focus is placed on Sub study II and Sub study III, both conducted in early primary education (Grades 1–2). These two studies offer complementary perspectives on how teachers' occupational well being is reflected in their emotional, organizational, and instructional interactions with young learners, and how teachers' characteristic interactional styles relate to their occupational well being and classroom practices. By synthesizing these findings, the presentation aims to deepen understanding of the interplay between teacher well being and interactional processes in early childhood education and early primary school.

Sub study II examined associations between primary school teachers' occupational well being and the observed quality of teacher–student interactions. Forty nine Grade 2 teachers participated by completing self reports of work engagement and burnout, while their classroom interactions were video recorded and coded using the CLASS framework (emotional support, classroom organization, instructional support). Structural equation modeling showed that teachers reporting higher work engagement demonstrated higher levels of emotional and instructional support. Burnout symptoms showed a potential negative association with instructional support. These findings suggest that teachers' positive aspect of well being may be reflected in both emotional and instructional practices, whereas the negative aspect of well-being may be particularly reflected in the instructional aspects of teaching. The study highlights the importance of supporting teachers' occupational well being as part of early primary education, where teachers' emotional support and instructional support are central to children's learning and development.

Sub study III extended this work by identifying distinct profiles of teachers' interactional styles and examining how these profiles relate to occupational well being and observed teacher–student interactions. Seventy Grade 1–2 teachers reported their interactional styles (affection, behavioral control, psychological control) and occupational well being, and their classroom interactions were observed using CLASS. Latent profile analysis revealed five interactional style profiles: below average affectionate and controlling; least affectionate; moderately affectionate and controlling; least behaviorally and psychologically controlling; and above average affectionate and controlling. These profiles differed meaningfully in teachers' work engagement and in the observed quality of emotional and instructional support. Overall,

the findings indicate that the balance between affection and control is linked to both teachers' occupational well being and their interactional practices.

Together, Sub studies II and III demonstrate that teachers' occupational well being is closely intertwined with the emotional and instructional supports they create in early primary classrooms. Understanding these associations, as well as the heterogeneity of teachers' interactional styles, can inform more targeted professional development and well being support. Strengthening teachers' well being is essential for fostering high quality interactions that support every child's learning and development in the early years.

Keywords: teacher occupational well-being, stress, work engagement, teacher-student interactions, interactional styles

Session D:7

Time: 9.15–10.45

Location: RUU 3rd floor lobby

Single papers: **Associations between digital media and early language skills**

Chair: **Sara Huotari, University of Jyväskylä**

Understanding the diversity of digital media offerings in early childhood education: A scoping review

Michael Hast, IU International University of Applied Sciences; Jennifer Chung, UCL Institute of Education

Losing time or learning? Linking children's digital media use trajectories with language and science literacy outcomes

Dave Möwisch, Leibniz Institute for Educational Trajectories; Jessica Willard, Leibniz Institute for Educational Trajectories; Sabine Weinert, University of Bamberg

Age-related evidence from digital assessment of oral language comprehension in kindergarten

Jana Jungjohann, TU University Dortmund

Abstracts

Understanding the diversity of digital media offerings in early childhood education: A scoping review

Michael Hast & Jennifer Chung

Digital media are increasingly present in early childhood education (ECE), yet research in this field remains highly fragmented. Many studies examine single tools or focus on developmental benefits and risks, leaving limited understanding of the broader landscape of digital media offerings within institutional ECE settings. This scoping review addresses this gap by mapping the diversity of digital media used in early years settings such as preschools and kindergartens, the pedagogical purposes they serve, and the contextual factors shaping their implementation. The review was guided by the question:

What is the diversity of digital media offerings in early childhood education? Its aim was to provide a descriptive overview rather than evaluate effectiveness, offering conceptual clarity on the kinds of tools and digitally mediated practices that are currently part of early childhood settings. The scoping review followed an established methodological framework. Eligible studies included empirical research, dissertations, and reviews published between 2010 and 2025 in English or German, examining digital media used with children aged 3 to 6 in institutional ECE environments. Searches across multiple academic databases used terms related to early childhood education, digital media, and diversity of tools or practices. Data extraction captured study characteristics, types of digital media, pedagogical aims, modes of use, and contextual influences. Findings were synthesised using descriptive mapping and thematic analysis. Digital media offerings emerged as highly varied in type, purpose, and educational role. The tools identified ranged from e-books, literacy apps, and digital documentation platforms to computer-based numeracy training programs, tablets for multimodal play, and applications supporting emotional regulation and communication between educators and families. This diversity demonstrates that digital media in ECE encompass not only instructional technologies but also creative, relational, and organisational tools. The pedagogical purposes of digital media were similarly wide-ranging. Digital tools supported emergent literacy and numeracy, facilitated socio-emotional learning, enabled multimodal storytelling and digital play, and provided avenues for documentation, planning, and family engagement. Some media were used in highly structured interventions, while others enabled flexible, child-led or teacher-designed activities. Modes of use also differed markedly. Children engaged with digital media individually, in small groups, or within whole-class contexts. Educators used digital tools for planning, documentation, assessment, and communication, while hybrid arrangements extended learning across home and school environments. Contextual factors strongly shaped implementation. Teachers' beliefs, familiarity with technology, and comfort with children's digital cultures influenced uptake, as did resource availability, institutional expectations, and curriculum traditions. Studies highlighted that researcher-designed interventions often created different patterns of engagement compared to everyday classroom practice. Taken together, the findings show that digital media offerings in early childhood settings constitute a diverse and evolving ecosystem shaped by technological affordances, pedagogical intentions, educator roles, and contextual conditions. The review contributes to a more coherent understanding of this landscape and identifies areas for further empirical and conceptual development.

Keywords: Early childhood education, digital media, scoping review

Losing time or learning? Linking children's digital media use trajectories with language and science literacy outcomes

Dave Möwisch, Jessica
Willard & Sabine
Weinert

Theoretical Background

There is considerable variability in children's digital media use over time including the amount, content, and family context in which it occurs (Barr et al., 2020). Previous research often used undercontrolled models of snapshot measures of "screentime" (Mannell et al., 2024). For language outcomes, these yielded clear negative associations (Madigan et al., 2020), commonly interpreted as reflecting "displacement" of other activities. For science and other STEM competencies, very few studies revealed null or negative associations, suggesting that quantity of use alone might not explain developmental effects (Adelantado-Renau et al., 2019; Drummond & Sauer, 2014; Hartanto et al., 2018). Children can and do learn from "educational" digital media (Jing et al., 2023). Moreover, a stimulating home learning environment could buffer negative displacement effects (Xie et al., 2024). The Dynamic, Relational, Ecological Approach to Media Effects Research – DREAMER – framework emphasizes that digital media use exerts differential effects based on content features, long-term use, developmental domain, and experiences outside of media use (Barr et al., 2024). This study harnesses large-scale longitudinal data to examine how children's media use unfolds into the elementary school years, predicts later language and science literacy, as well as the moderating roles of a large-scale indicator of content quality and the home learning environment.

Research questions:

1. How does the quantity of digital media use develop from age six to eight?
2. Do the initial quantity of digital media use/change in media use negatively predict science literacy or vocabulary at age nine?
3. Does a rich home learning environment diminish a negative association between quantity of digital media use and science/vocabulary?
4. For children whose favorite app is a "learning app": Is the association between quantity of digital media use and science/vocabulary diminished or positive?

Method and Sample

Data from 1,303 families in Starting Cohort 1 of the National Educational Panel Study (NEPS) were analyzed. Parent reported children's average weekly digital media use at three time points. Latent growth curves modelled media use trajectories from ages six to eight. Intercept and slope factors were used to predict vocabulary and science competence at age nine with interaction terms for app preference and home learning environment.

Results

Preliminary analyses indicate that (1) media use increases between ages 6 and 8; however, most children follow similar developmental trajectories. (2) The amount of media use at age six (but not changes in media use between ages 6 and 8) was significantly and negatively associated with vocabulary

and science at age nine. (3) No interaction effects were found for app preferences or the home learning environment.

Discussion

Using a lot of digital media at age six was linked to lower age nine science literacy and vocabulary. This was the case regardless of whether children favored higher quality media (an “educational app”) or experienced a richer home literacy environment. We discuss whether findings should be interpreted as all naturally occurring media use being “wasted” time for educational processes, as well as implications for parents.

