Biennial Meeting EARLI SIG 5

Researching Development, Learning and Well-Being in Early Childhood

Programme

27th - 29th of August 2012
Utrecht University
the Netherlands

Gemeente Utrecht

s a r d e s
Kennis voor beleid en praktijk

Universiteit Utrecht

**Educational and Learning Sciences
Utrecht University**

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Welcome to Utrecht!

We are very pleased to welcome you to the biennial meeting of the *EARLI Special Interest Group (SIG) 5 Learning and Development in Early Childhood* in Utrecht. Enjoy your stay!

We are proud to present to you the final conference programme and we thank all the presenters and their co-authors for submitting so many interesting symposium, paper and poster proposals of such high quality. There will be 2 plenary keynote addresses, 11 symposia, 14 thematic paper sessions, 2 round table discussions, 2 poster sessions and 5 interactive 'hands-on' workshops. In all, there will be 79 oral paper presentations and 22 poster presentations, partly together with the meeting of *SIG 15 Special Educational Needs*, also taking place in Utrecht on August 29th and 30th.

The presentations will cover virtually all topics in the field of early childhood development, care and education, addressing core issues of home and classroom quality, and the role of parents, teachers and peers in the development and education of emotional, social and cognitive competences in young children.

We are also very proud to welcome so many participants coming from all parts of the world. We hope there will be ample opportunities to get to know each other, to share research findings and to set up plans for future collaboration.

Thanks are also due to our sponsors: City of Utrecht, European Association for Research in Learning and Instruction, Sardes Research & Consultancy in Education, Utrecht University Department of Special Education, and Utrecht University Research Impulse Educational and Learning Sciences.

The first SIG 5 meeting in Lucerne, Switzerland, in 2010, was a big success and stimulated the development of networks of researchers in early childhood development, care and education from all over the world. We hope the second meeting of SIG 5 in Utrecht will be as inspiring and exciting, and will further strengthen the bonds between early childhood researchers.

Paul Leseman & Miriam Leuchter
(SIG 5 coordinators)

Lotte Henrichs, Ora Oudgenoeg-Paz, Pauline Slot & Saskia van Schaik
(local committee)

Anne Fluitman & Jacqueline Tenkink-de Jong
(administrative support)

Facilities at *de Uithof* and Practical Information

At *the Uithof* Campus, some standard facilities are available:

- Free wi-fi is available on campus through the eduroam network. If your university makes use of this network you will be able to log in using your regular username and password. If your university does not make use of this network, a temporary username and password can be provided to you by the service desk in the library.
- There are two Automated Teller Machines (ATM) present at the campus: one is located next to the entrance of *De Spar* mini supermarket (opposite to the Library's entrance) and one around the corner of *The Basket Bar* (in front of the Willem C van Unnik Building). Both ATMs accept most debit and credit cards, including MasterCard, Visa and Maestro.
- All machines and UU cafeterias at the campus are chip card operated. These chip cards are available on most Dutch debit cards. If you would like to buy yourself some snacks or drinks, you can buy special chip cards near the reception of the library.
- There is a mini supermarket (*De Spar Express*) available, opposite to the library.
- There is a pub/cafe present (*The Basket Bar*), near the main entrance of the Willem C van Unnik Building.
- A Bookshop is located on the ground floor of the Willem C van Unnik Building.
- On the ground floor of the library, you can find Book- and magazine shop Primera, Coffee/Espresso Bar *Gutenberg*, an Italian take-away restaurant (accepts cash only!) and a small sandwich bar.
- Tap water in Utrecht is perfectly safe to drink. In fact tap water in the Netherlands is one of the best in the world! During registration you will be offered a water bottle as a present. In light of sustainability, may we suggest that you refill this bottle with tap water? On campus you will find a special drinking tap (see map), but you can also refill your bottle using any tap on and off campus.
- In case of emergency, call: (0031)(0)30 253 2012

Venue

The conference will take place at Utrecht University, at the campus *De Uithof*.

Sessions will take place in the Boothzaal, which is located on the first floor of the university library (Heidelberglaan 3, Utrecht). Paper and poster sessions will take place in the Ruppert and Unnik buildings (Heidelberglaan 2, Utrecht) which is opposite to the library.


University library: Boothzaal

Unnik building with entrance to Ruppert building

Maps of *de Uithof*
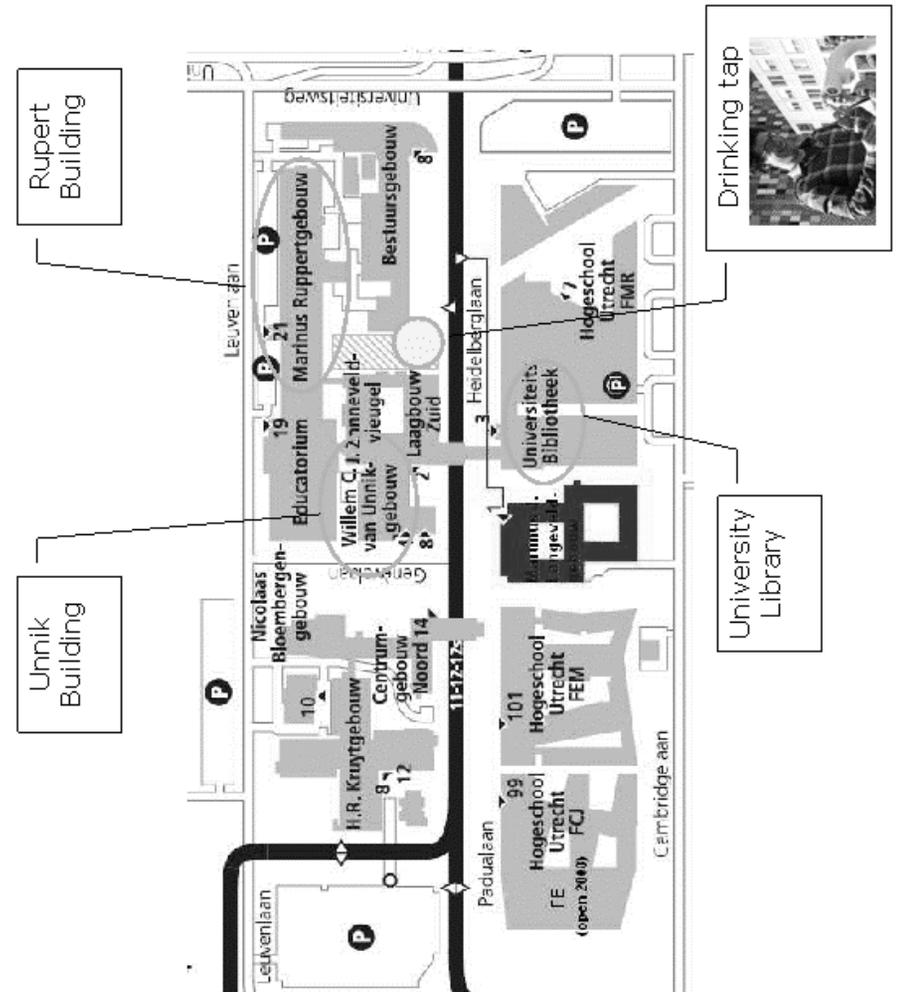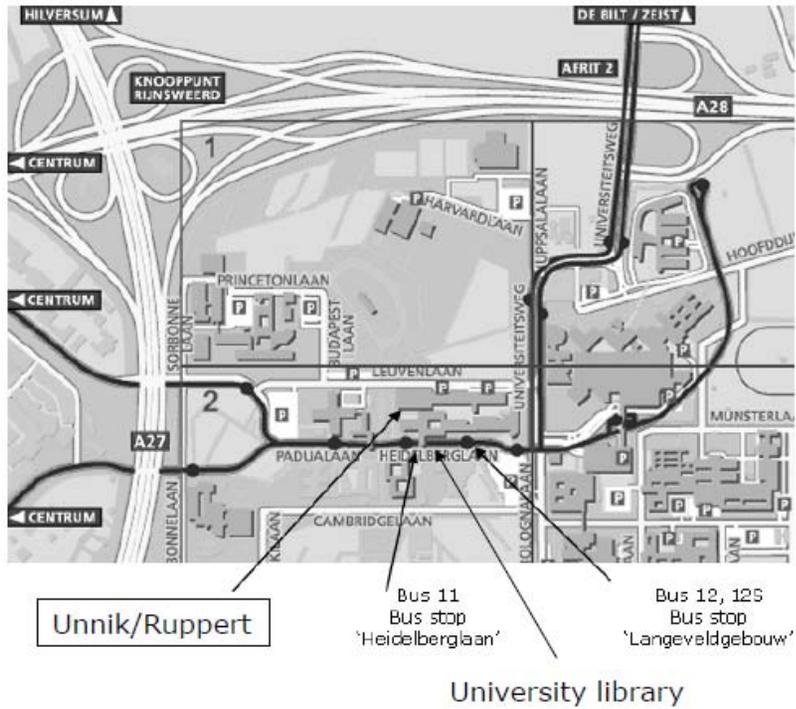
Unnik/Ruppert

Bus 11
Bus stop
'Heidelberglaan'

Bus 12, 12S
Bus stop
'Langeveldgebouw'

University library

Rupert Building

Drinking tap

Unnik Building

University Library

Biennial Meeting EARLI SIG 5
Researching Development, Learning and Well-Being in Early Childhood
Utrecht, The Netherlands

Programme

Monday 27 August

9.00-11.00	Registration	Hall Ruppert
9.00-11.00	Welcome	Booth Hall
11.00-11.30	Plenary opening session	Booth Hall
11.30-12.30	Keynote by Prof. Paul Harris (Harvard University, USA)	Booth Hall
12.30-13.30	Lunch break	Hall Ruppert
13.30-15.00	Parallel paper sessions & symposia	Ruppert
15.00-15.30	Tea break	Hall Ruppert
15.30-17.00	Parallel paper sessions & symposia Interactive Workshop Classroom Assessment Scoring System	Ruppert
19.00-22.00	Conference dinner	Academy Building

Tuesday 28 August

8.30-10.00	Parallel paper sessions & symposia	Ruppert
10.00-10.30	Coffee break	Hall Ruppert
10.30-12.00	Parallel paper sessions & symposia	Ruppert & Unnik
12.00-13.00	Lunch break	Hall Ruppert
12.00-14.00	Poster session	Hall Ruppert
14.00-15.30	Parallel paper sessions & symposia Interactive Workshop Classroom Discourse Analysis	Ruppert & Unnik
15.30-16.00	Tea break	Hall Ruppert
16.00-17.00	SIG 5 business meeting	Ruppert Rood
18.15-22.00	Boat trip & dinner	

Wednesday 29 August

8.30-10.00	Parallel paper sessions & symposia	Ruppert
10.00-10.30	Coffee break	Hall Ruppert
10.30-12.00	Parallel paper sessions & symposia	Ruppert
12.00-13.00	Lunch break	Hall Ruppert
12.00-14.00	Poster session	Hall Ruppert
14.00-15.30	Parallel paper sessions & symposia Interactive Workshop Longitudinal Growth Modeling[1] Interactive Workshop Bayesian Testing	Unnik
15.30-16.00	Tea break	Hall Ruppert
16.00-17.00	Keynote by Prof. Adèle Diamond (University of British Columbia, Canada)	Megaron
17.00-19.00	Farewell drinks	Hall Ruppert

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[1] Note. This workshop will start at 13:30 hrs

Keynote

Trusting what you're told: How children learn from others

Professor Paul Harris, Harvard University, United States of America

Monday 27th of August, 11:30 – 12:30
Boothzaal, University Library
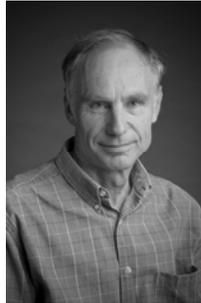
Abstract

Experimental work in psychology has traditionally focused on our capacity to observe and remember reality in a more or less veridical fashion. But recent research in developmental psychology has increasingly begun to analyze our human ability to set reality aside and to think about unobservable or fictional possibilities. I will describe how this imaginative capacity emerges in early childhood, the key role that it plays in learning from what other people say and do, and its larger impact on our trust in historical, scientific and religious claims.

Keynote

Leveraging Knowledge about Brain Development and Developmental Science to Help Every Child Thrive

Professor Adele Diamond, University of British Columbia, Canada

Wednesday 29th of August, 16:00 – 17:00
Megaron, Educatorium

Abstract

Diverse activities have been shown to improve children's executive functions (EFs), including computerized training, aerobics, martial arts, yoga, mindfulness, playing a musical instrument, and school curricula. Regardless of the intervention, a few principles hold: (1) EFs can be improved even in young children. (2) Children most behind on EFs benefit the most. Hence, early EF training is a good candidate for leveling the playing field and reducing social disparities in academic achievement and health. (3) EF demands need to keep increasing as children improve, or few gains are seen. (3) Whether EF gains are seen depends on the way an activity is done and the amount of time spent doing it, practicing and pushing oneself to do better.

The importance of social, emotional, and physical health for cognitive health is nowhere more evident than with EFs. EFs are the first to suffer, and suffer disproportionately, if we are lonely, sad, sleep-deprived, or not physically fit. If we want the best EFs and the best academic outcomes for our children, we need to nurture the whole child; our children need to feel joyful and that they are in a supportive community they can count on and their bodies need to be strong and healthy. What nourishes the human spirit also appears to be best for executive functions.

While it may seem logical that if you want to improve academic outcomes you should concentrate on academic outcomes alone, not everything that seems logical is correct. The most effective way to improve EFs and academic achievement is probably not to focus narrowly on only those, but to address children's social, emotional, and physical needs as well. Traditional activities, part of all cultures throughout time (e.g., dance, music-making, play and sports), should be immensely helpful. They challenge children's EFs, make them happy and proud, provide a sense of belonging, and help their bodies develop. A school curriculum that ignores children's emotional, social, or physical needs will find that those unmet needs will work against achievement of the academic goals.