Keywords: Digital media use, Science literacy, Vocabulary, National Educational Panel Study

Age-related evidence from digital assessment of oral language comprehension in kindergarten

Jana Jungjohann

Early oral language comprehension is a foundational prerequisite for children's participation in learning environments and later academic development (Conti-Ramsden et al., 2018; Hayiou-Thomas & Hobson, 2025). In line with the conference theme of creating a hopeful future for every child through supportive and collaborative systems, both reliable and accessible tools for identifying developmental variation in early language skills are essential to inform timely and equitable support in early childhood education settings.

The present study examines developmental patterns in oral language comprehension using BLINDED (Author & Author, 2025), a digital speeded curriculum-based measurement designed for preschool and primary school children. The test comprises 80 audio-supported picture-selection items covering four grammatical domains (prepositions, numerus, comparison, and relative clauses) in German. The items avoid written language, allowing nonverbal responses independent of reading skills. Children complete as many items as possible within five minutes, receiving one point per correct response.

Trained assessors administered BLINDED on tablets in kindergarten settings, guiding children through the task in individual or small-group sessions depending on age. Written informed consent was obtained from legal guardians. For the present sample, the instrument demonstrated very good internal consistency (Cronbach's $\alpha = .85$). The sample comprised $N = 202$ children (49.75% male) attending kindergarten or comparable formal early childhood education settings. Most children had no additional support needs (94.55%). The mean age was $M = 59.88$ months ($SD = 9.48$), and 35.15% of the sample were multilingual. Children were assigned to six half-year chronological age groups to reflect developmental stages; due to small cell size, children aged $\geq 6;1$ years were excluded from group-based analyses.

Rasch modeling was successfully conducted on the first 28 items (cell frequency > 100). No evidence of differential item functioning was observed.

Item fit statistics indicated no critical misfit (Infit MSQ = 0.75–1.20; Outfit MSQ = 0.47–1.53), and person parameter precision was satisfactory (WLE reliability = .78), supporting the psychometric soundness of the instrument for early childhood assessment. A one-way ANOVA revealed a significant effect of age group on total sum score, $F(4,186) = 21.57$, $p < .001$, $\eta^2 = .32$. Post-hoc analyses showed no significant differences between children aged $\leq 4;0$ and 4;1–4;5 years. From 4;6–5;0 years onward, children achieved significantly higher scores than the youngest group (all $p < .001$), with further significant increases across subsequent age groups, indicating pronounced developmental gains in oral language comprehension during the preschool period.

Overall, the findings provide evidence for developmental validity and demonstrate that digital curriculum-based measurement sensitively capture age-related growth in early language comprehension. The results will be discussed regarding how early identification of language comprehension difficulties in kindergarten can inform targeted support and promote equitable learning opportunities in early childhood education.

Keywords: Early childhood assessment; Oral language comprehension; Digital curriculum-based measurement; Developmental validity

Session E

Session E:1

Time: 13.30–15.00

Location: RUU Juho

Symposium: **Long-term associations between early cognitive development and learning**

Chair: **Eeva Levijoki, University of Turku**

Organizer: **Eeva Levijoki, University of Turku**

Discussant: **No discussant**

Longitudinal latent profiles of oral and written language development from one to nine years of age

Pihla Saaristo, University of Turku; Eeva Levijoki, University of Turku; Essi Saloranta, University of Turku; Akie Yada, University of Jyväskylä; University of Turku; Kiia Kurila, University of Turku; Aura Yli-Savola, University of Turku; Satu Savo, University of Turku; Kati Renvall, University of Turku; Denise Ollas-Skogster, Åbo Akademi; Riikka Korja, University of Turku; Hasse Karlsson, University of Turku; Linnea Karlsson, University of Turku; Elina Mainela-Arnold, University of Turku

Latent profiles of verbal and non-verbal cognitive development from 1 to 9 years of age

Eeva Levijoki, University of Turku; Pihla Saaristo, University of Turku; Essi Saloranta, University of Turku; Kiia Kurila, University of Turku; Aura Yli-Savola, University of Turku; Elisabeth Nordenswan,

University of Turku; Pauliina Juntunen, University of Turku; Venla Huovinen, University of Turku; Saara Nolvi, University of Turku; Fiia Takio, University of Turku; Hasse Karlsson, University of Turku; Linnea Karlsson, University of Turku; Riikka Korja, University of Turku; Elina Mainela-Arnold, University of Turku

Machine learning predicts learning difficulties in reading and math from kindergarten data

Maria Psyridou, University of Oslo; Tuire Koponen, University of Jyväskylä; Kati Vasalampi, University of Jyväskylä; Marja-Kristiina Lerkkanen, University of Jyväskylä; Anna-Maija Poikkeus, University of Jyväskylä; Minna Torppa, University of Jyväskylä

Early numerical skills as predictors of arithmetic fluency in third grade

Tuire Koponen, University of Jyväskylä; Kenneth Eklund, University of Jyväskylä; Kaisa Lohvansuu, University of Jyväskylä; Minna Torppa, University of Jyväskylä; Jenni Salminen, University of Jyväskylä

Abstracts

Long-term associations between early cognitive development and learning

Symposium (overarching abstract)

This symposium examines long term associations between early cognitive development during toddlerhood and the preschool years, and subsequent learning outcomes in school age children. A central focus is the early identification of cognitive risk profiles and the developmental timing at which such risks can be reliably distinguished from typical trajectories. Across four presentations, complementary analytical approaches are used to explore early predictors of later cognitive development, literacy, and mathematical skills.

The first presentation investigates longitudinal profiles of oral and written language, addressing whether children at risk for reading difficulties can be identified even in the absence of early oral language delays. The second presentation introduces latent profiles of verbal and non-verbal cognitive development and evaluates the extent to which early cognitive risk predicts subsequent developmental outcomes across these domains.

The third study applies machine learning models to preschool-phase data to predict later dyslexia, reading comprehension difficulties, and dyscalculia. The final presentation focuses on early numerical skills as precursors of arithmetic fluency, examining whether numerical skills in toddlerhood and preschool are related to arithmetic fluency at third grade.

Together, these studies provide evidence on the early cognitive foundations of learning and highlight developmental periods in which at risk profiles can be most effectively identified. The findings underscore the importance of early detection to guide timely, targeted interventions aimed at mitigating later academic difficulties and supporting optimal learning trajectories.

Friday 21th of August

(AI was used for the proofreading)

Keywords: *cognitive development, reading, mathematics*

Longitudinal latent profiles of oral and written language development from one to nine years of age

Presentation as part of a symposium

Pihla Saaristo, Eeva Levi-joki, Essi Saloranta, Akie Yada, Kiia Kurila, Aura Yli-Savola, Satu Savo, Kati Renvall, Denise Ollas-Skogster, Riikka Korja, Hasse Karlsson, Linnea Karlsson & Elina Mainela-Arnold

Aims

The aim of this study was to explore the extent to which language development in oral and written dimensions form shared or distinct longitudinal latent profiles. In particular, we were interested if we would observe statistically clustering profiles of (1) children who present a risk in learning to read without risk in early oral language development or (2) if children at risk in oral language development would also present risk in learning written language. Research on language and reading development has primarily used three categories to label children at risk, differing by the age at which risk is identified. Late talkers are toddlers with late onset of oral language development identifiable around the age of two years. If oral language development difficulties persist after the age of four, the term developmental language disorder is used. When children learn to read, dyslexia is used to refer to children with difficulties in this domain. However, the longitudinal relationship between these disorder categories is unclear to this date (Bishop & Snowling, 2004; Carroll et al., 2025). We set out to examine the developmental trajectories in both oral and written language from toddlerhood to nine years of age without predefined groups with a data-based methodology in a cohort-based sample.

Methods

The data (n=617) consisted of a longitudinal dataset from the FinnBrain Birth Cohort Study. Oral language development was measured at ages 1, 2.5, 5 and 9 years of age using assessments of early vocabulary development, sentence-level language comprehension and production, nonword repetition, and mean length of utterance. Written language was measured with reading fluency, reading comprehension, rapid automatized naming, and writing at 9 years of age. Latent profile analysis was used to identify profiles emerging from the data.

Results

Preliminary results support a modeling solution with one risk profile characterized by persistent low oral language performance combined with risk in written language performance at age 9, as well as profiles within typical range of development across the dimensions. The persistent low trajectory could be identified as early as two and half years of age.