Overview parallel paper sessions & symposia
Monday 27th of August

		1	2
Room		Ruppert A	Ruppert C
Theme		Assessing quality of ECE	Social-emotional development
1.1 13:30 15:00		**Symposium** Slot: Measuring quality in early childhood education and care. - Helmerhorst & Fukkink - Slot, Veen & Leseman - Kuger, Schmidt & Rossbach - Sylva, Siraj-Blatchford & Taggart Discussant: Lerkkanen	**Paper session** - Walker, Harrison & Spilt - Salminen, Hännikäinen, Poikonen & Rasku-Puttonen - Egert, Flöter & Eckhardt
Room		Ruppert 033	Ruppert A
Theme		Assessing quality of ECE	Social-emotional development
1.2. 15:30 17:00		**Workshop 1** CLASS Lecturer(s): Lerkkanen, Poikkeus, Slot & Leseman	**Symposium** Broekhuizen: Differential effects of early childcare on socio-emotional development - Broekhuizen & van Aken - Supper, Eckstein & Ahnert - van Schaik & Leseman Discussant: Vermeer

Overview parallel paper sessions & symposia
Monday 27th of August

		3	4
Room		Ruppert D	
Theme		Language in ECE	
1.1 13:30 15:00		**Symposium** Gunzenhauser: Language development and peer problems; integrating developmental psychology, linguistics, and speech-language pedagogy and therapy - Gunzenhauser, Fäsche & von Suchodoletz - Wagner - Licandro & Lüdtke Discussant: Sachse	
Room		Ruppert D	Ruppert C
Theme		Language in families & ECE	Play & peer interaction
1.2. 15:30 17:00		**Paper session** - Duursma - Purcell - Beckerle	**Paper session** - Wannack - Koenig - Hoogdalem & de Haan

Overview parallel paper sessions & symposia
Tuesday 28th of August

	1	2
Room	Unnik Groen	Ruppert 033
Theme	Social interaction in classrooms	Family processes & homecare
2.1 8:30 10:00	**Symposium** Ebert & Lehrl: Social interaction at home and in preschool - Ebert & Weinert - Lehrl, Ebert & Rossbach - Kratzmann & Faust Discussant: Evangelou	**Paper session** - Echhardt & Riedel - Berthelsen, Hackworth, Westrupp, Matthews & Nicholson - Linting, Groeneveld, Vermeer et al.. - Groeneveld, Vermeer, van IJzendoorn & Linting
Room	Ruppert 033	Unnik Groen
Theme	Social interaction in classrooms	Family processes
2.2. 10:30 12:00	**Paper session** - Mascareno, Doolaard & Bosker - Smidt, Kuger & Rossbach - Wanlin & Schauber	**Symposium** Luijk: The importance of sensitive parenting in child development - Lucassen, Lambregtse-van den Berg, van IJzendoorn, Bakermans-Kranenburg, Verhulst & Tiemeier - Tharner, Luijk, van IJzendoorn, Bakermans-Kranenburg, Verhulst & Tiemeier - Kok, van IJzendoorn, Bakermans-Kranenburg, Verhulst & Tiemeier Discussant: Harris
Room	Unnik Groen	Ruppert 033
Theme	Motivation in classrooms	Assessing quality of ECE
2.3. 14:00 15:30	**Symposium** Kikas: Task-avoidance behavior in the beginning of school and its relationships with teachers' practices and perceptions - Soodla, Mägi & Kikas - Pakarinen, Lerkkanen,Poikkeus & Nurmi - Kikas & Peets Discussant: Raski-Puttonen	**Paper session** - Vermeer & van IJzendoorn - Werner, Linting, Vermeer & Van IJzendoorn - Richter

Overview parallel paper sessions & symposia
Tuesday 28th of August

	3	4
Room	Unnik 211	Ruppert 116
Theme	Language in ECE	Evaluating ECE
2.1 8:30 10:00	**Symposium** Henrichs: Fostering advanced language in preschool and kindergarten settings - van Druten - Gosen - Henrichs & Leseman Discussant: Grøver Aukrust	**Round table** Mixed methods in early childhood research: the case of EPP(S)E Moderators: Siraj-Blatchford & Mayo
Room	Unnik 211	Ruppert 116
Theme	Language in ECE	Math development
2.2. 10:30 12:00	**Workshop 2** Early childhood classroom discourse analysis Lecturers: Henrichs & Zwitserlood	**Paper session** - Lambert & Spinath - Vogel & Jung - Bull, Marschark, Nordmann, Skene, Sapere &Lumsden
Room	Unnik 211	Ruppert 116
Theme	Language development	Digital tools & assessment in ECE
2.3. 14:00 15:30	**Symposium** Oudgenoeg & Verhagen: Assessing early predictors in language development - Oudgenoeg-Paz, Volman & Leseman - Verhagen, Mulder, Messer & Leseman - de Bree, Kerkhoff, de Klerk, Capel & Wijnen Discussant: Raijmakers	**Paper session** - Eagle & Sutherland - Liebers - Overtoom & van der Aalsvoort

	1	2
Room	Ruppert 033	Ruppert 116
Theme	Math & science development	Evaluating ECE
3.1. 8:30 10:00	**Paper session** - Mark-Zigdon - Hardy, Stephan-Gramberg, Tröbst, Robisch & Möller - Van Schijndel, Visser, van Bers & Raijmakers	**Paper session** - Egert & Eckhardt - Becke, Soltani & Leuzinger-Bohleben - Keegan, Siraj-Blatchford & Hayes
Room	Ruppert Wit	Ruppert 033
Theme	Math & science development	Executive functions
3.2. 10:30 12:00	**Symposium** Steffensky: Activity-based learning opportunities in science and math - Steffensky, Lankes & Carstensen - Leuchter, Plöger & Saalbach - Elia, Gagatsis, van den Heuvel-Panhuizen, Evangelou & Hadjittoouli Discussant: Leseman	**Paper session** - Van Bers - Lee et al. - Stevenson & Resing
Room	Ruppert 033	Unnik Groen
Theme	Math & science development	Executive functions
3.3. 14:00 15:30	**Paper session** - Rechsteiner & Vogt - Raijmakers - Anders & Rossbach	**Symposium** Mulder: Self-regulation in early childhood - Mulder, Verhagen, Boom & Leseman - Slot, Leseman & Mulder - Beijers, Riksen-Walraven, Putnam, de Jong & de Weerth Discussant: Wijnroks

	3	4
Room	Ruppert Wit	
Theme	Language in families & ECE	
3.1. 8:30 10:00	**Symposium** Leseman: Language exposure in preschool predicting first and second language development in bilingual children - Koch & Hormann - Rydland, Aukrust & Lawrence - Henrichs & Leseman Discussant: Schoonen	
Room	Ruppert 116	Ruppert 111
Theme	Language development	Quality of ECE
3.2. 10:30 12:00	**Paper session** - Law, Houston-Price & Loucas - Mason-Apps, Stojanovik & Houston-Price - Lepola, Lynch, Laakkonen, Silvén & Niemi	**Round table** Professionalization and ECE staff competences in European perspective: the CoRe report Moderators: van Laere & Peeters
Room	Unnik 104	Unnik 220
Theme	Modeling development	Evaluating programs
3.3. 13:30/ 14:00 15:30	**Workshop 3** **NOTE: Starting time 13:30** Longitudinal growth modeling Lecturers: Boom & Oudgenoeg-Paz	**Workshop 4** **Starting time 14:00** Moving beyond null hypothesis testing Lecturer: Van der Schoot

Overview Parallel Sessions & Symposia

SIG-15 sessions also open to SIG-5 visitors

	5	6
Room	Ruppert 038	Unnik 222
Theme	Math & science development	Mathematic difficulties 1
3.3. 14:00 15:30	**Workshop 5** Maths garden Lecturer: van der Ven (SIG 15: 1.2.2)	**Paper session** - Lambert & Spinath - Peltenburg et al. - Groenesteijn (SIG 15: 1.2.1)

- These sessions, while associated with the EARLI SIG-15 conference also taking place at Utrecht University, are open for visitors from the EARLI SIG-5 conference as well. As such, you are welcome to join these sessions in addition to the regular SIG-5 program.

Conference Dinner

Monday August 27th 19:00 – 22:00
University Hall, Domplein 29

The conference dinner will take place in the 'Senaatszaal' of the University hall (Academiegebouw) at the Domplein 29 in the city centre of Utrecht. The dinner is only open to delegates who have registered for the dinner in advance.

Mr. Jeroen Kreijkamp, member of the City Council of Utrecht and alderman for education, library services, personnel & organization development, will welcome the delegates on behalf of the City of Utrecht.

You can get to the University hall by bus, exiting at bus stop 'Janskerkhof'. Turn your back at the church behind you (Janskerk) and walk towards the street you are facing. This is the Korte Janssstraat. Follow this street, then the straight on to the Domstraat, and you will encounter the Dom tower. You will find the University Hall around the corner (see map below).

Boot trip
Tuesday 28th of August

Utrecht has a unique character with its convivial terraces along the canals, the old centre with its many churches and the beautiful parks along the defensive canal system (Singels). We will make a city tour over the Oudegracht and the outer canal system (Singels) of Utrecht and learn all about the hidden beauties of the city and about historic and modern places of interest. The boats are covered-in and have a heating system, though with good weather the roof panels and the side windows are of course wide-open. During the trip there will be drinks and some appetizers.

Departure time 18:15
Departure point Oudegracht aan de Werf nr. 85, at the Viebrug (Viebridge) crossing Lange Viestraat
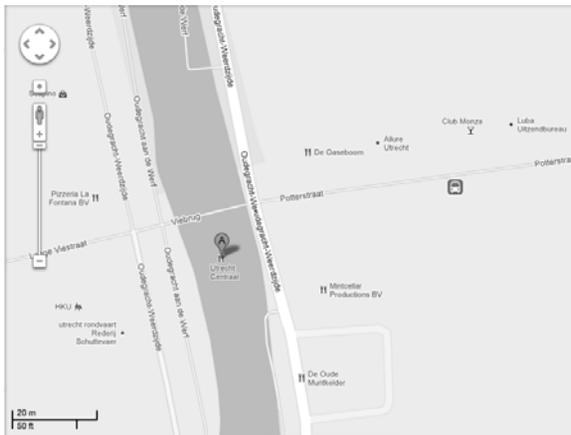
Directions from the Uithof/University:
Take **bus line 11** to Utrecht Centraal and get out at busstop **Neude**. Turn to the left at **Potterstraat** and walk towards the canal, take the **Viebrug** and cross the water. Here you will find the meeting point for the boat trip. It takes approximately 25 minutes to get from the Uithof/University to the meeting point. Bus line 11 leaves about every ten minutes from the Uithof/University.
http://www.schuttevaer.com/boat-excursions-and-tours-over-unique-canal-system-mediaeval-city-utrecht

Overview abstracts parallel sessions

Monday 27th of August
13:30-15:00

1.1.1

Symposium

Measuring quality in early childhood education and care

Convenor: Pauline Slot, Utrecht University, the Neterlands
Discussant: Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland

Integrative Statement:

This symposium represents studies on quality of Early Childhood Education and Care (ECEC) of three different countries. It sheds a light on different aspects of measuring quality in ECEC. Katrien Helmerhorst and Pauline Slot will address global observational measures used to assess process quality. Pauline will provide an overview of relations between different structural and process quality aspects, measured with the CLASS. Katrien will address the effects of quality, using a Dutch quality instrument based on the ORCE, on children's well-being, problem behavior and competencies. Furthermore, Susanne Kuger will provide new findings in comparing quality measurement at the classroom level, using the ECERS-R/E, and quality measured at the individual level. And, Kathy Sylva will provide more insight in the relation between global quality, measured with the ECERS-E, and actual teaching practices by using focal child observations, which allowed for more detailed information on children's day-to-day experiences. In sum, this symposium will address different aspects of quality, and different assessment systems to measure quality in ECEC, and relations between quality and children's experiences as well as children's outcomes.

1.1.1.1

Measuring childcare quality: Focus on the caregiver

Katrien Helmerhorst, University of Amsterdam, the Netherlands
Ruben Fukkink, University of Amsterdam, the Netherlands

Abstract:

There is now abundant evidence that the quality of nonparental child care contributes to children's wellbeing and development. Child care quality can be measured with structural quality measures (i.e. caregiver-child ratio and caregiver education and training) and proximal quality measures which capture process quality that refers to the children's everyday experiences with caregivers, peers and materials. Caregiver behavior in interaction with children constitutes the core of process quality. Given the key role of the caregiver in determining the quality of children's experiences in child care, adequately measuring the quality of caregiver interactive behavior is needed to monitor the process quality of care. The Netherlands Consortium for Research in Childcare (Nederlands Consortium Kinderopvang Onderzoek, NCKO) therefore developed the *Caregiver Interaction Profile* (CIP) scales, distinguishing between six key caregiver skills: *Sensitive responsiveness*, *Respect for autonomy*, *Structuring and limit setting*, *Verbal communication*, *Developmental stimulation* and *Fostering positive peer interactions*. A validation study of the CIP-scales showed adequate reliability and provided indications for construct and criterion validity.

In a second study, we found statistically significant relationships between childcare quality, as measured with the CIP scales and the ITERS/ECERS measure, and well-being, problem behavior and competencies of young children in Dutch childcare. These correlations were still apparent when family and child variables were taken into account.

Our findings emphasize the importance of including specific measures of caregiver behavior in the measurement of childcare quality.

1.1.1.2

Structural and process quality of different ECEC provisions in The Netherlands

Pauline Slot, Utrecht University, the Netherlands
Annemiek Veen, Kohnstamm Instituut, the Netherlands
Paul Leseman, Utrecht University, the Netherlands

Abstract:

Quality of early childhood education and care (ECEC) is known to contribute to children's cognitive and social development, especially for at risk children. Longitudinal studies have shown long term effects on children's school achievement and behavioral adjustment. PreCOOL is a longitudinal cohortstudy

aimed at investigating the quality of different ECEC provisions in the Netherlands and the effects on the cognitive and social development of children.

For this study, one of the pre-COOL-cohorts of children was used: A cohort consisting of 1667 children in 269 participating ECEC centers (both day care and preschool). Child and parental data were collected when children were two and three years old. Quality of the participating ECEC centers was measured on both times as well, which is the focus of the current paper.

Quality was measured using observational measures as well as questionnaires for teachers and managers. The Classroom Assessment Scoring System (CLASS) was used to measure process quality in the centers, focusing on Emotional Support, Classroom Management and Instructional Support. The questionnaires were aimed to measure structural quality aspects, different classroom characteristics (e.g. group size, group composition, use of an educationally focused program), teacher or center characteristics (e.g. educational level and additional training, team regulation) and process quality aspects (e.g. frequency of educational and play activities).