Theoretical and practical significance

We did not find support for profiles resembling recovering late talking or dyslexia without oral language difficulties, at least for this cohort-based

dataset. Instead, the findings suggest that at risk early language and reading development reflect a shared continuum of vulnerability. The results suggest that when evaluating the presence or absence of reading difficulties in school-aged children, oral language should be carefully addressed as well as and raises a prospect of preventing school ages reading difficulties by early oral language intervention.

Bishop, D. V. M., & Snowling, M. J. (2004). Developmental Dyslexia and Specific Language Impairment: Same or Different? *Psychological Bulletin*, 130(6), 858–886. <https://doi.org/10.1037/0033-2909.130.6.858>
Carroll, J. M., Holden, C., Kirby, P., Thompson, P. A., Snowling, M. J., & the Dyslexia Delphi Panel. (2025). Toward a consensus on dyslexia: Findings from a Delphi study. *Journal of Child Psychology and Psychiatry*, 66(7), 1065–1076. <https://doi.org/10.1111/jcpp.14123>

Keywords: language development, literacy development, longitudinal study

Latent profiles of verbal and non-verbal cognitive development from 1 to 9 years of age

Presentation as part of a symposium

Eeva Levijoki, Pihla Saaristo, Essi Saloranta, Kiia Kurila, Aura Yli-Savola, Elisabeth Nordenswan, Pauliina Juntunen, Venla Huovinen, Saara Nolvi, Fiia Takio, Hasse Karlsson, Linnea Karlsson, Riikka Korja & Elina Mäkinen-Arnold

Aims.

The aim of the present study is to describe developmental profiles of verbal and non-verbal cognitive development during early childhood in a Finnish birth cohort. Some neurodevelopmental diagnostic categories have traditionally excluded co-occurring cognitive deficits. In recent years, the definition of Developmental Language Disorder (DLD) has been refined, and the prevalence of co-occurring cognitive conditions has been emphasized (Bishop et al., 2017). Likewise, the latest definition of Developmental Visuo-Spatial Disorder (DVSD; formerly non-verbal learning disability) allows for co-occurring neurodevelopmental disorders (Fisher et al., 2025). However, it is still unknown how distinct the developmental pathways of verbal and non-verbal skills are. Our research question concerns what kinds of latent developmental profiles emerge when analysing verbal and non-verbal skills in a general population sample using a data-driven method, Latent Profile Analysis (LPA). We investigate whether the profiles in the general population resemble distinct diagnostic categories such as DLD and DVSD, or whether they display co-occurring verbal and non-verbal risk.

Methods.

Participants (n = 529) are part of the FinnBrain Birth Cohort Study. Oral language skills were measured through parental report at 14 months and 2.5 years (MCDI; Lyytinen et al., 1999). Verbal and non-verbal cognitive skills were assessed at study visits at 2.5 years (INTER-NDA; Murray et al., 2018), at 5 years (RDLIS-III, Kortesmaa et al., 2001; mean length of utterance from speech samples; nonword repetition; Block Design, Matrix Reasoning, and Similarities subtests of WPPSI-III, Wechsler, 2009), and at 9 years (Finnish CELF-5, Wiig et al., 2013; nonword repetition; Block Design, Matrix Reasoning, and Similarities subtests of WISC-IV, Wechsler, 2010). LPA was used to identify latent developmental profiles.

Results.

Preliminary LPA results revealed a risk profile characterized by below-average performance at all across both verbal and non-verbal cognitive domains and age points. This at risk profile differentiated from other profiles already during toddlerhood. Additionally, profiles with average-range performance displayed stable developmental trajectories from ages 1 to 9 years.

Theoretical and practical significance.

Distinct disorders and diagnostic categories such as DLD and DVSD have traditionally guided educational practices and healthcare services. However, results from this population-based sample emphasize the prevalence of co-occurring verbal and non-verbal developmental risk. Consistent with most recent definitions of DLD, we did not identify risk groups with isolated impairments solely in language development or solely in non-verbal cognitive development. These findings support the recent shift toward acknowledging overlapping neurodevelopmental conditions. This implies that the prevalence of co-occurring cognitive risks needs to be more fully considered in healthcare services and education.

(AI was used for the proofreading)

Keywords: verbal development, non-verbal development, latent profiles

Machine learning predicts learning difficulties in reading and math from kindergarten data

Presentation as part of a symposium

Maria Psyridou, Tuire Koponen, Kati Vasalampi, Marja-Kristiina Lerkkanen, Anna-Maija Poikkeus & Minna Torppa

Specific learning disorders (LD)—including dyslexia, dyscalculia, and reading comprehension difficulties—affect around 10% of school-aged children and can have long-term effects on academic and life outcomes. Early identification is critical for timely support, yet most diagnoses occur only after persistent difficulties emerge. This study examines whether risk for dyslexia, dyscalculia, and reading comprehension difficulties can be predicted already from kindergarten using machine learning models. We utilized a 10-year longitudinal dataset and a broad range of measures, including cognitive, motivational, behavioral, language, parental, home, and school-related factors. We trained machine learning models to classify individuals as at risk or not at risk for each LD. The models achieved mean area under the curve (AUC) of 0.74 for dyslexia, 0.75 for dyscalculia, and 0.78 for reading comprehension difficulties, indicating good discriminative performance across LD. This study shows that machine learning models trained with kindergarten-age data can predict later risk of dyslexia, dyscalculia, and reading comprehension difficulties. Further data collection, validation, and correlational and causal analyses are crucial to enhance robustness and practical utility. While not diagnostic tools, such models may ultimately help inform and support educators' and psychologists' processes for early identification of students at risk for LD, thereby enabling timely interventions.

Keywords: Machine learning, Learning difficulties, Longitudinal data, Kindergarten

Early numerical skills as predictors of arithmetic fluency in third grade

Presentation as part of a symposium

Tuire Koponen, Kenneth Eklund, Kaisa Lohvan-suu, Minna Torppa & Jenni Salminen

Children show significant variability in mathematical skills at the start of school, and the gap between low-performing and typically achieving children widens during the school years (e.g., Aunola et al., 2004; Zhang et al., 2020) calling for a stronger understanding of when meaningful differences in children's early mathematical skills begin to emerge. Understanding the developmental hierarchy between early numerical skills and their long-term predictive effects on arithmetic skills provides important knowledge for early identification and information for developing early support. The present study examines 120 children followed from toddlerhood ($M = 2.91$ years, $SD = 0.29$) to third grade ($M = 9.79$ years, $SD = 0.31$), examining whether third-grade arithmetic fluency can be predicted by early number concept and number sequence skills assessed in toddlerhood and at the end of preschool ($M = 5.92$ years, $SD = 0.30$). We also explored whether first-grade arithmetic fluency mediates the effect of early numerical skills on later arithmetic fluency.

Number-concept skill in toddlerhood was assessed with a 'Give me X' task, and in preschool with items measuring quantity-number-symbol associations. The child's skill in producing number sequences in toddlerhood was measured with a 'How high can you count?' task, and in the preschool phase with a forward- and backward-counting task. Arithmetic fluency in Grade 1 was assessed using single-digit addition and subtraction fluency tasks with written number symbols and a 2-minute time limit. In Grade 3, both single-digit and multi-digit arithmetic-fluency tasks were used. Data was analyzed by using age-adjusted numerical skill variables and path analysis.

Findings showed that neither number concept nor number sequence skills from toddlerhood predicted third-grade arithmetic fluency. Rank-order stability of these skills from toddlerhood to preschool was low. In contrast, preschool number sequence skills significantly predicted third-grade fluency. Including first-grade arithmetic fluency as a predictor revealed a unique connection between preschool number sequence skills and third-grade fluency.

Although results support the hierarchical nature of math skills, the study highlights low early stability, indicating substantial developmental changes both within and between individuals from toddlerhood to preschool.

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<https://doi.org/10.1111/j.1467-8624.2010.01508.x>

Zhang, X., Räsänen, P., Koponen, T., Aunola, K., Lerkkanen, M., & Nurmi, J. (2020). Early cognitive precursors of children's mathematics learning disability and persistent low achievement: A 5-year longitudinal study. *Child Development*, 91(1), 7–27.

Keywords: Early math skills, long-term predictive value, arithmetic fluency

Session E:2

Time: 13.30–15.00

Location: RUU Lucina

Symposium: Towards more continuity and integration across the early childhood system

Chair: **Pauline Slot, Utrecht University**

Organizer: **Pauline Slot, Utrecht University**

Discussant: **Susanne Kuger, LMU Munich**

Collaboration and continuity in the Dutch split ECEC system: a common framework to support children's education and development across systems.

Bodine Romijn, Utrecht University; Lieselotte Oudega, Kohnstamm Instituut; Paul Leseman, Utrecht University; Martine Broekhuizen, Utrecht University

After school care in the spotlight: Children's well-being and staff qualifications

Markus Sauerwein, Tu Dortmund; Laurin Bremerich, TU Dortmund

Integration in ECEC through interprofessional collaboration

Lobke Van Lombergen, Ghent University; Jochen Devlieghere, Ghent University

Abstracts

Towards more continuity and integration across the early childhood system

Symposium (overarching abstract)

Children navigate through different systems over the years, including transitions from daycare to kindergarten, and during the day, such as shifting from kindergarten to after school care. Several initiatives have been implemented across countries aimed at enhancing collaboration between professionals in early childhood education and care (ECEC) provisions based on the assumption that this will increase quality of services and provide more pedagogical continuity in children's experiences which will ultimately be more supportive for their development. Interprofessional collaboration (IPC) is one way of promoting more pedagogical continuity across ECEC, school and/or family support services. At the other end of the continuum fully integrated centres have emerged to provide children continuity across ages and during the day. However, little is known about these different forms of integration

Friday 21th of August

across the whole age range 0-8 years, the quality of these services and experiences of children and professionals.

This symposium brings together work from three different countries, across several systems at different levels of integration aimed to smoothen children's experiences. The first paper presents findings from a Flemish qualitative study focused on teachers' experiences and practices with IPC in childcare and kindergarten. The second paper reports on Dutch results of a quantitative study on IPC and relations with parents in preschool and kindergarten. Finally, the third paper describes quantitative outcomes of quality, teachers' orientation/qualifications and children's wellbeing in German all-day schools. The implications of the findings will be contextualized to the current status quo (e.g., changes in legislations, staff shortages) by the discussant.

Keywords: continuity - interprofessional collaboration - integrated centres - staff - transitions

Collaboration and continuity in the Dutch split ECEC system: a common framework to support children's education and development across systems.

Presentation as part of a symposium

*Bodine Romijn,
Lieselotte Oudega, Paul
Leseman & Martine
Broekhuizen*

Introduction: The Dutch ECEC system is a split system with a transition moment between center-based childcare/pre-schools and kindergarten (part of primary education) at the age of 4. One of the largest cities of the Netherlands, Utrecht, has developed a citywide quality framework in collaboration with both pre-schools and schools to create stronger continuity between the two systems. The framework provides guidelines on: a) classroom quality and support for children's development, b) collaboration with parents, c) collaboration within and between organizations, and d) continuity and smooth transitions at age 4 (i.e., the transition between pre-schools and schools). The current paper focusses on the collaboration with parents (b) and the continuity between systems (d) as the transition from the family to an educational setting and from one education setting to the other are important milestones in the lives of young children and their families (Degli Esposti & Cigala, 2025; Morawska et al., 2024) and strong connections between these systems are crucial for children's development (Bronfenbrenner, 1994).

Method: Quality measures were conducted in 2024 to provide insight in the city's status quo related to this framework. Data was collected in 30 pre-school classrooms and 30 kindergarten classrooms with close ties to these pre-schools (i.e., classrooms that most of these pre-school children transfer to at the age of 4). The 60 classrooms provided a representative sample of the whole municipality. Observational measures on the quality (i.e., CLASS and ECERS-R/E) were collected and N = 140 professionals (both practitioners and managers) filled out a survey.

Results: Results show that contact with parents in kindergarten more often had a formal and informative character, compared to the pre-schools where there was a stronger focus on informal contact to foster the relationship with parents. The observations (ECERS-R) revealed a significant difference in the scores for the quality of greeting and departing moments between the pre-schools ($M=6.15$, $SD=1.68$) and the schools ($M=4.39$,

SD=2.43); $t(58)=3.26$, $p=.002$. Self-reported data on how greeting/departing at the beginning and end of the day is organized supported this finding that schools have less interactions with parents during those moments compared to pre-schools. Finally, a vision on how to collaborate with parents was formalized in policy documents less often in schools (40%) compared to pre-schools (80%).

Regarding the inter-system collaboration, teachers indicated more joint effort for a smooth transition (e.g., site visits to get familiar with the new environment) than for a continuity in experiences of children (e.g., shared activities and policy). Time spent on (team-based) professional development was positively correlated with both the transition and continuity. Moreover, the transition and continuity were considered better in classrooms with a more disadvantaged population of children.

Conclusions: The evidence points towards weaker collaborations between parents and teachers in kindergarten compared to the pre-schools. The transition between school systems seems to be organized at a practical level rather than a conceptual level and continuity is lacking in most settings. Overall, a stronger focus on team-based learning and professional development is likely to create better transitions for children and parents.

Keywords: ECEC quality, split systems, collaboration, continuity

After school care in the spotlight: Children's well-being and staff qualifications

Presentation as part of a symposium

Markus Sauerwein & Laurin Bremerich

The provision of all-day schools, extended education or after-school care (we use the terms synonymous) in Germany has been in place for a period of approximately 25 years. In the forthcoming school year, a legal entitlement to after-school care will be in effect. Nevertheless, the quality of extracurricular activities is a matter of concern, primarily due to a lack of suitably qualified staff. The objective of extended education is twofold: firstly, to enhance the feasibility of combining childcare and employment; secondly, to furnish children with quality educational experiences that will develop their school-related and social competencies, thereby reducing social inequalities. Moreover, since children spend a large part of their day in educational institutions, they should experience a sense of well-being. Although the existing research has shown that there has been no significant improvement in school-related competencies, other studies have demonstrated that enhancing social competencies is possible through high-quality extracurricular activities.

The shortage of qualified staff has raised concerns that the quality of all-day schools will depend on their location. Schools in affluent areas may be able to recruit more highly qualified staff, whereas those in disadvantaged areas will have to rely on unqualified staff. In our presentation, we will explore two questions using two different studies: 1) Does the quality of the services perceived by children depend on the social environment of the school, and does the social environment influence their well-being (Study I)? 2) Do

qualifications influence the orientations and skills to reflect pedagogical antinomies of professionals (Study II)?

Study I: The findings of a cross-sectional, multilevel analysis of 780 8-year-olds showed that their ratings of the quality of extended education were not affected by the social index (social environment) of the schools. Nonetheless, children enrolled in educational institutions characterised by social deprivation exhibited diminished levels of well-being.

Study II: The lack of professional staff for extracurricular activities has resulted in the employment of unqualified staff in the field of extended education. Thus, this is a field in which both qualified and unqualified staff work, which gives us the opportunity to compare both groups. In a questionnaire, staff members (N=256) were required to select between a perspective that is more aligned with a child-oriented approach or a school/institutional perspective, thereby enabling the measurement of orientations through the implementation of a forced-choice scale. Reflection on pedagogical antinomies is measured using a vignette and the coding of open responses according to three levels of reflection. The findings revealed that possessing a qualification predicts both child orientation and the ability to reflect on pedagogical antinomies at a higher level.

Altogether, the findings highlight the need to improve children's well-being at socially disadvantaged schools. Staff with pedagogical qualifications appear to be helpful in this regard, but there is a lack thereof. Currently, the legal right to all-day care cannot be realised with qualified staff alone due to a shortage of such trained staff. This is why pragmatic solutions, such as further training and professional development, need to be discussed.

Keywords: all-day school, qualification, professionalisation, children's wellbeing, extended education

Integration in ECEC through interprofessional collaboration

Presentation as part of a symposium

Lobke Van Lombergen &
Jochen Devlieghere

The significance of high-quality ECEC as a foundation for lifelong development has received increasing attention. While there are many different views on what quality means, there is broad agreement on the interconnectedness of care and education. This has prompted many countries to reconsider their existing systems, leading to both top-down and bottom-up changes aimed at integrating ECEC. Integrated ECEC practices can be placed on a continuum from split to integrated systems, based on several criteria, such as policy making and administration, regulations, curriculum, funding, access, workforce.