Results indicate important differences between child day care and preschools. Furthermore, the relations between different structural and process quality aspects will be discussed in light of improving the quality of Dutch ECEC centers.

1.1.1.3 **Process quality in preschool – comparing assessment at individual child level with classroom level**

Susanne Kuger, German Institute for International Educational Research, Germany
Wilfried Smidt, University of Koblenz-Landau, Germany
Hans-Günther Rossbach, University of Bamberg, Germany

Abstract:

Research reviews have proven the effects of non-family early child care on socio-emotional and cognitive child outcome many times over. Most present research studies in non-parental care settings focus on quality that is assessed on classroom level. One of the criteria of high quality care in these assessments is individualized support. This could best be captured when analyzing process quality experienced by individual children. Such quality at single child level covers more closely the teachers' endeavors to match instructional support to a child and individualize work in general. It also assesses a child's experiences and behavior in more detail and focus. So far, only little research is available that compares quality at the two levels of assessment, yet some indications point to substantial differences between quality at classroom level and quality at single child level. The current contribution compares quality that was observed at single child level and at classroom level. Both observations took place at the same preschool classrooms during the same morning by independent observers. The question is raised to what extend the two levels of assessment are in agreement with each other and which facets are more distinct.

The data used was collected in the longitudinal sample BiKS-3-10. The study includes observational data measured by the ECERS-R and ECERS-E and by a newly developed target child observation in 51 classrooms. The target child observation focuses on behavior and experiences of individual children and their teachers. Two children per classroom were observed (102 children). The 53 boys and 49 girls were in their first year of German preschool and 45.7 months (SD = 3.3) old. For 25 children at least one parent had a non-German mother-tongue, which is the criterion defining migration background. The 51 teachers were all females with an average teaching experience of 16.6 years (SD = 8.8). The classrooms were regular age-mixed German preschool classrooms with an average size of 20.4 (SD = 3.7 3- to 6-year-old children from diverse backgrounds.

Correlation analyses and confirmatory factor analysis display a pattern of relations among aspects of process quality at target child level and at classroom level. On the one hand, global aspects of quality at classroom level, such as climate and the overall management and structuredness of the classroom are closely related to positive interactions between the teacher and the target child and individualized work of the teacher at target child level. On the other hand, aspects of cognitive stimulation at target child level – either in global aspects (e.g. general knowledge, reasoning) or else in domain-specific aspects (e. g. literacy, numeracy) – are far less related to cognitive stimulation at classroom level.

We conclude that a) teacher match their teaching behavior to individual children to a certain extent, b) this matching is apparently more prevalent in aspects of cognitive stimulation than in more global aspects of process quality. A reason might be that aspects of individualized work like empathy and respecting children's individual needs are overall teacher traits, whereas individualized instructional support require material, stimulating situations, and methods that can be adjusted according to individual children's needs.

Child and Adult Activities in High Quality Early Education: role of 'sustained shared thinking'

Kathy Sylva, Oxford University, United Kingdom
Iram Siraj-Blatchford, London Institute of Education, United Kingdom
Brenda Taggart, London Institute of Education, United Kingdom

Abstract:
The purpose of this paper is to show how curricular quality is related to the day-to-day activities experienced by children and the pedagogical activities of staff. The study used focal child observations (target-child) that coded child and adult behaviour separately. Data were drawn from the Effective Provision of Pre-School Education (EPPE) and the Researching Effective Pedagogy in the Early Years (REPEY) studies. Curricular quality was measured by coding the ECERS-E, an English curricular extension to the well-known ECERS-R.

In centres scoring high on the ECERS-E, staff engaged in pedagogical practices that included more 'sustained shared thinking' and more 'direct teaching' such as questioning or modelling. In high-scoring centres, children were also observed participating in more activities associated with early reading, emergent writing and active listening. Children in centres assessed as 'adequate' spent more time in activities associated with the 'Physical Development' and 'Creative' aspects of the curriculum. Thus the ECERS-E gives higher scores to pedagogical practices and activities where staff take a more active role in children's learning, including scaffolding young children's play, especially in the communication and literacy domains of the curriculum.

Paper session

Teacher-child relationship trajectories from age 4/5 to 8/9 years: associations with academic achievement.

Sue Walker, Queensland University of Technology, Australia
Linda Harrison, Charles Sturt University, Australia.
Jantine Spilt, Free University Amsterdam, The Netherlands.

Abstract:
Introduction
The importance of supportive, non-conflicted relationships between students and teachers for academic achievement at school has been well established internationally, but few studies have examined these effects continuously over time. An exception is the work of Spilt et al. (in press) who predicted differences in children's maths and reading achievement from trajectories for teacher-student relationships. Spilt et al studied a U.S. sample of 657 low-achieving children from Grade 1 to Grade 6. In this paper, we take this work further by examining relationship trajectories in a nationally representative sample of 3584 children participating in the Longitudinal Study of Australian Children (LSAC) – K Cohort.

Method
Trajectories for teacher-student closeness and conflict were identified from data collected at waves 1 to 3 of the LSAC via the Student-Teacher Relationship Scale (STRS) – Short Form (ages 4-5, 6-7 and 8-9 years) using growth mixture models, which were conducted separately for boys and girls. The LSAC wave 4 data release includes linked data to Australia's National Assessment Program - Literacy and Numeracy (NAPLAN), a test that all students in Year 3 (age 8) complete on the same day using national tests in Reading, Writing, Language Conventions and Numeracy. Regression analyses were conducted to predict children's NAPLAN scores from teacher-student relationship trajectories, controlling for the effects of family socio-economic position, child ethnicity and age 4-5 literacy/numeracy ability.

Results
Teacher-student conflict had a low-stable growth trajectory for 73% of boys and 85% of girls, and teacher-student closeness had a high-declining trajectory for 56% of boys and 63% of girls. For conflict, both girls and boys were identified in a low-increasing (12% of boys; 9% of girls), high-declining (8% of boys; 4% of girls); and moderate-increasing (4% for boys; 2% for girls) patterns. Only boys showed a high-stable (3%) trajectory. For closeness, three additional trajectories were identified: high-stable (30% of boys; 28% of girls), low-increasing (11% of boys; 7% of girls), and low-stable (3% of boys; 2% of girls). Results from hierarchical regression analyses indicated that the STRS latent class predictors contributed 0.9% to 2.8% of the variance for NAPLAN scores. In comparison, early literacy and numeracy, Indigenous status and family socio-economic position contributed 18.8% to 27.2%. Overall, girls

with decreasing conflict trajectories performed well compared to girls whose levels of conflict increased. No effect of STRS conflict classes for boys. Boys with decreasing levels of closeness (normative) performed better than boys with continuously high closeness over the three waves. No effect of STRS closeness latent class membership for girls.

Conclusions

A focus of current government policy in Australia is to build positive attitudes to school and competencies in literacy and numeracy. Fostering positive and effective student-teacher relationships across the early school years will benefit children's academic achievement. Girls' achievement is negatively affected when conflict with their teachers increases. Teachers need to recognise this and find ways to reduce conflict with girls. Boys' achievement is negatively associated with overly close relations with teachers, perhaps indicating greater anxiety about school and too much reliance on teachers.

1.1.2.2   **How do teachers contribute to social life in preschool classrooms during structured learning sessions**

Jenni Salminen, University of Jyväskylä, Finland
Maritta Hännikäinen, University of Jyväskylä, Finland
Pirjo-Liisa Poikonen, University of Jyväskylä, Finland
Helena Rasku-Puttonen, University of Jyväskylä, Finland

Abstract:

Patterns of relationships are established between adults and children in preschool classrooms. Teachers are the adults who share social life in educational settings with children and, thus, have an opportunity to direct children's behavior towards socially acceptable ways of interaction. Social life in preschool classrooms consists of a multitude of elements such as interactions and relationships between children and adults, social skills, social responsibility, rules and agreements, and classroom climate, which teachers influence through various practices.

The present study aims to seek a deeper understanding of the teacher's role in social life in Finnish preschool classrooms. Further, the aim is to reveal the subtle, intertwined nature of structured learning sessions where teachers provide support for social life simultaneously alongside the academic agenda. The following research question is addressed: What types of practices do teachers establish during learning sessions that can be seen to positively contribute to social life in preschool classrooms?

Observations were conducted in the classrooms of 22 Finnish

preschool teachers, who participated in the First Steps follow-up study (Lerkkanen et al., 2006). Teacher-child interactions were observed for three hours at a time on two separate days and were simultaneously either video- or audio taped. The tapes were transcribed resulting in a total 581 pages of transcribed text. The data were analyzed qualitatively, according to the principles of thematic analysis. The tool utilized to structure the data was a 3-level model (see Kernan, Singer and Swinnen, 2011) of teacher's support for: 1) individual children, 2) dyadic or small group interactions or 3) whole group.

The findings indicated that teachers contribute to the social life of classrooms in at least the following ways: a) teachers model the socially appropriate behavior to children, b) teachers establish commonly shared rules for participation or social interaction together with children and, thus, children refer to these rules and c) teachers speak directly about social themes (e.g., being a good friend, fairness) with the children. The amount of direct talk of socially appropriate behavior was clearly less frequent than teachers' modeling of behavior. In addition, teachers contributed to social life more often by addressing their message to the whole group or child dyads/small groups than by addressing individual children. The findings suggest that despite teaching a specific content to children, teachers also utilize many practices which indirectly affect social life in the classrooms.

The teachers had created a warm and intimate climate in their classrooms, which they modeled to children through sensitive practices. The findings can be used as good examples in teacher education and can be seen to enhance understanding on the importance of positive social life not only with regard to the well-being of individual children but also the wider social contexts. Paying attention to social life in early educational settings may help preventing social exclusion, and socially responsible and motivated children perhaps create constructive relationships also later in life.

1.1.2.3   **Differential effects of student-teacher-relationship on social and behavioral competencies of 2 and 4 year olds in center based care**

Franziska Egert, German Youth Institute, Germany
Manja Flöter, Free University of Berlin, Germany
Andrea G. Eckhardt, University of Applied Science Zittau-Görlitz, Germany

Abstract

The purpose of this investigation is the examination on the dependence of child-teacher-relationships and child, teacher, and classroom characteristics and the extent to which these features predict social competencies and problem behavior of 2 and 4 years old children in center based care. The sample of this investigation is a subsample of the NUBBEK-Study (Tietze et al., 2012) and consists of 403 early education teachers (395 females) with a mean of 15.13 years (SD=11.35) of working experience in early childcare classrooms. Of the subsample, 118 teachers work in infant-toddler classrooms, 139 in mixed-aged groups, and 146 in pre-k classrooms. The sample of 1278 children is composed of 2 year olds (n=564) and 4 year olds (n=714) in center based care. Teacher were ask to rate their relation to the target child, measured with the student-teacher-relationship scale (STRS, Pianta et al., 1992), and to estimate social competencies (ITSEA; Carter & Briggs-Gowan, 2000; SSIS; Gresham & Elliot, 2008), problem behavior (CBCL; Achenbach, 1991) and communicative skills (subscale Vineland II; Sparrow, Cicchetti & Balla, 2005).The relational quality of teacher child dyads distinguishes within the classroom, because both child and teacher are constructing the relationship. Therefore in a first step, we analyzed the relation of child (e.g., age, gender, ses, ethnicity, and communication skills), teacher (e.g., gender, qualification, sensitivity, depression and personality), and classroom characteristics (e.g., ratio, group size, quality) on the child-teacher-relationship with hierarchical regression models. Within the 2 year olds 20.3% of variance and within the 4 year old children 12.7% of variance is explained by child, teacher, and classroom characteristics. Further, teachers' judgments on relational conflicts and the emotional support they provide for young children are indicators of children's social adjustment. In a second step, we hierarchically analyzed the predictive function of child, teacher, and classrooms characteristics in addition to child-teacher-relationship and communication skills on social development and problem behavior of 2 and 4 year olds. Together, 55.9% of variance in social competencies and 44% of problem behavior of the 2 year olds and 55.6% in social competencies and 40.7% of problem behavior of the 4 year olds could be explained by these indicators. However, social and behavioral competencies are mostly associated with child-teacher-relationship and communication skills of the children. The mediation function of these two indicators will be further analyzed with a structural equation model. Results point to the importance of child-teacher-relationship to establish positive behavior and foster social-emotional development in early childhood.

Symposium

Language Development and Peer Problems: Integrating Developmental Psychology, Linguistics, and Speech-Language Pedagogy and Therapy

Convenor: Catherine Gunzenhauser, University of Freiburg and University of Cologne, Germany

Discussant: Steffi Sachse, University of Ulm, Germany

Integrative Statement:

Children with poor language skills often experience social difficulties in preschool and beyond (Moffit & Caspi, 2001). In particular, they struggle with initiating and maintaining positive peer relations (McCabe, 2005; Menting, van Lier, & Koot, 2011). The purpose of the suggested symposium is to examine reciprocal relations between children's language skills and peer relations, integrating research methods and evidence from the fields of developmental psychology, linguistics, and speech-language pedagogy and therapy. The symposium seeks to (1) clarify how language skills may contribute to peer problems and vice versa, and (2) to explore practical implications for preschool language interventions. The first paper (Gunzenhauser, Fäsche, & Suchodoletz) presents a longitudinal study investigating children's vocabulary and peer problems between preschool and grade 1. Results of a cross-lagged path-analysis indicate that poor vocabulary puts children at risk for later peer problems. The second paper (Wagner) examines child-child interactions during free play in a German preschool classroom. Findings will provide qualitative insight in the way children's language skills contribute to their management of peer conflict and cooperation. The third paper (Licandro & Lüdtke) explores the effectiveness of a peer tutoring program designed to improve narrative skills of second language learners in preschool. Results will indicate whether children with deficient skills in their second language can benefit from structured interactions with peers that share the same cultural and linguistic background. The discussion will focus on possible ways to foster children's language development and social skills, taking into account the interrelatedness of both domains.