At the workforce level, integrated ECEC is shaped through the facilitation of interprofessional collaboration (IPC), which is a growing field of study. Given the essential role of IPC in integrated ECEC and professionals' key role in implementing integration, this study aims to investigate what IPC means for professionals. IPC is framed as a part of integrated ECEC, requiring collective and sustained efforts across professional, organisational and policy levels.

We address the following research questions: (1) How do professionals experience and shape IPC within integrated ECEC practices? (2) How do professionals in integrated ECEC practices perceive their roles within IPC? And (3) What opportunities and challenges are encountered when shaping IPC in integrated ECEC practices?

We conducted 21 interviews with professionals in Flanders. By exploring these questions, the study contributes to theoretical knowledge on the role of IPC in integrated practices within a context where ECEC continues to be shaped by historically entrenched distinctions between 'care' and 'education', both at policy and practice level. We aim to generate new knowledge about how professionals from different disciplines collaborate, and what facilitates or hinders this collaboration in practice. This insight may subsequently inform concrete policy and practice recommendations regarding organizing integrated ECEC.

Our findings highlight IPC as both an outcome and a driver of professionalisation, requiring professionals to continuously (re)define their roles, competencies and learning needs in relation to colleagues from other disciplines. Our data revealed three main themes: (1) Disrupting the care and education divide through child-led and rhythm-based practice, (2) Reinforcing the care and education divide in professional identity and practice and (3) The care and education divide as an institutional issue: conditions for meaningful integration. Although professionals try to overcome the care and education divide for children by individualizing their pedagogical approach, realizing meaningful IPC remains challenging in their own roles and actions. Although proximity is considered a facilitator of IPC, our study shows that it is not enough to bridge the care and education divide and institutional divide that is represented in professionals' profiles.

To achieve strong IPC and integration across all levels of the system, changes are needed beyond the level of practice alone. While professionals make small but meaningful steps towards IPC and integration, these efforts remain vulnerable when structures at other levels continue to institutionalize the care and education divide. The results demonstrate that meaningful IPC, and thus high-quality integrated ECEC, depends strongly on organisational leadership, shared pedagogical visions and institutional arrangements that actively support collective learning and professional dialogue.

Keywords: continuity, interprofessional collaboration, integrated centres, staff, transitions

Session E:3

Time: 13.30–15.00

Location: RUU Katri

Single papers: **Self-Regulation during early childhood: Development and support**

Chair: Jenni Koski,
University of
Jyväskylä

5-year-old Finnish children's self-regulation profiles: the role of child characteristics and educators' support practices

Tekla Seppälä, University of Jyväskylä; Jenni Salminen, University of Jyväskylä; Eija Pakarinen, University of Jyväskylä; Niina Rutanen, University of Jyväskylä

Self-regulation development in preschoolers: Effects of pre-school activity types

Vaso Tiliopoulou, Utrecht University; Pauline Slot, Utrecht University; Ora Oudgenoeg-Paz, Utrecht University; Paul Leseman, Utrecht University

Pilot study of check in check out support in Finnish early childhood education and care

Mika Paananen, University of Jyväskylä; Meri Liimatainen, University of Eastern Finland; Asko Tolvanen, University of Jyväskylä, Finland; Anne Karhu, University of Eastern Finland

Abstracts

5-year-old Finnish children's self-regulation profiles: the role of child characteristics and educators' support practices

Tekla Seppälä, Jenni Salminen; Eija Pakarinen & Niina Rutanen

This study aims to 1) identify children's self-regulation profiles (educator ratings and direct measurement) and 2) examine whether child characteristics (gender, age, care history, previous interpersonal skills and learning related self-regulation, parental education level) and educators' support practices are associated with the profile membership. Identifying self regulation profiles using multiple indicators provides a more precise picture of how different dimensions co occur, and examining their associations with child and contextual characteristics clarifies the factors underlying these distinct patterns.

This study is part of larger longitudinal study. The current study utilized data from two timepoints when children were 2-3-year-olds (T1, N = 245) and again at the age of 5-6 years (T4, N = 179). Children's self-regulation skills were assessed with two measures. At T1 and T4, educators evaluated children's self-regulation using the Child Behavior Rating Scale (CBRS; Bronson et al., 1990). The measurement assesses self-regulation in two domains: behavior in learning situations (10 items, LRSS) and peer interactions (7 items, IPS). In addition, in T4, children's behavioral self-regulation skills were directly assessed using the Head-Toes-Knees-Shoulders (HTKS) -task (Ponitz

et al., 2009). The information about support practices was collected through a questionnaire completed by educators.

At T4, we used latent profile analysis to identify self regulation profiles derived from the HTKS and CBRs measures. In addition, the auxiliary DUSTEP procedure was applied to examine associations between profile membership and child characteristics as well as educators' support practices.

A four-profile model provided the best fit. The profiles were labeled as follows: Low regulators (12.6 %, n = 24), High behavioral self-regulation with low educator ratings (19.7%, n = 37), Low behavioral self-regulation with high educator ratings (14.8%, n = 26) and Competent regulators (56 %, n = 99). Low regulators, exhibited low levels of LRSS, low IPS, and low behavioral self-regulation measured with the HTKS. The second profile, High behavioral self-regulation with low educator ratings, showed high behavioral self-regulation but received low ratings from educators on LRSS and IPS. The third profile, Low behavioral self-regulation with high educator ratings, was characterized by low behavioral self-regulation combined with high educator ratings of LRSS and IPS. The fourth profile, Competent regulators, demonstrated high levels across all measurements.

Significant differences emerged across profiles for child gender ($\chi^2(3) = 12.06$, $p = .007$), age ($\chi^2(3) = 9.28$, $p = .026$), parental education ($\chi^2(3) = 11.85$, $p = .008$), and previous IPS ($\chi^2(3) = 17.79$, $p < .001$) and LRSS ($\chi^2(3) = 20.05$, $p < .001$). Competent regulators were characterized by a higher proportion of girls, older age, stronger previous LRSS and IPS, and higher parental education levels. Low regulators showed the opposite pattern, with more boys, younger age, and the weaker previous skills.

Using both educator ratings and direct assessments provides a more accurate view of children's self regulation. The profiles show that measures may diverge, highlighting the need for comprehensive assessment. Children who are younger, boys, or who have weaker earlier skills may benefit from additional targeted support.

Keywords: self-regulation, early education and care, educator ratings, Direct assessment, Latent profile analysis

Self-regulation development in preschoolers: Effects of preschool activity types

Vaso Tiliopoulou, Pauline Slot, Ora Oudgenoeg-Paz & Paul Leseman

Self-regulation (SR) is a multidimensional construct defined as the ability to manage one's thoughts, emotions and behaviors. It develops rapidly during the preschool years and is crucial for later socio-emotional and academic development. In the Netherlands, targeted preschool programs under the national educational equity policy aim to support children from disadvantaged backgrounds during this critical developmental period. However, little is known about how activities in these programs relate to SR development. This study examines (1) how SR develops between ages 2.5 and 4 and the extent to which background characteristics explain individual differences,

and (2) how different types of preschool activities contribute to SR, particularly for children from socioeconomically disadvantaged backgrounds.

This paper reports on a Dutch longitudinal sample of 110 children participating in ECEC centers offering targeted programs, assessed at approximately age 2.5 (T1) and 4 (T2). SR was modeled as a second-order latent construct using longitudinal confirmatory factor analysis (CFA) in Mplus. We used a multi-method, multi-informant design combining task-based measures of momentary regulation (a selective sustained attention task and two delay of gratification tasks) with teacher-rated questionnaire measures reflecting children's everyday classroom behavior (Strengths and Difficulties Questionnaire; SDQ). This design strengthens construct validity by reducing measurement impurity and capturing SR both in momentary task performance as well as in general behavior in everyday classroom contexts, which is often overlooked in research that focuses exclusively on performance-based measures. Longitudinal measurement invariance was examined, and partial scalar invariance, a rather strong form of invariance, was established, allowing for comparisons of the mean SR scores over time. Additionally, background characteristics were examined as predictors, including age, gender, and a binary variable indicating whether children were targeted for the programs based on maternal education (a proxy for SES) and migrant/multilingual status. Activities were reported by teachers at group level, forming eight categories (motor/physical indoor, play/cooperation, language/literacy, math, nature/science, creative, music, and outdoor activities).

Our results show that SR increased rapidly from T1 to T2 (≈ 0.90 SD), indicating a substantial development during the 1.5-year preschool period. At T1, girls and non-targeted children showed higher SR, but after accounting for earlier SR, background characteristics did not further predict SR at T2. This pattern indicates that initial differences by gender and socioeconomic risk status do not increase during the preschool period, possibly reflecting the effects of targeted programs. Furthermore, exploratory analyses suggest that structured educational and collaborative play activities are positively associated with SR growth, whereas more frequent physical play (indoors/outdoors) shows a trending negative association. Additional analyses will explore whether the strength of these associations varies by socioeconomic risk status.

This study highlights the value of multi-method, multi-informant designs in capturing SR more comprehensively. Our findings show that SR develops rapidly during preschool, differences between children from diverse backgrounds may be mitigated, and that specific types of activities, particularly structured and socially engaging activities, may support SR development. These insights can inform educators and policymakers in designing preschool programs that reduce early inequalities and better support young children's emerging self-regulatory skills.

Keywords: self-regulation, early childhood, second-order model, longitudinal, preschool activities

Pilot study of check in check out support in Finnish early childhood education and care

*Mika Paananen, Meri Lii-
mätäinen, Asko Tolvanen
& Anne Karhu*

Children in early childhood education and care (ECEC) settings often experience difficulties with self-regulation and behaviour. Such difficulties can have a negative impact on the wellbeing of both the children and the staff responsible for their care (Siekkinen et al., 2013). Despite the evident need for effective behavioural interventions in ECEC settings, research in this area remains limited. This study aims to examine the effects and social validity of Check In Check Out (CICO) support models for children with behavioural problems in ECEC settings. CICO's core elements include antecedent strategies such as pre-correction of behaviour, systematic positive feedback and the use of a Daily Report Card (DRC) to monitor progress. Evidence from school-based research largely suggests that CICO is an effective approach for pupils displaying a range of problematic behaviours (Hawken et al., 2014; Paananen et al., 2025). Furthermore, modified CICO in ECEC settings has demonstrated promising outcomes (Daniels et al., 2021). However, there is currently no evidence on the effectiveness or feasibility of CICO in ECEC settings in Finland and other European countries. The research questions were: (i) Does CICO support lead to positive changes in individually set target behaviours and a decrease in problematic behaviours in different ECEC situations? (ii) What is the level of social validity (i.e. experienced effectiveness and feasibility) of CICO support in ECEC? Interventions were implemented in spring and fall 2024.

Six boys and five girls ranging in age from five to six years old, along with their educators, participated in the study. The research team organised CICO implementation training for special education teachers conducting intervention implementation in ECEC units. Repeated measurements were employed, with outcomes evaluated by monitoring changes in specified target and problem behaviours between baseline, the intervention phase, and follow-up. Social validity was assessed using a questionnaire consisting of six items on a Likert scale ranging from 1 to 5. The data was analysed using nonlinear growth modelling and nonparametric randomisation tests. The overall results showed a clear positive change in the children's behaviour, both in the target behaviours and in the problem behaviours. At the group level, repeated measurements showed a positive trend during baseline (negative for diminishing problem behaviour). Therefore, it is not possible to assume an obvious, immediate and statistically significant effect of the intervention at group level. Instead, the entire intervention process produced a clear positive behavioural change (effect sizes ranging from 1.77 [DRC] to 2.41 [problem behaviour]). Analysis at the individual level showed that five of the eleven participants demonstrated a statistically significant (and for one approaching significance) change in target behaviour between the baseline and intervention phases. The social validity of CICO support was found to be as high as a mean score of 4.6 (out of 5), indicating its feasibility and effectiveness. The preliminary results suggest that usually school context CICO support is a potentially effective and applicable

Friday 21th of August

form of support in an ECEC setting and may be beneficial in preventing the exacerbation of behavioural problems and fostering social adaptation.

Keywords: Self-regulation, Behaviour problems, Intervention, Check In Check Out, Early Childhood Education and Care

Session E:4

Time: 13.30–15.00

Location: RUU Aino

Single papers: **Digital learning**

Chair: **Mimmu**

Sulkanen, University of Jyväskylä

Early childhood teachers' professional decisions about ICT: agency, responsibility, and educational purpose

Küllli Kallas, University of Tartu; Lehte Tuuling, University of Tartu

Quality development in the field of digitalisation of pre-schools

Sebastian Then, DIPF | Leibniz Institute for Research and Information in Education; Matthias Borgstede, University of Bamberg; Yvonne Anders, DIPF | Leibniz Institute for Research and Information in Education

Effects of unplugged and digital interventions on computational thinking skills in early childhood

Belinda Jäger, University of Graz

Individual learning support of children's development in pre-academic skills for pre-school- and early primary school years — first evaluation results of an digital app

Nurit Viesel-Nordmeyer, Aix-Marseille University (AMPIRIC)/TU Dortmund University; Jörg-Tobias Kuhn, TU Dortmund University (Department of Rehabilitation Sciences)

Abstracts

Early childhood teachers' professional decisions about ICT: agency, responsibility, and educational purpose

Küllli Kallas & Lehte Tuuling

Successful information and communication technologies (ICT) use in education is often linked to educators' self-efficacy, understood as teachers' beliefs in their ability to use technology to support learning. However, there is still a lack of knowledge of how early childhood education and care (ECEC) teachers make professional decisions about whether ICT should belong to ECEC, who should take responsibility for it and for what educational purposes ICT is used. This study addresses this gap by shifting the focus from

teachers' attitudes and technical skills toward how ECEC teachers think about the role of ICT in their everyday educational practice.

Empirically, the study draws on survey data from ECEC teachers in four European countries: Estonia (n = 226), Germany (n = 341), Latvia (n = 77), and Slovenia (n = 177), resulting in a total sample of 821 teachers. Teachers responded to eight statements addressing their perceived ability and willingness to engage with ICT, their sense of professional responsibility for children's ICT learning, and their views on the educational value of ICT in ECEC. Responses were given on a four-point agreement scale and included "hard to say" option.

This study builds on research on teacher agency and professional judgement (Bandura, 1997; Tschannen-Moran & Hoy, 2001; Priestley, Biesta, & Robinson, 2015), educational purpose and responsibility (Biesta, 2009, 2015), and digital competence (DigComp 3.0; Cosgrove & Cachia, 2025). From this perspective, teachers' responses to statements related to ICT in ECEC are understood as professional decisions shaped by role expectations, institutional boundaries, and views of what is appropriate for young children. Cultural and ecological perspectives (e.g., Rogoff, 2003) further emphasise that decisions about ICT are closely connected to questions of where children should encounter digital technologies and under whose guidance.

Exploratory and confirmatory factor analyses based on the answers to the statements supported a three-factor structure, where identified dimensions capture (1) instructional agency and ownership, reflecting whether teachers feel able, responsible and willing to engage with ICT in ECEC; (2) professional responsibility for ICT, indicating whether using ICT is part of the ECEC teachers' role; and (3) perceived educational value of ICT, referring to judgements about ICT as meaningful learning resource for young children. Composite scores based on the confirmed factor structure were used to examine teachers' overall positioning, with Kruskal–Wallis tests applied for country comparisons.

The findings suggest a distinction between recognising ICT as educationally meaningful and seeing oneself as the responsible agent for its implementation. Many teachers appear to value ICT in principle, while remaining hesitant to claim ownership of ICT use within ECEC settings. Cross-national comparisons showed that differences between countries were strongest in teachers' sense of agency and professional responsibility, while differences in perceived educational value were less pronounced. Overall, the findings show that responses to ICT in ECEC reflect professional decision-making about roles, responsibilities, and educational purpose. These findings suggest that efforts to support digitalisation in ECEC should address teachers' professional roles and institutional responsibilities, not only their technical skills or attitudes toward technology.