Reciprocal Influences between Vocabulary Skills and Peer Problems: A Longitudinal Approach

Catherine Gunzenhauser, University of Freiburg, Germany
Anika Fäsche, University of Freiburg, Germany
Antje von Suchodoletz, University of Freiburg, Germany

Abstract:
Purpose and research questions

Children's language skills are associated with the quality of their peer interactions (Hill, 2002). As language skills help children to interpret social cues and build satisfying relationships, children with poor language skills are at risk to experience peer rejection more frequently (Menting, van Lier, & Koot, 2011). Thus, deficient language skills may contribute to peer problems. At the same time, peer interactions are an important context for children's further language development (Justice, Petscher, Schatschneider, & Mashburn, 2011). Accordingly, children with peer problems may have difficulties to improve their language skills (Cohen & Mendez, 2009). The aim of the present study was to explore the reciprocal relationships between vocabulary and peer problems in children between preschool and first grade.

Method

In this study, N = 65 children participated (37% girls; MAge (time 1) = 5.64 years, SD = 0.38). The study included three time points: Fall of the last preschool year (time 1), fall of grade 1 (time 2), and summer of grade 1 (time 3). At each time point, children's mothers completed the peer problems subscale of the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997). Children's vocabulary at time 1 was assessed using the vocabulary subscale of Kaufman's Assessment Battery for Children (Kaufman, Kaufman, Melchers & Preuß, 2006). Children's vocabulary at time 2 and time 3 were assessed with the Vocabulary and Word Finding Test (Glueck, 2006). Vocabulary scores were z-standardized to make scores comparable across time points.

Results

Growth and reciprocal relationships between vocabulary and peer problems were modeled using cross-lagged path analysis in Mplus 6.12. Results showed that children's vocabulary scores at time 2 were predicted by their vocabulary scores at time 1 (β(Voct1) = .67, p < .01. Children's vocabulary scores at time 3 were predicted by their vocabulary scores at both earlier time points (β(Voct1) = .28, p < .01; β(Voct2) = .66, p < .01). Peer problems did not contribute to children's vocabulary scores at any time point. Children's peer problems at time 2 were not predicted by earlier peer problems or vocabulary. Children's peer problems at time 3 were predicted by earlier peer problems β(Peert1) = .33, p = .01; β(Peert2) = .42, p < .01), but also by lower vocabulary skills at time 2 β(Voct2) = -.35, p = .01).

Conclusions and implications

In this study, we did not find any evidence for a contribution of children's peer problems on later vocabulary scores. Although children may increase their language skills when interacting with peers, children with problematic peer relations do not seem to be on a disadvantage in terms of vocabulary growth as compared to children with better peer relations. In contrast, children's vocabulary scores at the beginning of grade 1 predicted peer problems at the end of the school year, controlling for earlier peer problems. Children with lower vocabulary scores showed more peer problems. Thus, early interventions facilitating children's vocabulary growth may not only improve their later language skills, but also help them developing more satisfying peer relations.

Conflict and Cooperation in Preschool classrooms: Multimodal Pragmatic Strategies in Child-Child Interaction

Katarina Wagner, University of Cologne, Germany

Abstract:
Purpose and research questions

As there is an ongoing debate on language deficiencies of children with a migrational background when entering primary school and how to solve this problem best, it is important to investigate language use in the educational institution prior to school, namely kindergarten. Here, children with a migrational background often have their first encounter with German as the sole language of communication.

This field of research still shows many gaps. Firstly, there is a noticeable lack of empirical data on successive second language acquisition of children with migrational background (cp. List, 2007). Secondly, there is a lack of research on how young children talk to each other when adults do not interfere (cp. Komor, 2010; Lengyel, 2009), although one can assume that peer interaction constitutes the majority of interactions in kindergarten. Therefore, it is of particular interest how children interact in these situations, given the fact that Blum-Kulka and Snow (2004) consider peer interaction to be very important for the pragmatic and cognitive development of children.

This study investigates the language use of children amongst themselves in a kindergarten with a high percentage of children with German as L2 (second language). The study will provide insights into the structure of child-child-interaction, taking its multimodality and the role of multilingualism into account. The approach is explicitly not deficiency-oriented, but focuses on the identification of children's skills and strategies dealing with frequent patterns of interaction, such as conflict and cooperation.

Method

An ethnographical fieldwork approach is used, as the children are observed openly in their natural environment. The study is carried out in a kindergarten in Cologne-Mülheim, a district with a high percentage of socio-economically disadvantaged families and families with a (Turkish) migrational background. The data is recorded in a group of 19 3- to 6- year old children during „Freispielphasen" ("free play") from March 2011 to March 2012. The final corpus will contain about 40 hours of recordings. Different levels of interaction such as speech, intonation and gesture and their interplay are analyzed on the basis of conversational analysis with additional annotations on the nonverbal and paraverbal modes of communication (using ELAN and the GAT 2 transcription system (Selting et al., 2009)).

Results

As this is a basic research study, the results will provide knowledge about early childhood verbal and nonverbal behavior in child-child-interaction as well as insight into the multimodal pragmatic strategies of children with German as L2 and of monolingual children in contact with their multilingual peers. Furthermore, the results will allow a closer look into the role of child-child-interaction for (second) language acquisition and language development.

Conclusions and implications

The results of the study can enhance the socio-political discussion on how to improve the language competence of children with a migrational background (and socio-economically disadvantaged children with German as L1 (first language)) as well lead to the improvement of early language support programs and pedagogical concepts in kindergarten.

1.1.3.3 Peers as Agents in Preschool Language Intervention – Can They Bridge the Cultural and Linguistic Mismatch?

Ulla Licandro, Leibniz University Hanover, Germany
Ulrike M. Lüdtke, Leibniz University Hanover, Germany

Abstract:

Purpose and research questions

In Germany, there is an urgent need for strategies supporting culturally and linguistically diverse preschool children as they develop their second language skills. Children's individual cultural backgrounds influence their production of narratives (Gorman, Fiestas, Peña & Clark 2011). However, due to the lack of culturally and linguistically diverse preschool teachers, there is often a mismatch between the child and the language support provider. In this case, pairing peer tutors and tutees from the same cultural and linguistic background might be a viable way to solve the cultural and linguistic mismatch and to promote enhancement of selected language skills in the preschool setting (McGregor 2000), as young children especially can benefit from models of their own cultural and linguistic backgrounds. On a different note, children with low language abilities, who frequently exhibit social difficulties, specifically in initiating play and entering peer groups (Beilinson & Olswang, 2003; Botting & Conti-Ramsden, 2009; McCabe, 2005), can benefit from language models of their typically developed peers (Robertson & Weismer, 1997).

Method

In this single-subject A-B-A design study, 4-5- year old Turkish-German preschool children (N=6) will participate. Based on standardized language scores in both Turkish (using SCREEMIK 2, Wagner, 2008) and German (SETK 3-5, Grimm, Aktas & Frevert, 2010), as well as narrative samples, they will be paired up in teams of two, each consisting of an untrained tutor and a tutee with overall lower language abilities. Intervention will take place twice a week in the preschool setting over the time course of eight weeks: Prompted by an adult, children will take turns telling each other stories selected from a pool of wordless picture books. Narrative samples obtained throughout the intervention will allow us to track development trajectories of narrative structure, as well as lexical-semantic and morphological-syntactical aspects. In a follow-up study four weeks after the intervention, long-term effects will be assessed. Additional narrative samples collected in Turkish pre- and post intervention will provide insight in whether a side-effect of the language intervention is the facilitation of narrative skills in the children's first language.

Results

Data collection will start in March 2012. Previous research leads us to expect gains in narrative ability on the side of the

tutees and no deterioration of performance on the tutors' side (cp. McGregor, 2000).

Conclusions and implications

First results will provide insight into whether employing peers as mediators in language intervention is a viable way to enhance selected language skills in the preschool setting in cases of a cultural and linguistic mismatch.

Notes

Monday 27th of August
15:30-17:00

Workshop

Assessing classroom quality in Early Childhood Care and Education with the CLASS

Marja-Kristina Lerkkanen, University of Jyväskylä, Finland
Anna-Maija Poikkeus, University of Jyväskylä, Finland
Pauline Slot, Utrecht University, the Netherlands
Paul Leseman, Utrecht University, the Netherlands

Abstract

   Classroom quality and the role of teacher–child interactions on developmental outcomes have been under extensive examination in recent years. Higher quality of teacher-child interactions has been found to be predictive of higher social competence and better pre-academic skills in the early childhood period (e.g. Burchinal et al., 2010). Authentic classroom observations have demonstrated their potential to inform about the quality. The Classroom Assessment Scoring System is an observational instrument developed to assess classroom quality in day care, in preschool, and in primary school (CLASS Pre-K and CLASS K-3; Pianta, La Paro, & Hamre, 2008; CLASS Toddler; La Paro, Hamre & Pianta, 2011). It focuses on three major components of classroom quality: Emotional Support, Classroom Organization, and Instructional Support. In this Workshop, we will give a brief general introduction to the CLASS framework and together with the participants engage in discussion of the CLASS dimensions and challenges of scoring using examples such as video clips and transcripts. We will also describe classroom quality observed in Finnish preschools and Dutch early childhood settings. The presentations are based on research findings which shows that the quality of teacher-child interactions are important contributors to children's academic skill development and achievement-related behaviours such as task behaviour and motivational interest. The findings in the presentations suggest that program development and professional development programs that focus on improving teacher-child interactions can enhance children's development and provide opportunities for positive learning experiences in early childhood.

Differential effects of early childcare on socio-emotional development

Convenor: Martine L. Broekhuizen, Utrecht University, The Netherlands
Discussant: Harriet J. Vermeer, Leiden University, The Netherlands

Integrative statement:

   There is general consensus that early childcare can be a mean to promote socio-emotional skills before entering formal schooling (Lamb & Ahnert, 2006). In correspondence, several studies found that higher quality of experienced childcare was related to several positive short-term and even long-term effects on child socio-emotional development. However, it also appeared that higher quantity of experienced childcare was related to child and sometimes even adolescent externalizing behavior problems.

   The aim of the current symposium is to specify these summarized main effects on child socio-emotional development, by presenting results on possible differential effects of early childcare, as a result of the home caregiving environment, type of childcare and specific caregiver characteristics.

   The first presentation will focus on how parenting and other home-environment characteristics (e.g. SES), interact with quality of center-based childcare. For example, are children from both low and high quality home environments equally influenced in their socio-emotional adjustment by high quality childcare? In connection, the second presentation will discuss whether attachment pre-experiences influence children's relationship experience with caregivers for two different types of childcare (home-based vs. center-based). In addition, examined gender differences will be discussed. Finally, the third presentation takes into account different cultural backgrounds of caregivers and how these backgrounds influence their beliefs and behavior in dealing with a group of children in center-based care. Furthermore, the relationship between caregivers' support of group dynamics and child socio-emotional adjustment will be discussed.

   Discussion of communalities and differences of these three studies, and their implications, will be led by Harriet Vermeer.

1.2.2.1 Combined effects of early childcare and education and the home-environment on child socio-emotional adjustment

Martine Broekhuizen, Utrecht University, The Netherlands
Marcel van Aken, Utrecht University, The Netherlands

Abstract:

After the home caregiving environment, early child care and education (ECE) settings are the most important context in which early child development takes place. Therefore, it is no surprise that several studies found that higher quality of experienced childcare was related to several small positive behavioral effects a few years later (e.g. Burchinal et al., 2008; NICHD, 2006). Some studies even indicate long-term behavioral benefits of high quality care (Sylva et al., 2011; Vandell et al., 2010). However, Vandell et al. (2010) also found that higher quantity of experienced childcare was related to higher levels of behavior problems, even up to adolescence.

To specify these main quality effects of ECE, the current study will look at the possible combined effects of both the home- and ECE environment. Several studies indicate the existence of such joined effects. For example, Côté et al. (2007) found that children of mothers with low educational levels had less risk of developing chronic physical aggression when they were enrolled into non maternal care. More specifically, Sylva et al. (2011) found that children experiencing a poor home learning environment but high quality pre-school had better self-regulation skills at age 11 than children attending low quality or no pre-school. Finally, using a comprehensive measure including maternal sensitivity, Watamura et al. (2011) found that children experiencing poor quality home environments benefited the most from high quality childcare. Furthermore, children experiencing both poor quality childcare and home environment displayed most problem behavior and least prosocial behavior.

These studies depict the first emerging and still inconclusive evidence regarding possible combined effects of quality of ECE and characteristics of the home-environment. Therefore, the current study will examine whether (specific) quality characteristics of ECE interact with (specific) parenting behaviors and other home-environment characteristics (e.g. SES), when relating them to child socio-emotional adjustment.

Data are gathered in children attending a professional childcare facility (n≈500) at three moments: T1 (2-2,5 years) T2 (3-3,5 years) and T3 (4-4,5 years). Group-level childcare quality is assessed with live-observations using the CLASS (La Paro, Pianta, Hamre, & Stuhlman, 2002). In addition, questionnaires are administered to professional caregivers about the caregiver-child relationship and to parents about their parenting strategies. Both informants also report on child socio-emotional adjustment. Results of the first wave data will be presented during the symposium.

1.2.2.2 The impact of out-of home care on children's relationship experience: Comparisons between center-based and home-based care

Barbara Supper, University of Vienna, Austria
Tina Eckstein, University of Vienna, Austria
Lieselotte Ahnert, University of Vienna, Austria

Abstract:

The present paper deals with relationships that children experience in out-of-home care. Whereas infant-child care provider relationships have proven to carry attachment like characteristics, much less is known about how these characteristics vary in terms of specific child characteristics/attachment pre-experiences and, most importantly, in term of types of out-of-home settings such as center-based or home-based care.

Based on two samples of infants and toddlers (mean age almost 20 months) in and around Vienna/Austria, we contrasted n=63 children cared for in center-based care with n=111 children from home-based care settings, carefully matched in ages and socio-economical backgrounds. In both samples children's relationship qualities were measured both, at home towards their mothers and in out-of-home settings towards their care providers using Attachment Q-Sort (AQS). These attachments were described based on the traditional overall score but also by means of a new developed eight-component model tapping features of attachments in form of secure base activation, shared exploration, enjoyment of physical contact, turn-taking in communication, social receptiveness towards others, demonstrating resistance, imbalance of emotions, and demands for exclusive attention. Because of the more individualized home-based care, we assumed higher overall scores of attachments towards care providers in home-based than center-based care. We also expected non-significant associations between child characteristics/attachment pre-experiences and child-care provider attachments in home-based but not center-based care while child-mother attachments remained unaffected by types of out-of-home care.