Keywords: ICT in education, teacher agency, Professional judgement

Quality development in the field of digitalisation of preschools

Sebastian Then, Matthias Borgstede & Yvonne Anders

Increasing digitalization is transforming not only society but also practices in preschools. Since the coronavirus pandemic, preschools have increasingly used digital media, particularly in col-laboration with families (Cohen et al., 2021). While this offers new opportunities, it also pre-sents significant challenges for early childhood education. Given that high-quality childcare positively affects child development (Anders et al., 2013; Sluiter et al., 2025), the integration of digital media should be embedded in systematic quality development processes. The expanded structure–process model (Anders & Oppermann, 2024) emphasizes that quality improvement depends on both conceptual anchoring and implementation, processes strongly influenced by the headteacher. We examine whether preschools can be classified into distinct groups based on their digitalisation efforts and which structural and professional characteristics predict group membership. Data was collected from 576 headteachers after the pandemic. On average, the preschools cared for 91 children, with a staff-to-child ratio of approximately 1:6. The proportion of children with a migration background averaged 55%. Headteachers were predominantly female, with a mean age of 49 years, and most held an academic qualification. Latent class analysis identified three digitalization profiles. Class 1 comprises highly digitalised preschools characterized by systematic use of digital media, digital organizational structures, and digital collaboration with families. Headteachers in this class frequently participated in professional development; however, structured quality development processes related to digital media were less pronounced. Class 2 includes highly digitalised preschools with comparable levels of media use and organizational digitalisation. In contrast to Class 1, these preschools regularly engaged in conceptual work and continuous quality improvement regarding pedagogical use of digital media. Class 3 includes preschools with low digitalisation, minimal use of digital media, almost no training for headteachers, and limited conceptual or quality-related engagement. Multinomial regression analyses were conducted to predict class membership. Neither the proportion of children with a migration background nor the staff-to-child ratio was significantly associated with class affiliation. However, each additional percentage point in the proportion of children under age three increased the odds of belonging to Class 2 rather than Class 1 by approximately 3% (OR = 1.03). Institutional support, attitudes toward digitalisation, and technical equipment did not significantly predict class membership.

Digital self-efficacy and digital leadership of headteachers emerged as strong predictors. Higher levels of self-efficacy and leadership were associated with a significantly higher likelihood of belonging to the more highly digitalized classes (e.g., OR = 3.9 and OR = 3.2 for Classes 1 and 2). Digital leadership was the only significant predictor distinguishing Class 1 from Class 2 (OR = 2.2): stronger leadership and a clearer digital vision increased the probability of belonging to the class characterized by systematic quality development.

Overall, findings demonstrate that preschools differ substantially in digital quality development efforts. Not only structural characteristics, but

especially the competencies of headteachers—particularly self-efficacy and leadership—are closely linked to higher levels of digitalisation. Headteachers with a clear digital vision and strong skills are more likely to lead preschools in which digital media are systematically integrated into educational and quality development processes.

Keywords: Digitalisation, Headteacher, Preschool, Quality Development

Effects of unplugged and digital interventions on Computational Thinking skills in early childhood

Belinda Jäger

Theoretical Background

The concept of Computational Thinking (CT) includes solving problems and understanding systems and human behaviour by applying concepts derived from computer science (Wing, 2006). CT skills can be applied across disciplines and for systematic problem-solving in everyday life (Moreno-León et al., 2025). Despite varying definitions of CT, abstraction, algorithmic thinking, decomposition and debugging are widely recognized as core concepts (Ezeamuzie & Leung, 2022). Previous research shows that various approaches such as robot-based and unplugged activities can enhance CT skills in preschool children (Zhang et al., 2025). However, empirical findings remain inconsistent regarding which approach is more effective and comparative studies across multiple intervention types are still limited (Zurnacı & Turan, 2024).

The present study aims to examine the effects of two digital and one unplugged intervention on CT skills of children aged 5-6 years. Accordingly, the study addresses the following research questions:

- (1) How do children's CT skills change from pre- to post-test in the intervention groups compared to the control group?
- (2) How do changes in children's CT skills from pre- to post-test differ between the two digital and the unplugged intervention groups?

Method

In this intervention study a quasi-experimental pre-post design with a control group is used. The participating 5- and 6-year-old children (N = 300) were assigned to one of four groups: (1) CT-focused board game, (2) button-operated robot, (3) tablet-based robot, or (4) control group. The study is conducted in Austria. While children of the intervention groups attended a weekly session for eight weeks, the control group did not have any special treatment apart from their daily routine. CT skills were measured pre- and post-intervention using the standardized assessment tool TechCheck-K (Relkin et al., 2020). Furthermore, additional covariates were collected, including mathematical competence, vocabulary and socio-economic background. Primary analyses will focus on pre-post changes in CT skills and will be conducted using ANCOVA, with post-test CT skills as the dependent variable, intervention group as a between-subjects factor and baseline CT skills included as a covariate to account for initial differences.

Results

At the time of submission, data collection is still ongoing and is expected to be completed in May 2026. Based on previous research, all applied interventions are expected to lead to improved CT skills compared to the control group, with the robot-based intervention showing a stronger effect than the unplugged intervention (Lin et al., 2024; Zhang et al., 2025). Results will be presented as adjusted post-test means with corresponding effect sizes, allowing comparisons across intervention groups and the control group.

Implications

The study is expected to have important theoretical and practical implications for early childhood education by identifying which instructional approach is most effective in supporting preschool children's development of CT. Although the interventions were specifically designed for small-group settings and implemented by trained professionals, the findings may provide guidance for developing approaches also adaptable for everyday practice in early childhood education settings. Furthermore, a follow-up assessment conducted two months after the post-test will enable an exploration of longer-term intervention effects.

Keywords: Computational Thinking, robot programming, early childhood education

Individual learning support of children's development in pre-academic skills for pre-school- and early primary school years — first evaluation results of a digital app

Nurit Viesel-Nordmeyer &
Jörg-Tobias Kuhn

Children's pre-academic skills at the beginning of formal schooling are fundamental for their successful learning processes in key competencies such as math or reading at school age (e.g., OECD, 2018). Therefore, each child should have the best possible opportunities for an adequate development of these pre-skills during their pre-school years. Due to the large amount of time that children spend in preschools before formal schooling, preschools offer a great opportunity to support children's development of these pre-skills, regardless of their home-learning environment. Therefore, the integration of individual support opportunities for each child's development of these skills into preschools' all days activities can be considered promising.

To address this need of individual support, we developed a science-based educational learning app (TELA) including games and a screener, that can be easily used via tablets directly in preschools. Specifically, caused by its features this TELA supports not only each child's individual need of learning support spanning ages 4-7 in math, reading and further cognitive skills, but also preschool teacher's resources to meet them. Our first evaluation of TELA's math learning training (N=71; Age Span=5-7) via questionnaires and logfiles revealed the following results: While children were using the TELA's math games(G) and screener(S) in preschools, they showed a large motivation to engage in the learning process (G=86%; S=99%), a high comprehension of the tasks itself (G=82%; S=94%) and the tasks' instructions (G=77%; S=95%), as well as a good motor use of these app (G=90%; S=95%). Also,

the teachers felt self-confidence conducting the screening (99%), and described a positive child-teacher collaboration during the whole screening process (99%). Log-file data analyses revealed, that this screener is in line with previous standardized paper and pencil tests for early math skills spanning different ages of pre- and early primary school (e.g., OTZ). Also, we found an age-appropriate distribution of the assessed skills over different development levels of math skills (Level I: basic numeracy skills, Level II: quantity number concept, Level III: number relationship) that are determined by models of early math development (e.g., Krajewski et al., 2015). This distribution of the different development levels was also visible by analyses on the percentage of up-leveling within the different math learning games, in relation with these games' skills level demand. For instance, in a given time of 15 minutes, 74% of the children were able to finish level 2 of a game demanding skills of quantity comparison but only 23% of the children were able to finish level 2 of a game that trains the understanding of the whole-part concept.

In conclusion, our findings of the first evaluation on TELAs math learning support were promising regarding usability and learning support in pre-schools. Further evaluations of TELA's different addressed skills (reading, math, executive function), their development processes as well as in different countries are currently in process. The connection of this pre-school learning app to existing standardised adaptive learning apps for primary school children, such as Meister Cody, will be discussed. A large standardisation study is in preparation.

Keywords: Learning support, pre-academic skills, Early education, digital support, key competences

Session E:5

Time: 13.30–15.00

Location: RUU Onni

Single papers: **Social and emotional learning**

Chair: Xiaona Lu,
University of
Jyväskylä

Empathy and Peer Acceptance in middle childhood: The mediating role of Prosocial Behavior

Cátia Bastos, University of Porto; Mafalda Pimenta, University of Porto; Tiago Ferreira, University of Porto; Joana Cadima, University of Porto; Marisa Matias, University of Porto; Paula Mena Matos, University of Porto

Emotional formation of a “friend” in institutional early childhood education and care

Eija Salonen, University of Jyväskylä; Lasse Lipponen, University of Helsinki; Annukka Pursi, University of Helsinki

Unlocking the potential of after-school programs: Social and emotional learning and interest development in Dutch after-school programs

Lisanne Jilink, Utrecht University & Partou Childcare; Paul Leseman, Utrecht University; Pauline Slot, Utrecht University; Mirjam Gevers, Partou Childcare

Abstracts

Empathy and peer acceptance in middle childhood: The mediating role of prosocial behavior

Cátia Bastos, Mafalda Pimenta, Tiago Ferreira, Joana Cadima, Marisa Matias & Paula Mena Matos

AIMS: Empathy and Prosocial Behavior (PB) are key socioemotional competencies associated with children's peer relationships (Ettekal & Mohammadi, 2020; Wang et al., 2019). However, the mechanisms linking children's empathy to peer acceptance remain insufficiently understood. The present study aims to investigate the association between different facets of children's empathy (i.e., understanding feelings, feelings of sadness, and tearful reaction) and peer acceptance during middle childhood, while testing PB as a mediator of this relationship.

METHODS: Participants were 123 children (53% boys; Mage = 8.2 years, SD = 0.6) recruited from 50 classrooms within 26 elementary schools in the metropolitan area of Porto, Portugal. Their mothers, fathers, and teachers also participated. Empathy was self-reported by children using Bryant's Empathy Index (Bryant, 1982), considering both cognitive (i.e., understanding feelings – e.g., "People who kiss and hug in public are silly.") and affective (i.e., tearful reaction – e.g., "Seeing a girl who is crying makes me feel like crying."; and feelings of sadness – e.g., "It makes me sad to see a boy who can't find anyone to play with.") dimensions. A multi-informant approach was used to assess PB, collecting mothers', fathers', and teachers' ratings on the prosocial subscale of the Strengths and Difficulties Questionnaire (Goodman, 1997 – e.g., "Shares readily with other children, for example toys, treats, pencils"). Furthermore, teachers filled the Child Peer Acceptance Scale (Ferreira et al., 2019 – e.g., "In general, other children like him/her."), a 4-item questionnaire developed to evaluate children's peer acceptance. We conducted a path analysis to examine the mediating role of PB, in the association between distinct dimensions of children's empathy and peer acceptance.

RESULTS: Results indicated that children's feelings of sadness were positively linked to PB reported by teachers, whereas tearful reaction was negatively associated with PB reported by teachers. Neither of these facets of empathy related significantly to mother- and father-reported PB. Furthermore, understanding feelings (a cognitive aspect of empathy) did not significantly contribute to children's PB. Our results suggest that PB fully mediated the association between empathy and peer acceptance, namely via the effect of feelings of sadness and tearful reaction (i.e., affective aspects of empathy) on teacher-reported PB.

THEORETICAL AND PRACTICAL SIGNIFICANCE OF THE STUDY: This study emphasizes how distinct dimensions of children's empathy might

contribute to PB and peer acceptance, stressing the relevance of cognitive and affective empathy facets in children's social adjustment during middle childhood. It also highlights the importance of considering multiple informants when assessing children's behaviors, such as sharing, helping, and comforting, as teachers' observations at school appear to capture different aspects of these prosocial behaviors than those reported by mothers and fathers. By highlighting the bridging role of PB between empathic foundational skills and peer acceptance, our findings may contribute to informing educational practices that foster children's socioemotional development, promoting social integration and more positive school environments.

Keywords: empathy, prosocial behavior, peer acceptance, middle childhood

Emotional formation of a "friend" in institutional early childhood education and care

Eija Salonen, Lasse Lipponen & Annukka Pursi

This study aims to shed light on the cultural-historical phenomenon of emotional formation (see Vallgård & Olsen, 2022) in the context of institutional early childhood education and care (ECEC). Specifically, it explores how emotional formation unfolds during educator-guided peer interactions.

The data consists of video observations of children between the ages of one and five and their educators at two centers providing flexibly scheduled ECEC in Finland. The analysis focuses on how educators respond to children's emotional displays during peer interactions, and how these displays evolve in response to guidance from educators.

The preliminary findings suggest that educators encouraged children to display emotions they deemed appropriate for a "friend," and children's emotions evolved accordingly. Specifically, educators urged children to display happiness and cheerfulness when playing and socializing with their peers; care and sympathy when comforting peers in distress; and regret and forgiveness when resolving conflicts with peers. In line with these trends, educators discouraged strong displays of grief, hostility, and boisterousness among peers.

The findings will provide insight into the cultural norms and expectations regarding the emotional qualities in peer interactions and friendships in institutional ECEC, promoting theoretical discussions about them. Furthermore, they will inform pedagogical practices that foster important friendship-related emotions, such as care and sympathy, in everyday ECEC interactions.

Reference

Vallgård, K., & Olsen, S. (2022). Historicizing emotional development. In D. Dukes, A. C. Samson, & E. A. Walle (Eds.), *The Oxford handbook of emotional development* (pp. 146–156). Oxford University Press.
<https://doi.org/10.1093/oxfordhb/9780198855903.013.25>

Keywords: cultural historical approach, early childhood education and care, emotional formation, emotional learning, friend

Unlocking the potential of after-school programs: Social and emotional learning and interest development in Dutch after-school programs

*Lisanne Jilink, Paul Lese-
man, Pauline Slot & Mir-
jam Gevers*

Many children in kindergarten and primary school spend a substantial part of their daily lives in after-school programs (ASPs), yet research on this setting is limited compared to early childhood education and care for pre-school-aged children. Debate continues about the role of ASPs: should it primarily provide leisure, or also support children's learning and development? This is especially relevant given the growing "broad developmental gap," encompassing not only academic disparities but also unequal opportunities to develop interests, talents, and social-emotional skills (Meier, Hartmann & Larson, 2018).

Unlike schools, ASPs operate without a fixed curriculum, allowing flexibility to support social and emotional learning (SEL), interest development, and experiential learning through play and activities. ASPs can complement formal education, particularly for children with limited access to enriching activities such as sports, arts, or music, offering accessible opportunities to explore and deepen their interests.

International literature shows that ASPs can positively contribute to SEL (Authors, 2025). Effective ASPs require differentiated program designs reflecting children's backgrounds, interests, and needs, with a rich and well-supported curriculum. Aligning activities with children's interests is particularly important to support motivation and sustained participation.

Two studies were conducted in typical ASPs in The Netherlands with mostly 4-8-year-olds to examine the quality of ASPs and to explore how it can be better utilized to support children's broad development. First, a qualitative study examined children's experiences, preferences, and ideas regarding ASP content. Semi-structured interviews were conducted with 27 children, focusing on their experiences in ASPs and their wishes regarding activities. Second, a quantitative study evaluated current program content and pedagogical quality. Data were collected in 66 ASP groups using standardized quality measures, including the CLASS Pre-K, an environment rating scale, and surveys among 89 pedagogical professionals.

The qualitative findings show that many children express a strong desire for guidance and instruction that enables them to develop knowledge and skills in specific domains, that is, to become knowledgeable and highly skilled. Moreover, the vast majority of children preferred to pursue these interests together with other children and expected to learn from each other. Observational measures indicate generally sufficient emotional support, but comparatively lower educational process quality, alongside substantial variation between settings. Furthermore, results point to a varying, but overall scarce offer of activities and reveal associations between interest-related pedagogical practices, the reported richness of activities offered, and policy and practice around child participation.

Theoretically, this study argues that interest development may provide a promising framework for conceptualizing an appropriate pedagogy for ASPs, a field in which theory development is still limited. By flipping the

Friday 21th of August

traditional curriculum-directed approach in education to a child-centered, personalized program that supports interest development across contexts, ASPs may foster deep learning and integration of basic school skills, skill formation, and expertise development in a way that adds importantly to school-based learning. Practically, the findings highlight the need for a richer and more intentional activity offer and for professional support that enables pedagogical staff to stimulate children's SEL and interest development.

Keywords: after-school programs (ASP), social and emotional learning (SEL), interest development, school-aged children

Closing session

Time: 15.10–15.30

Location: Ruusupuisto lobby/staircase

Saying farewells and closing the conference.

Closing words

Musical performance, Aada Ruotsalainen (violin)

Thank you for participating the SIG5Conference 2026!