Results confirmed these assumptions. In additon, children in home-based care displayed higher levels of secure base activation, shared exploration, enjoyment of physical contact and turn taking in communication towards their care providers than children in center-based care. Gender differences were obvious only in center-based but not in home-based care with boys having developed significantly lower attachment scores than girls.

1.2.2.3 **Caregivers' beliefs about and competence in group dynamics and the effects on child socio-emotional development**
Saskia van Schaik, Utrecht University, The Netherlands
Paul Leseman, Utrecht University, The Netherlands

Abstract:
Caregivers' beliefs and behaviours are important determinants of the quality of Early Childhood Education and Care (ECEC) and, through quality, of child outcomes. Caregivers' group-related sensitivity was found to be a strong predictor of child- care provider attachment in center-based care (Ahnert, Pinquart, & Lamb, 2006).
In view of this, the current project studied the influence of an increasing cultural diversity among caregivers in Western ECEC on process quality. Using video observations and interviews of 57 caregivers of different cultural backgrounds, the project started out by investigating the effects of beliefs on behaviour regarding group dynamics. Results show that Moroccan-Dutch and Turkish-Dutch caregivers held more beliefs on group dynamics than Dutch, Surinamese-Dutch and Antillean-Dutch caregivers. Furthermore, these caregivers actually showed more support of group processes during the observations and the children showed more collaborative play. This collaborative play increased the cognitive complexity of their play. Unfortunately, only few empirical studies to date have examined group dynamics in these group-based settings. As a follow-up on the first project, we studied group processes in ECEC in the Netherlands more elaborately and combined data on the caregivers, centers and children with in-depth video observations. Preliminary results will be discussed, regarding the influence of caregivers on group processes and the relationship between group processes and other quality indicators. Following these preliminary findings on group dynamics and quality of care, the effect of the degree in which caregivers promote group dynamics and show group-related sensitivity on child socio-emotional development will be discussed.

1.2.3 **Paper session**

1.2.3.1 **Home language and literacy environment of at-risk toddlers in The Netherlands**
Elisabeth Duursma, University of Groningen, the Netherlands

Abstract:
It is well known that a stimulating home environment can promote children's language and literacy development (Dickinson & Tabors, 2001: Payne & Whitehurst, 1994). However, little is known about what exactly parents do (beyond bookreading) at home to encourage children's language and literacy skills.
This study examined parental language and literacy behaviors among families of at-risk toddlers (average age 37 months) in a rural area in the Netherlands. The data collected was part of a larger project focusing on eliminating disparities in language development among children at risk (e.g., low parental education, diagnosis of language delays, parental addiction). Parents (n=321) filled out a questionnaire containing 80 items on demographics, literacy behaviors, and language use. Children's receptive vocabulary (n=146) was assessed using the Peabody Picture Vocabulary Test (PPVT).
Around 60% of parents had attended some community college while approximately 21% had attended college. Almost a quarter of the mothers reported to be a homemaker while 56% had a part time job (vs. 7% working fulltime).
More than a third of the children had fewer than 25 books at home. Around 36% of children had between 25 and 50 children's books. More than one third of the parents indicated that they had fewer than 25 books for adults while 10% reported having no books for themselves. More than half of the children had a library card (57%) while 42% of parents reported having one.
Most parents reported reading daily to their children (72%) and this usually happened before children went to bed. All children, except two, enjoyed being read to. In general, parents enjoyed reading to their children a lot and their child frequently asked to be read to. We also asked parents about dialogic reading strategies such as looking at the book beforehand and talking about the story of the pictures. Very few parents said that they never engaged in these activities while more than three quarters of parents reported to do so.
Almost half of all parents reported talking daily to their children about books while around 40% talked about TV programs and friends on a daily basis.
Singing songs with children was a popular activity as more

than 50% of parents reported to do so on a daily basis. Making music or reciting nursery rhymes were less popular activities among parents as more than a third of the parents reported to never engage in these activities.

There was no significant relationship between parental education and children's vocabulary scores (PPVT). We also did not find a relationship between literacy environment (as defined by presence of reading materials in the home and library visits) and child language score. Surprisingly we did not find a significant relationship between frequency of bookreading and children's PPVT scores. However, a positive and significant correlation was found between parental reading attitudes and children's receptive vocabulary.

The information gathered could help professionals and policy makers to make decisions on how to encourage parents to provide a stimulating home environment (e.g., focus on nursery rhymes or library visits)

1.2.3.2 Let's talk! Improving oral language through sustained planned play and storybook reading in the early years.

Gillian Purcell, Department of Education, University of Oxford

Abstract:

Being literate can enable children to become adults that can function in society in a meaningful way (Burns, Griffin, & Snow, 1999; Riley, 1999). Early intervention in literacy development is crucial and has proved successful in having a long-term impact on children's life-chances or outcomes (Nutbrown, Hannon, & Morgan, 2005; Shanahan & Lonigan, 2011). In particular, younger children benefit from oral language interventions that contain talk and narrative which can improve their reading later in life (Aram, 2006; Bowyer-Crane et al., 2008; Landry & Smith, 2006). Dialogic discussion that can take place during storybook reading can develop de-contextualised language (Coyne, Simmons, Kame'enui, & Stoolmiller, 2004; Sénéchal, 1997; Whitehurst & Zevenbergen, 1999). Vocabulary and inference training can also improve oral comprehension, vocabulary and sentence repetition in young children (Dockrell, Stuart, & King, 2010).

This oral language development, which is so crucial for a child's literacy development can take place through play, talk and interaction (Vygotsky, 1978; Whitehead, 1999). It does not arise only out of an inbuilt predisposition to speak, nor does it emerge solely as a result of influences from outside of the child.

It is an organic process that operates within an interactionist playing field (Harris, 1992; Vygotsky, 1978).

The use of drama as a medium of instruction in oral language fits this interactionist remit quite well (Heathcote, 1980). It involves the instructor interacting with the child in a way that is both adaptive and reactive to the child's learning needs, while being enjoyable for the child and quite natural a process (Johnson & o' Neill, 1984). With this in mind, an intervention is being designed that targets young children's oral language through various dramatic devices. These devices include puppets, sustained planned pretend play episodes and storybook reading. It will take place over 12 weeks by twice-weekly sessions with groups of children aged 3- 4 years. A Randomised Control Trial will be carried out to evaluate this intervention and it is hoped that it will become an evidence-based intervention in due course.

1.2.3.3 Language Support Practices — Evaluation in the Project "Continuous Language Support in the City of Fellbach"

Christine Beckerle, Leibniz University Hanover, Germany

Abstract:

Despite the consensus on the importance of children's good language competencies in German and the undisputed educational mandate of kindergarten and primary school to provide language support in German, it is uncertain how to implement language support in order to make all children profit from it – children with German as their native language, who might have a speech development problem or disorder, as well as children with German as their second language (cf. Knapp et al. 2010).

The language supporting early years practitioners and primary school teachers are responsible for the implementation and the success of language support. Indeed, they have valuable knowledge and skills, but theoretical background, professional concepts and effective language supporting techniques are often missing. Therefore, their advanced training is essential (cf. Fried 2010).

The city of Fellbach commissioned the University of Education Weingarten to develop, implement and evaluate a language support concept. The concept considers language support as everyday life support for all children in kindergarten and primary school. Its modules are advanced training and coaching for early years practitioners and primary school teachers, which make

them enhance their theoretical and practical knowledge and reflect on their daily practice. It is a longitudinal study in a control group design: In the pre-test and post-test, the pedagogues' language support practice was filmed and they were interviewed on the issue of language support. Differences in the early years practitioners' and primary school teachers' knowledge, attitudes and the practice of language support between the model and control groups are in the research focus. The children's language competencies were tested at the beginning of the project and afterwards to act as an indicator of the language support's effectiveness.

The paper presentation is about the main part of the video analysis: the used language support practices of the early years practitioners and primary school teachers. It will be discussed, whether and how they changed in the model group – in comparison to the control group –, and conclusions should be drawn what these results mean for further advanced training in the field of language support.

1.2.4 **Paper Session**

1.2.4.1 **Children's motor activities during free play in kindergarten**
Evelyne Wannack, University of Teacher Education, Switzerland

Abstract:

Due to claims that the motor abilities of young children are declining and the fact of increasing numbers of children with overweight, the Institute for Continuing Professional Education at the University of Teacher Education Berne initiated a project in kindergarten, called «Purzelbaum» (somersault). The project's aims are to enhance motor activities in kindergarten, especially basic motor skills, such as running, jumping, rolling, climbing, swinging, throwing, catching, bouncing and, in combination with these skills, coordinative abilities, such as balance, kinaesthetic differentiation, spatial orientation, reaction to signals and sense of rhythm. Hence, kindergarten teachers are challenged to enhance the range of motor activities. In order to accomplish these aims, they participated in various training courses. We took advantage of this arrangement and initiated an empirical study into the questions: How do the teachers implement their concepts of physical education in kindergarten, particularly during free play, and how are the children taking advantage of these motor learning opportunities.

In order to explore these questions, we created a qualitative research design. Our sample consisted of eight kindergarten teachers who participated in the project Purzelbaum. Prior to the beginning of the training courses, we analysed their kindergarten classrooms. We conducted a second analysis half a year after the beginning of the training courses for the purpose of comparing the differences. We used the two outlines to stimulate the qualitative interviews with the kindergarten teachers. After they had commented on the changes in their learning environment, we provided a set of questions concerning the change in their pedagogical concept, the implementation thereof and the support required to maintain the innovation in a long-term perspective. In order to survey the children's motor activities during free play, we conducted a video-based observation during four mornings of a week.

In this presentation, we focus on the results of the video analysis. We were able to distinguish three arrangements that provide motor activities. In the first one, a thematic task is given to the children, for example building a balancing course. The second one consists of a pre-arranged room, in which the task is indirectly given by the available materials. The third arrangement has the highest degree of freedom, because there is only a marked space and a wide range of materials, so that the children can create motor activities themselves. The results show that the intensity and variety of basic motor skills are higher in the first two arrangements than in the third one. In the latter the children have difficulties agreeing upon one or two ideas. In this case, we can observe that less time is spent on motor activities and that the quality of these is on a very basic level.

One aim of the research project is to discuss the results with the kindergarten teachers participating in the project Purzelbaum. By applying the findings to their own pedagogical practice, we hope to help optimise the motor activities in free play and to contribute to a long-term commitment to physical education.

1.2.4.2 **Learning in dyadic interaction: A comparison of literacy settings in preschools and families**
Anke Koenig, Vechta University, Germany

Abstract:

One of the largest pedagogical challenges currently faced in Germany is to provide a solid foundation for promoting language acquisition in Early Childhood Education and Care (ECEC). This is a pressing need, as various studies have shown that short-term language support programs or isolated language-development assistance only have limited influence on language development

(Lisker, 2011). However, many have contended that language acquisition could be improved if support were given to children on a day-to-day basis in preschool and if preschool teachers were to receive special training in language intervention. Indeed, both of these measures are current aims of educational policy, and the ECEC is viewed as a key factor linking families and formal schooling.

This study examines the learning environments of young children one year before formal schooling in families and preschool. The applied research approach draws on socio-cultural learning theories, which view learning by means of social interaction as an important factor for cognitive development (Rogoff, 1990). Different international studies has shown that preschool teachers are the key to ensuring positive outcomes for young children's social and intellectual development (Roskos et al 2006; Howes, 1997; Cost, Quality & Child Outcome Study Team, 1995; Espinosa, 2002; Sylva et al. 2003; Pianta, 2006). Similarly, Pianta has shown that development depends on the experiences children make in their social environments.

The research undertaken here aims to answer the following question: Does early education in families and preschools provide children with the types of experiences that are associated with positive outcomes? The gathered data are part of a larger study (BISKO) that is exploring the connection between early childhood social interactions in families and preschools and the development of working memory. The following paper, however, focuses specifically on the literacy experiences made by young children with their parents and preschool teachers. Data on interactions were gathered by means of videography. Data were collected from 72 children in families and preschools, one year before formal schooling (duration of each clip: 6–15min). These videos show dyadic interactions between young children and their parents and preschool teachers, respectively, while reading picture books. To evaluate the data, we applied qualitative assessment methods. The video clips were analyzed by content analysis with the aid of the software program "Interact." Special focus was placed on the dialogic interaction (e.g. "sustained shared thinking") (Siraj-Blatchford, 2002; König 2009).

Our initial results show that the experiences made by young children differ strongly in the alternate settings. Our assessments indicate that from the perspective of language support, the familial learning environment is much more beneficial to language acquisition than the preschool setting. In the next step of the research, the quantitative data set (gathered through language tests) will be evaluated and compared to the qualitative findings. The results could be of great significance to preschool teacher training as it relates to language intervention.

1.2.4.3 **The role of language in young children's cooperation during play interactions**
Anne-Greth van Hoogdalem, University of Applied Sciences Inholland, the Netherlands
Dorian de Haan, University of Applied Sciences Inholland, the Netherlands

Abstract:
Social skills like emotional self-regulation, the acquisition of a theory of mind and pro-social behavior underlie complex and competent cooperative play. Children acquire these components of social competence in peer interactions in which language seems to play a major role. Firstly, children have to share meanings and create intersubjectivity to coordinate their play actions. Therefore children have to inform each other of their play intentions, which may be expressed implicitly in their (non) verbal play enactments or explicitly in meta language. In addition, being able to cooperate is a matter of give and take. Language offers two different type of strategies to resolve the tension that may result from the want to pursue one's own play intentions and the want to be considered an attractive play partner by the other child (Brown & Levinson, 1987, Huls, 2001). By the use of 'solidarity' strategies the child may communicate that its own wants are in some respects similar to the addressee's wants. By the use of 'respect' strategies the child may communicate that it recognizes the wants of the other child or that the imposition on the addressee is minimal.

When children often play together, they may be familiar with each other's specific play wants. Therefore, the role of language may be different in play between friends and play between non-friends, since friends may only need a half word.

The main research questions are: Which role does language play in the quality of cooperative play? Are there any differences in the use of metalanguage and language strategies by friends and non-friends?

Participants are 24 four- to six-year old children with indigenous and migrant/second language learner backgrounds. Video-observations are made of 30 minutes free play and a construction task in a classroom setting of two Dutch preschools. All language utterances are transcribed and coded in CHILDES, a computerized system for language analysis, and non-verbal play is analyzed by instantaneous 10 seconds interval sampling. Language ability is measured by the TAK passive and active vocabulary test, mean length of utterance and number of word

types, the quality of play by categories of Howes et. al. (1992) and friendship by children's self reports and teachers' judgments.

Correlational quantitative analyses focus, amongst others, on relations between language measures on the one hand and on the other hand the use of language during enactment and metacommunication, language strategies, and the quality of (non-verbal) play. In addition, differences between the play of friends and non-friends are examined. Further qualitative analyses go into the children's use of metalanguage and solidarity and respect strategies.

Preliminary first results show a positive relation between vocabulary scores of the TAK and complexity of non-verbal play in free play, but not in the construction task. Mean length of utterance is negatively related to the use of language during enactment, but positively related to the use of metalanguage. Further results will be available at the end of this academic year.

Notes

Tuesday 28th of august
8:30-10:00

Symposium

Social interaction at home and in preschool
Convenor: Susanne Ebert & Simone Lehrl, University of Bamberg, Germany
Discussant: Maria Evangelou, University of Oxford, United Kingdom

Integrative Statement:

Child development doesn't take place in outer space, but in social interaction. Therefore the three contributions of this symposium all ask in a different way, how child development is influenced by the social world children interact with every day.

The three studies are all part of the interdisciplinary project BiKS (Educational Processes, Competence Development and Selection Decision in Preschool and School Age) and they all refer to the longitudinal sub-study BiKS-3-10. This study started in 2005 with 547 children at the age of about 3 years. Measurements were conducted at home and in (pre)school with half or one-year intervals between assessment points until the end of primary school. As a special focus of BiKS-3-10 is on the impact of home learning environment and preschool quality on children's development, the three papers focus on different social interactions observable in the family and preschool environment, while reflecting the interdisciplinary view of the BiKS-project.

The first paper examines different aspects of verbal communication in parent-child interaction and its importance for various aspects of cognitive and language development in preschool age, whereas the second paper asks, how different measures of the home learning environment of preschool children are associated with children's later reading competencies at school. The third paper focuses on social situations found in preschool and examines, whether immigrant children are confronted with stereotypes and different teacher expectations compared to their native peers.

2.1.1.1   **Distancing strategies and cognitive language in parent-child picture book reading and its impact on cognitive and language development**
Susanne Ebert, University of Bamberg, Germany
Sabine Weinert, University of Bamberg, Germany

Abstract:

As various studies show, parents' verbal communication with their children is associated with children's cognitive, socio-cognitive and language competencies. Parents' distancing strategies are one example known to foster children's cognitive development by separating the child mentally from the ongoing present, e.g. by stimulating the child to assume alternative perspectives. Another aspect of language input proved to significantly influence children's socio-cognitive development is the use of mental language during communication. Accordingly, various studies have demonstrated that the more parents talk about mental states, the earlier children develop a theory of mind understanding. However, it is not known so far, whether the usage of mental terms is associated with other facets of cognitive and language development as well. In addition, studies focussing on distancing strategies are often correlational in nature. Therefore it is not clear, whether children's competencies are really influenced by their parents' language input or whether differences in parents' language just reflect differences in child's competencies. Thus, the aim of the present study is to compare these two indicators of verbal stimulation in their impact on distinct aspects of children's cognitive and language development (e.g. reasoning, metamemory, arithmetics, vocabulary), while controlling for earlier competencies.

In the present study a subgroup of 67 children from the longitudinal study BiKS-3-10 took part in a semi-standardized picture book reading task with their parents (usually with the mother) when children were about 4;5 years old and again half a year later. These parent-child interactions were videotaped and transcribed. Further on, each single parental statement during picture book reading was coded a) for the degree it separated the child mentally from the ongoing present and b) whether it contains a cognitive term. To assess children's various cognitive and language competencies different subtest from well-known standardized tests (e.g. K-ABC, SON 2½ -7, PPVT) were used.

Results show low to moderate correlations between parents' talk and children's competencies for both types of language input. However, there are differences as well as similarities according to the type of talk and according to the competencies analysed. Whereas for both types of parental input moderate

correlations are observed with metamemory and rather low correlations with arithmetics, parents' distancing strategies are somewhat stronger associated with language measures than parents' usage of cognitive terms. Concerning nonverbal reasoning and categorisation tasks it is especially parent's usage of cognitive terms that is relatively highly correlated with children's later achievement. For both types of verbal input significant effects on growth are seen for none of the considered variables except for categorisation and reasoning tasks. These somewhat surprising results are discussed with respect to theoretical ideas behind distancing strategies and parental mental talk as well as with respect to methodical difficulties in measuring cognitive stimulation in parent-child-interaction.

2.1.1.2 **Facets of preschoolers' home literacy environments: What contributes to reading literacy in primary school?**

Simone Lehrl, University of Bamberg, Germany
Susanne Ebert, University of Bamberg, Germany
Hans-Günther Rossbach, University of Bamberg, Germany

Abstract:

How the family contributes to the acquisition of children's emergent literacy skills and later reading competencies early in life has received increased attention throughout the research literature. Numerous studies have accumulated evidence for the relation between the home literacy environment when children are of preschool age (e.g., shared book reading interactions) and children's literacy and language skills. In order to understand how the home literacy environment shapes children's reading literacy before formal schooling starts, it is important to examine how specific aspects of the home literacy environment contribute to the development of children's reading literacy. Because many studies focus only on one special aspect of the home literacy environment—mainly frequency of shared book reading at only one time point over the preschool period—we examine the relation between various specific home literacy practices for children of preschool age and children's reading literacy in elementary school. We ask whether these various measures have a different impact for later reading. In particular we hypothesize that depending on the particular dependent measure different aspects of home learning environment can be important.

The current paper presents findings from the BiKS-3-10 study, which follows about 500 children from preschool age till the end of elementary school. The different aspects of home literacy practices were measured by questionnaires and observations of a shared-book-interaction. The following facets are covered: 'teaching literacy', 'language stimulation in parent-child-interaction', 'social-emotional stimulation in parent-child interaction' and 'storybook exposure'. Concerning reading a measure for more basic reading skills (SLS 1-4) and a measure to assess reading comprehension (ELFE 1-6) were administered.

Besides various child and family background factors (e.g., gender, immigration background, SES), several aspects of the home literacy environment significantly relate to reading literacy in elementary school. While 'teaching literacy' and 'social-emotional stimulation' is significantly related with reading skills, reading comprehension is significantly predicted by 'language stimulation in parent-child-interaction' and 'storybook exposure'. The findings underline the importance of the home literacy environment and point to strengthening research approaches using multiple measures of the home literacy environment to detect those mechanisms that work.

2.1.1.3 **Stereotypes and teacher expectations on immigrant children in Germany**

Jens Kratzmann, University of Bamberg, Germany
Gabriele Faust, University of Bamberg, Germany

Abstract:

There is consistent evidence nationally and internationally concerning the poorer educational opportunities of immigrant children. In recent years empirical educational research has explored reasons for these differences connected to migration. According to an institutional perspective, children are confronted with stereotypes, lower teacher expectations and unfair performance evaluations. Former studies focused on the transition from primary to secondary school. Meanwhile, however, the question raises about the importance of preschool education for the formation or reduction of migration coupled inequalities. This paper examines on the basis of 547 children from the longitudinal BiKS-study in the federal countries Bavaria and Hesse in Germany at three measurement points (2005, 2006 and 2007), whether german preschool teachers' attitudes are affected by stereotypes and whether they scale down their expectations and performance evaluations on children from immigrant families.

A concurrent mixed model design is utilised to answer the questions. The qualitative part is based on 10 guided interviews with german preschool teachers about immigrant children from Turkey and asks whether teachers' attitudes are affected by stereotypes. The interviews were analysed comparative using the

qualitative content analyses according to Mayring (2003). The quantitative part examines whether teachers scale down their expectations and performance evaluations on children from immigrant families compared to autochthonous children. Teachers' ratings about mathematical, oral and literary language skills as well as predictions about the time of school enrolment and the graduation of the children are used to test these hypotheses. The skills of the children in the areas of vocabulary, arithmetic, and basic cognitive abilities as well as the socioeconomic status of parents are controlled using the propensity score matching method.

Nearly no evidence of reduced expectations and performance evaluations of teachers towards children with immigrant backgrounds is found similar to studies on the transition from primary to secondary school. We found reduced ratings only at the last measurement point in oral language skills. Furthermore preschool teachers' attitudes are hardly affected by stereotypes. Most of them have a differentiated view on immigrant children.

In total there is hardly any confirmation for the thesis of lower expectations and stereotypes of preschool teachers towards immigrant children. Migration coupled inequalities are therefore rather unlikely reinforced by teachers expectations. Rather, they give up their forecasts and estimates according to the level of development and the social background of the children. Nevertheless there are differences in the skills between immigrant children and autochthonous children. It would be helpful to increase the domain-specific knowledge of german preschool teachers about the diverse cultural background of immigrant families as well as on bilingualism and the development of the second language to help immigrant children to improve their skills in the main language of the destination country.

2.1.2 Paper-Session

2.1.2.1 Family habitus and the use of external education and care

Andrea G. Eckhardt, Hochschule Zittau/Görlitz - University of Applied Sciences, Germany
Birgit Riedel, Deutsches Jugendinstitut e.V., Germany

Abstract:
Various representative studies have shown that participation in external care depends to a large extent on the socio-economic background of the family. In Germany even after the policy change around the turn of the century is this relationship apparent for the usage of educational care of under three year old children (Alt, Berngruber & Riedel, 2012; Kreyenfeld & Krapf, 2010). Results indicate that parents from higher educational backgrounds are more likely to use external child care for their very young children compared to parents with comparatively lower educational backgrounds. In addition, results of the socioeconomic panel (SOEP) indicate differential patterns of the usage of organized leisure time activities like PEKIP and baby-swim-courses depending on socio-economic status (Mühler & Spieß, 2008; Schmiade & Spieß, 2010). This finding indicates that reproduction of educational inequality may also be influenced by family practices and assumptions of care. However, so far the linkage between family background on the one hand and family practices and beliefs as indicated in a family habitus on the other hand have not been investigated.

On the basis of the Survey of the German Youth Institute (AID:A), usage of external early education programs and organized educational relevant activities are investigated in the context of educational practices of families. The analysis is based on the subsample of children under three years (n = 2.268). Structural characteristics (e.g. highest level of education in the family, employment status) and process characteristics of the family (e.g. family activities, educational objectives) were included in binary logistic regression models to predict the likelihood to use external care and leisure time activities.

Results indicate that the majority of parents orient their educational strategies towards an optimum support of their children's development. It can be shown that educational activities in the family correlate with the use of external care on the one hand and organized educational relevant activities on the other hand. Foremost, the use of external care and organized educational relevant activities depend on socio-economic background characteristics of the family. Once these effects are controlled for family educational practices add to a better understanding of the usage of external care and educational activities. It is concluded that background characteristics and family practices contribute to the transmission of human capital to further generations.

2.1.2.2 Children's early home learning environment and mothers' well-being

Donna Berthelsen, Queensland University of Technology, Australia
Naomi Hackworth, Parenting Research Centre, Australia
Elizabeth Westrupp, Parenting Research Centre, Australia
Jan Matthews, Parenting Research Centre, Australia
Jan Nicholson, Parenting Research Centre, Australia

Abstract:

Purpose: This paper explores the extent to which the early home learning environment of socially vulnerable children is influenced by parental well-being. Many parents of young children, especially those from families facing socio-economic adversity, have high rates of psychological distress. Maternal depression is often associated with a decrease in warm and responsive maternal-child interactions, as well as greater irritability. As a consequence, children are placed at risk of experiencing socio-emotional problems. However, the effect of maternal well-being on the quality of children's early home learning environment is less clear. Baseline findings are reported from the Early Home Learning Study (EHLS) on associations between mothers' well-being and children's home learning activities and opportunities.

Background to the research: The EHLS (2011-2012) is a large-scale randomized controlled trial with 2,000 families. It is evaluating the effects of a short-term, community-based parenting intervention with families living in vulnerable circumstances. The EHLS is designed to strengthen parenting skills to support early language and literacy of children, aged birth to three years. The key messages of the EHLS program focus on quality interactions and providing a stimulating home environment, including shared reading. The project is funded by the state government of Victoria in Australia. The EHLS is also designed to build capacity in early childhood community services that provide parenting support to families with young children. The parenting intervention is embedded within two existing service platforms: Maternal and Child Health Services and Supported Playgroups. The intervention is delivered across two levels of intensity: a low intensity version in which parents receive a weekly group-based intervention and a high intensity version in which parents receive the group program supplemented with home coaching.

Method: In this paper, cross-sectional data from the baseline assessment of participating families is reported. Children are aged 6 months to 3 years. Parent psychological distress was measured using the Kessler-6 (K6). The early home environment was measured using the Home Literacy Environment Scale, the Home Activities Index and the Parent Verbal Responsivity Scale. These measures are used in Growing Up in Australia: The Longitudinal Study of Australian Children. Preliminary analyses for 974 families examined the mean differences between parents with and without psychological distress on the three home environment measures. Final analyses with complete data (N ~ 2,000) will also test whether the relationship between the early home learning environment and children's learning outcomes is mediated or moderated by parent psychological distress.

Results: Preliminary results show that a high proportion (66%) of the EHLS parents fell within the 'symptomatic' ranges on the K6 (compared to estimates of 5-20% in the Australian population of mothers with young children). Our preliminary findings indicate that parents in either the symptomatic or clinical range on the K6 were less likely to provide an optimal home environment across all three home environment scales ($p < 0.01$).

Conclusions: These findings highlight the need for greater awareness and support for parents whose children attend early childhood programs. Providing practical and informational support that connect parents with services and with other parents is important, as is involving parents in such a way in programs to promote parenting self-efficacy.

2.1.2.3 Noise Matters for Child Wellbeing in Home-based Childcare

Mariëlle Linting, Leiden University, the Netherlands
Marleen G. Groeneveld, Leiden University, the Netherlands
Harriet J. Vermeer, Leiden University, the Netherlands
Marinus H. van IJzendoorn, Leiden University, the Netherlands

Abstract:

Recent research shows that about one sixth of 0- to 4-year-old Dutch children are using formal home-based childcare (CBS, 2010). This large number points at quality of home-based care as an important research subject. In particular process quality of

care (pertaining to direct experiences of children) has been associated with developmental outcomes in children.

Noise, as an aspect of environmental chaos, is a component of process quality, and has been shown to negatively affect attention (Hambrick-Dixon, 2002), cognitive performance (Hygge, 2003), language development (Manlove, Frank, & Vernon-Feagans, 2001), reading skills, and induced helplessness (Maxwell & Evans, 2000) in children. These effects may be either direct, or mediated by work stress and sensitivity of caregivers. Research also points to moderation of effects by the child's temperament, age, and gender (see Evans & Wachs, 2010).

Childcare settings, involving groups of children, are characterized by high levels of noise (Groeneveld, Vermeer, van IJzendoorn, & Linting, 2010). Although effects of noise on school-age children have been investigated, studies on younger children are rare. Also, most research involves cognitive outcomes, and little is known about the effects of noise on children's wellbeing.

This study investigates how noise level and variability in noise level are associated with child wellbeing in home-based childcare. We combined samples from two studies performed by the same research group including the same procedures and measurements on the key variables. The total sample consists of 103 caregivers, each coupled with one child. Noise level was measured as the average decibel level across three 10-minute observation episodes. Noise variability is the standard deviation of decibels, averaged across these three episodes. Wellbeing is the average observed rating across observation episodes, measured by the Wellbeing Scale, developed and validated by the Dutch Consortium for Child Care Research (NCKO; De Kruijf et al., 2007).

Results indicate that noise level and noise variability are significant predictors of child wellbeing (both p < .01). Using categorical regression analysis (CATREG), we show these relations to be nonlinear, with higher average noise level and noise variability associated with lower wellbeing, but only when exceeding a threshold value. These associations are controlled for child characteristics (age, gender, reactivity), structural care characteristics (caregiver experience, group size), and process quality (IT-CC-HOME and caregiver sensitivity), assuming linearity of relations between covariates and wellbeing. Out of these covariates, only child reactivity significantly predicted wellbeing (p < .01). None of the variables in these analyses posed as a mediator or moderator of the relations between noise level and variability on the one hand and wellbeing on the other. These results point to noise as a relevant aspect of child care quality. The current study adds to the literature by showing that

on top of average noise level, noise variability is also related to children's wellbeing in home-based care.

2.1.2.4 **Video-feedback intervention in home-based childcare to enhance childcare quality and children's wellbeing: a randomized controlled trial**

Marleen G. Groeneveld, Leiden University, the Netherlands
Harriet J. Vermeer, Leiden University, the Netherlands
Marinus H. van IJzendoorn, Leiden University, the Netherlands
Mariëlle Linting, Leiden University, the Netherlands

Abstract:
In this study, a video-feedback intervention was implemented in home-based childcare using a randomized controlled design with the aim to enhance childcare quality, and, eventually, child wellbeing. Previous studies in families showed that interventions are more effective when they have a narrow focus, a fixed-curriculum, make use of video-feedback, and are short term. The Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD), originally developed to enhance parental sensitivity and sensitive discipline in families, satisfies these criteria. Studies using the VIPP-SD approach showed positive effects on maternal sensitivity and attitudes in various samples (see Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2008). Key component in this attachment-based intervention is the caregiver's sensitivity and limit setting while interacting with a child.

In the current study, the intervention program VIPP-SD was minimally adapted to home-based childcare (VIPP-Child care: VIPP-CC), and tested with professional caregivers. We expected the intervention program to be effective in enhancing (1) childcare quality and (2) children's wellbeing.

The procedure within this study meets with the CONSORT criteria. Caregivers (n = 48) scoring the lowest on sensitivity during the baseline visit were randomly assigned to the intervention group (n = 24) or control group (n = 24). Caregivers in the intervention group received six home visits during childcare and caregivers in the control group received six telephone calls as a dummy-intervention. The VIPP-CC was implemented by trained interveners using a standardized protocol, focusing on the regular VIPP-SD themes: exploration versus contact seeking, 'speaking for the children' (in families: 'speaking for the child'), sensitivity, and empathy. In all sessions, video-recorded interactions of the caregiver with all the

children in her group were the main focus.

Childcare quality and child wellbeing were measured prior to the intervention and after the intervention. Global childcare quality was measured through direct observation during childcare. Caregiver sensitivity and child wellbeing were coded on video material by independent coders. Two weeks after the post test, caregivers were asked to fill out a questionnaire about their attitudes toward sensitive caregiving and limit setting.

Results showed that global childcare quality significantly improved in the intervention group, but not in the control group. The program did not change observed caregiver sensitivity. However, caregivers who received the intervention reported a more positive attitude toward sensitive caregiving than caregivers in the control group. As for child wellbeing, there was a significant interaction effect of time spent in childcare and group (intervention versus control). The wellbeing of children who were cared for by the caregiver for a longer period of time increased from the pretest to the posttest, but only for the children in the intervention group. Our study shows that this family-based intervention can be effective in a professional group setting as well.

2.1.3   Symposium

Fostering advanced language in preschool and kindergarden settings

Convenor: Lotte Henrichs, Utrecht University, the Netherlands

Discussant: Vibeke Grøver Aukrust, University of Oslo, Norway

Integrative Statement:

In the first grades of primary school large disparities appear among children with regard to their language and literacy proficiency. These differences, that have been shown to be associated with demographic factors and home language environment, contribute to persistent achievement gaps (cf. Dickinson 2011). From school entry onwards, teachers play an important role in the challenging enterprise of closing this achievement gap. An important aspect herein is providing a language environment that is as rich as possible in order to foster the language development of all students. In the current symposium, each contribution will discuss how advanced language in young children might be stimulated in preschool and kindergarten settings, and how teacher-child interactions affect child performance. The first presentation will discuss interactions within Dutch ECE programs, either with or without an additional language stimulation component, and its effect on vocabulary. The second presentation will shed light on joint knowledge construction patterns during shared book reading. The third presentation will show how kindergarten science lessons afford the use of (emergent) academic language by both teachers and students. Finally, Vibeke Grøver Aukrust, as an expert on academic vocabulary development, will provide the audience with her view on the presentations and lead the discussion.

2.1.3.1   The effect of 'Language Route' on toddlers' vocabulary development

Loes van Druten, Radboud University Nijmegen, the Netherlands

Abstract:

Children (L1 and L2 speakers) from low Social Economic Status (SES) families are at risk of delayed language development and consequently might have a limitation in their language skills on primary school entry (Dickinson, 2008). If children have a delayed language development at the start of their formal education (grade 1), they are likely to experience problems throughout their primary school years (Bracken, 2008). An important aim of Early Childhood Education (ECE) is to promote children's early literacy and language development during preschool and kindergarten (van Kampen, Kloprogge, Rutten & Schonewille, 2005).

'Language Route' [Taallijn] was designed as a supplement to strengthen ECE programs' language stimulation. It is a method with which teachers are taught several interaction skills to stimulate children's verbal communication, vocabulary and early literacy skills.

In this study, it was investigated whether Language Route can effectively stimulate toddler's vocabulary development. It was expected that Language Route will positively affect toddlers' vocabulary development, as interaction skills have proven to be an essential part in stimulating vocabulary development (Dickinson, 2011; Droop, Peters, Aarnoutse & Verhoeven, 2005).

Method: The research project distinguished one experimental group (with use of Language Route) and one control group (without use of Language Route). Children's vocabulary was measured at five times during three years (one intervention year and two retention years). During the intervention year, teachers received a Language Route training and stimulated children's language development with the use of specific materials and four Language Route themes, designed for this study. The study included a total of 464 children (Mean age = 36 months, SD =

3.6 months) recruited from 64 preschools.

Preliminary results: The results showed that, at entry level, children from a non-Dutch background had a significant lower vocabulary level than their Dutch peers. Children from lower and middle SES families demonstrated lower vocabulary levels than children from high SES families.

With respect to children's growth in vocabulary from T1 to T3, no significant effect was found for the use of Language Route. Children from both the experimental group and the control group showed similar growth in their receptive and productive vocabulary.

Conclusions: Preliminary results indicated that children differed substantially in their vocabulary level at preschool entry. The child's SES and background appeared to be strong predictors for their vocabulary level. These results have practical implications for the use of early language stimulation programs.

Additionally, the results suggested that Language Route doesn't have an additional effect to the effect the 'regular' ECE-programs have on the toddler's vocabulary development. It was expected that teachers in de Language Route group would learn (and use) additional skills to enhance toddlers' vocabulary development. An explanation might be that the teachers in the control group possess a sufficient level of the required interaction skills and therefore that the level of vocabulary stimulation in the control group is of such quality that it effectively stimulates vocabulary growth. Further, a lower fidelity of treatment in the experimental group might provide an explanation for the lack of an additional Language Route effect.

2.1.3.2   **Tracing learning in interaction. An analysis of shared reading of picture books at kindergarten**
Myrte Gosen & Jan Berenst University of Groningen, the Netherlands

Abstract:

Participation in shared reading interactions is associated with children's language- and literacy development (Mol, Bus, de Jong & Smeets, 2008; What Works Clearinghouse 2007), as well as with their conceptual development (Kwant, 2011; Van den Heuvel-Panhuizen, van den Boogaard & Doig, 2009; Van der Pol, 2010). The current study investigates how shared reading interactions contribute to students' knowledge construction.

In this study, 36 shared reading interactions from a longitudinal shared reading programme at three Dutch kindergartens were analysed in detail by means of Conversation Analysis. This is considered to be a suitable method because of the emphasis on participants' orientation and understanding as is reflected in their sequential moves in interaction. Zooming in on the interactional details of shared reading interactions adds to our insight in pupils' participation in the sequential structures of the classroom. This displays opportunities for learning and provides insight in children's joint construction of knowledge in interaction.

Results of the study indicate that shared reading offers a range of opportunities for pupils to participate in challenging, academic interactions. These interactions exceed regular classroom interactional practices, since they offer room for extended participation. This means that pupils get chances to participate in interaction with more, longer and more complex contributions. Extended participation offers opportunities to talk and think about book-related subjects which is related to pupils' knowledge development. This presentation adds to our understanding of the workings of these kinds of interactions by zooming in on pupils' participation in explanatory and problem-solving interactions in particular.

It will be shown how explanatory and problem-solving interactions get established within the shared reading activity. Both sorts of interactions start whenever the teacher or one of the pupils draws the attention to something in the book that can be reflected upon. This occurs by means of a statement or a simple question-answer sequence. Subsequently, pupils use these orientations as a start to talk about these issues constructively. In general, these explanatory and problem-solving interactions can be characterised by their tentative nature. Pupils discuss several possibilities without a conclusion being reached. Teachers give occasion to these tentative interactions by adopting a participant status that can be described as partner or discussion leader and by offering room for pupils to act as discussants. Teachers do so by downgrading their own epistemic status as primary knower. It is shown that if they accept pupils' contributions as possibilities instead of evaluating them, this opens up opportunities for extended participation.

The fine-grained analyses show how participation in these extended participations offers room for the development and application of knowledge. By doing so, we are able to trace learning in interaction. This contributes to our awareness of the possibilities of shared reading interactions for the co-construction of knowledge.

2.1.3.3 **Fostering teachers' and students' academic language in kindergarten science discourse: a cluster-randomized teacher training study**

Lotte Henrichs, Utrecht University, the Netherlands
Paul Leseman, Utrecht University, the Netherlands

Abstract:

By nature, children are curious and motivated to learn about the world and have strong intuitions about the nature of the phenomena they encounter in daily life. Children as young as 5 years of age already have an intuitive understanding of phenomena in the realm of physics, based in sensorimotor representations of previous experiences with these and similar phenomena. However, they still need to learn to map particular scientific words and expressions onto these representations in order to be able to articulate their insights in a conventional way and to share them with others. We propose that, in order to do so efficiently, children need to master command of what we refer to as 'academic language' (AL); the set of linguistic tools needed to efficiently convey cognitively complex content (Schleppegrell, 2001; Snow & Uccelli, 2009). Therefore, this study focuses on the linguistic content of early science discourse.

In a randomized controlled trial design we studied how a teacher training focused on 'academic language' affected early science discourse. In the training condition, kindergarten teachers' were taught the basic theory of AL, and the affordances of science lessons for AL use were discussed.

Fifty-nine teachers and 230 children were observed twice during science lessons about light reflection and air pressure. Thirty teachers attended a half-day training session in between measurement times. The conversations during the two science lessons were verbatim transcribed and coded for (i) occurrences of scientific reasoning, (ii) use of general academic words, such as explore or discover (iii) domain specific words, such as force or pressure and (iv) subordinate clause combinations. In addition, the number of different word types (lexical diversity) was computed.

The pretest data show that teachers used very general wording in their initial science lessons. General academic words and domain specific words were not found as often as might be expected in a science setting. Sentences were relatively short and aimed at describing the phenomena observed (e.g. "What do you see?" or "What is happening?") rather than challenging the children to reason about what they saw in order to arrive at joint knowledge construction.

Results of a repeated measures analysis indicate that the trained teachers' science discourse changed after training. In their air pressure conversations, the trained teachers showed increased levels of cues for scientific reasoning, lexical diversity, domain general and domain specific words and increased proportions of subordinate clauses. In the light reflection conversations, increase was found in scientific reasoning, domain specific words and proportion of subordinate clauses. Thus, a training effect was found, however, this effect was task specific. A modest transfer effect of the training to the children was found on the word level.

Based on the above described results, we conclude that promoting teachers' awareness of the affordances of science lessons for academic language learning, has positive effects on the quality of teacher-child discourse. However, it seems that the level of complexity of the conversations is constrained by teachers' content knowledge of the phenomenon under discussion. Implications of these findings will be discussed.

2.1.4 **Round Table**

Mixing or combining methods in early childhood research: Why do it?

Moderators:
Iram Siraj-Blatchford, University of London, United Kingdom
Aziza Mayo, University of London, United Kingdom

Abstract:
In a review of the challenges to progress in providing social research evidence that might usefully inform policy, Oakley (2004) argues strongly that the 'paradigm divide' between qualitative and quantitative research communities continues to constitute a major problem. Oakley refers to a number of recent critiques of what is seen as 'misplaced positivism' in educational research. This session addresses many of the same issues directed more specifically at research in early childhood education. While a comprehensive review of early childhood research might be required to counter some of the more contentious assumptions being made by the critics, it is argued that their contentions hold little water in the case of a growing number of major early years mixed-method studies. The presenters will draw on the EPPSE study's mixed-method design to illustrate key points.

2.2.1   **Paper Session**

2.2.1.1   **Characteristics of teacher-children interactions during instructional events in pre-school classrooms: a moment-by-moment approach**
Mayra Mascareño, University of Groningen, the Netherlands
Simone Doolaard, University of Groningen, the Netherlands
Roel J. Bosker, University of Groningen, the Netherlands

Abstract:
In the present study we analyze the characteristics of the teacher-children interactions during instructional events in pre-kindergarten and kindergarten classrooms. With instructional events we refer to a set of exchanges between teacher and children in which there is a learning goal and a possibility for extending the children's understanding (Glasswell & Parr, 2009).
Our main research questions are: What are the most typical forms of exchange between teacher and children during the identified instructional events? Are there recognizable patterns of instructional interaction? Is there a relationship between the level of abstraction of teachers' use of language and the level of abstraction of children's interventions?
We use video data from 23 pre-kindergarten and kindergarten classrooms in 14 schools from urban, low socioeconomic areas in Santiago de Chile. These classrooms pertain to the control condition of a cluster randomized intervention. Video segments in which an instructional event took place for at least 5 minutes were selected for coding (e.g., shared-reading or lessons' fragments with a specific topic). The unit of analysis is the sentence (spoken), or a part of a sentence that has a clear separate meaning.
The coding scheme tackles the type and the quality of teacher-children interactions in the development of instructional activities. At a descriptive level, we use the Initiation-Response-Evaluation/Follow-up classification to group teacher-child(ren) exchanges, since it has been recognized as the most common sequence of interactions in classrooms (Torrance & Pryor, 1998).

Additionally we intend to qualify the teachers' initiations and children's responses in terms of their level of abstraction using the distinction between literal and inferential language (Kleeck, 2008; Zucker, Justice, Piasta, & Kaderavek, 2010). In a literal language exchange children are not required to abstract from what they can actually perceive (e.g., t: 'what color is this?' / ch: 'red'). In inferential exchanges children are requested to infer or reason about what they can perceive in order to provide an answer (e.g., t: 'do mermaids really exist?' / ch: 'only on TV'). Previous research has shown that there is an association between the level of abstraction of teacher's questions and the level of abstraction of children's contributions (Zucker et al., 2010).

We are currently finishing the coding of the selected instructional events with the help of The Observer software. Sequential analysis and pattern analysis will be performed in order to identify the most typical interactional streams and patterns of interaction.

2.2.1.2 **Children's everyday activities and the role of preschool teachers in German preschools**

Wilfried Smidt, University of Koblenz-Landau, Germany
Susanne Kuger, German Institute for International Educational Research, Germany
Hans-Günther Rossbach, University of Bamberg, Germany

Abstract:

Educational processes in preschools are frequently examined on class-level (Sylva et al., 2006) or on target-child-level (NICHD ECCRN, 2002). Additionally educational processes can be covered with high-inferential ratings or low-inferential observations of children's activities (Soar & Soar, 1982). This paper refers to low-inferential observations of activities on target-child-level. Researching educational processes on target-child-level may provide important details regarding day-to-day activities of individual children with that cannot be covered by classroom-based measures (Chien et al., 2010). Bearing in mind theory and research-based standards of developmentally appropriate practices in preschool (Bredekamp & Copple, 2002) children should be involved in various activities (e.g., role playing, literacy-related activities) that may foster their development. With respect to Vygotskian influenced theories preschool teachers play a critical role regarding encouraging children in an appropriate way (Siraj-Blatchford, 2009). However, there is a considerable knowledge gap regarding children's day-to-day activities and the role teachers play during these experiences. Therefore the study addresses the following research question: In which everyday activities are children involved in preschool and what kind of role do teachers play during these activities?

The study refers to data from the study BiKS (educational processes, competence development and selection decisions in preschool and school age). Data from the first (spring 2006), second (spring 2007) and third year of preschool (spring 2008) are used. In all, 132 children and 64 teachers from 51 preschools in the federal states Bavaria and Hesse participated. Children's activities and the role of preschool teachers were captured with a time-sampling observation instrument (Target Child Observation; Kuger, Pflieger & Rossbach, 2006). This instrument documents everyday activities of individual target children in preschools. The coding procedure requires that during a typical morning (8 a.m. to noon), two children per preschool class were each observed for three periods of 20 consecutive one-minute intervals. Trained observers coded the frequencies of 17 target-child activities and nine preschool-teacher behaviours. For investigating the research question cross-sectionally (first year of preschool) and longitudinally (change over time) multiple pairwise comparisons with Bonferroni adjustment and MANOVAs for repeated measures were carried out. Results reveal that children are often involved in transitions, waiting periods and language activities, whereas other activities (e.g., natural science, school preparation) only play a minor role. Regarding longitudinal results especially school preparation (exercises, which refer to school enrolment) and language activities increase over time. Concerning the role of preschool teachers during children's activities, not surprisingly findings show that the staff is mostly involved with other children than with the target-children. If involved with the target children, preschool teachers frequently have an observing, informatory and supporting role during children's transitions and waiting periods. Quite often they observe children during care routines and arts. They are mainly informatory during children's language activities and supporting during art activities. Results are discussed in terms of previous findings from international research (e.g., ECCE Study Group, 1999) and standards of appropriate experiences of children in preschools.

2.2.1.3 **Do teachers base their teaching on their knowledge or perceptions of their students?**

Philippe Wanlin, University of Geneva, Switzerland
Holli Schauber, University of Geneva, Switzerland

Abstract:

Research on teacher thinking paradigms has shown that teachers possess knowledge about students (Borko & Putnam, 1996; Calderhead, 1996 ; Woolfolk-Hoy, Davis & Pape, 2006) and that they use that knowledge for classroom decision making (Clark & Peterson, 1986 ; Wanlin & Crahay, 2012).

Berliner (1987) showed that experienced teachers focused more frequently on information about a group of students for interactive decision making. Novice teachers on the other hand, focused primarily on individual students. Bromme (1987, 1989) found that experienced teachers based their planning and interactive reflections on the "collective student". This idea of a "collective student" as a reference for decision making is also available in papers dealing with typologies of students (Hofer, 1981, Hösterman, Krolak-Schwerdt & Fischbach, 2010) or with the steering group phenomenon described for example by Dahllöf and Lundgren in 1970. All of these papers, more or less concluded that different teacher knowledge or judgments of students leads to different teacher classroom behaviour. This paper tries to analyze the relationship between the different instructional behaviours during classroom interaction and the knowledge and judgment that teachers develop about their students.

Five elementary school teachers (students' age 6-7 years) of the French-speaking part of Belgium participated in our study combining different data collection techniques: a 7 point likert scale (to determine teacher judgment and knowledge of the pupils); classroom observation in natural settings (to identify potentially different classroom behaviour on factors like questioning, feedback, etc.); and stimulated recall (to determine teachers interactive perceptions of students' comprehension during classroom interaction). Data was gathered during two reading lessons (French). Qualitative data was transcribed and content-analyzed to determine the frequency of different factors that were then cluster-analyzed.

Results show that teachers develop statistically different knowledge or judgment profiles of their students (high performer vs. low performer) and that different statistically significant profiles based on instructional behaviour do emerge from classroom observation (some students are more represented during classroom interaction than others). However, no statistically significant relationship is visible between the profiles based on teachers' judgments and those based on the observation of instructional behaviour. In other words, the knowledge teachers have about their students, as we have collected it, doesn't determine the quality and the quantity of interactive teaching.

However, teachers' perceptions of individual students' comprehension collected during stimulated recall sessions are significantly related to the profiles based on teaching behaviour (students identified as having comprehension problems are more frequently involved in classroom episodes), and are significantly linked to teacher's knowledge and judgment about their students (low performing students are more frequently identified as presenting comprehension problems). Our results tend to indicate that the relationship between teachers' knowledge or judgment of their students and instructional behaviour is not direct. It seems that teachers' perceptions of students' comprehension are however an important mediator between interactive behaviour and teachers' knowledge of their students.

2.2.2

Symposium

The importance of sensitive parenting in child development

Convenor: Maartje P.C.M. Luijk, Erasmus University Rotterdam, The Netherlands
Discussant: Paul Harris, Harvard Graduate School of Education, United States of America

Integrative statement:

Sensitive parenting is known to play an important role in child development. Sensitivity, defined as the ability to perceive and interpret accurately children's signals, is one of the key elements of parenting. It helps to create a secure base from which the child can safely explore the environment and form a positive sense of self. Sensitive parenting behavior is associated with better cognitive, behavioral, and socio-emotional outcomes of the child, and knowledge about predictors of poor parental sensitivity may help identify families at risk for developing insensitive patterns of parenting. In this symposium, four studies on observed parenting are presented, and effects on different developmental domains in early childhood are explored. The presented studies are embedded in the Generation R Study, a large prospective cohort study designed to identify early environmental and genetic determinants of growth, development, and health from fetal life into young adulthood in Rotterdam, the Netherlands. In the first study, predictors of parental sensitivity are explored. The second study describes associations between breastfeeding and maternal sensitivity, and the effects on the quality of the mother-infant attachment relationship. The third study investigates the influence of prenatal family stress through maternal postnatal sensitive

discipline strategies on child socialization. The last study presents a model of children's differential susceptibility to (in)sensitive parenting. This symposium delineates the importance of early experiences on early socio-emotional development, making use of robust findings from one of the worlds largest cohort studies with data on observed parenting and child development.

2.2.2.1 History of Psychopathology and Family Functioning during Pregnancy as Predictors of Observed Parental Sensitivity

Nicole Lucassen, Erasmus University Medical Center, the Netherlands
Mijke P. Lambregtse-Van den Berg, Erasmus University Medical Center, the Netherlands
Marinus H. Van IJzendoorn, Leiden University & Erasmus University, the Netherlands
Marian J. Bakermans-Kranenburg, Leiden University
Frank C. Verhulst, Erasmus University Medical Center, the Netherlands
Henning Tiemeier, Erasmus University Medical Center, the Neterlands

Abstract:
  Sensitivity, defined as the ability to perceive and to interpret accurately children's signals, is one of the key elements of parenting. In this study, we focused on prenatally assessed determinants of sensitive parenting in early childhood. Information on history of depression or substance use disorder, and family functioning during pregnancy were available in 711 families. Family functioning was assessed by the subscale General Functioning of the McMaster Family Assessment Device at 20 weeks of pregnancy. History of substance use disorder and depression were assessed by the Composite International Diagnostic Interview during a home visit at 30 weeks of pregnancy. Parental sensitivity was observed in a semi-structured interaction between child and parent during a home visit when the child was four years of age. Poor family functioning during pregnancy was associated with lower maternal sensitivity towards the child at age four. Furthermore, if mother or father was diagnosed with a history of substance use disorder, mother's parenting was less sensitive. Father's parenting was not affected by poor family functioning or by parental history of psychopathology. This study showed that paternal and maternal problems prior to birth affect mother's but not father's sensitivity

towards the child in early childhood. The divergent findings for mothers and fathers underscore the importance of studying parents separately as well as in a family system.

2.2.2.2 Milk and more? Breastfeeding and its Relation to Maternal Sensitivity and Infant Attachment

Anne Tharner, Erasmus University Medical Center & Leiden University, the Netherlands
Maartje P.C.M. Luijk, Erasmus University Medical Center & Leiden University, the Netherlands
Marinus H. Van IJzendoorn, Erasmus University Medical Center & Leiden University, the Netherlands
Marian J. Bakermans-Kranenburg, Leiden University, the Netherlands
Frank C. Verhulst, Erasmus University Medical Center, the Netherlands
Henning Tiemeier, Erasmus University Medical Center, the Netherlands

Abstract:
  The goal of the current study was to examine whether breastfeeding is associated with maternal sensitive responsiveness, infant-mother attachment security and attachment disorganization. We included 675 participants of a prospective cohort study. Information about duration of breastfeeding was collected by questionnaires at 2 and 6 months postpartum. Maternal sensitive responsiveness was assessed using Ainsworth's sensitivity scales, and attachment security and disorganization were assessed with the Strange Situation procedure in 14 month-olds. Linear regressions and analyses of covariance adjusted for various background variables were conducted. After 6 months of breastfeeding, mothers were more sensitive responsive, and attachment relationships were more secure and less disorganized than in dyads with limited or no breastfeeding. However, effect sizes were small. Longer duration of breastfeeding was related to more sensitive responsiveness, more attachment security, and less attachment disorganization. The underlying pathways require further research.

2.2.2.3 Maternal Sensitive Socialization Strategies Mediate the Impact of Prenatal Family Stress on Compliance in Young Children

Rianne Kok, Erasmus University Medical Center, the Netherlands
Marinus H. Van IJzendoorn, Erasmus University Medical Center & Leiden University, the Netherlands
Marian J. Bakermans-Kranenburg, Leiden University, the Netherlands
Frank C. Verhulst, Erasmus University Medical Center, the Netherlands
Henning Tiemeier, Erasmus University Medical Center, the Netherlands

Abstract:

Maternal concurrent stress negatively influences the quality of maternal sensitive discipline. At the same time, prenatal maternal stress has shown long term effects on child development and psychopathology. Several mechanisms have been suggested concerning how maternal stress might affect the child: through intrauterine programming; as a marker of genetic risk and / or through the spillover of maternal stress on postnatal parenting. In our study we investigate the spillover effect of prenatal stress on an important part of child socialization compliance, via maternal discipline. Family stress (General Functioning of the McMaster Family Assessment Device) and general stress (Long Lasting Difficulties Questionnaire) were reported by the mother at 20 weeks pregnancy. Mother-infant dyads (N=613) were observed during a lab session at 36 months and maternal discipline and child compliance was observed and independently coded during two discipline tasks ("don't touch"). Prenatal family-related stress, but not general stress, was related to both maternal discipline and child compliance. Significant mediation analyses showed that low levels of maternal sensitive discipline mediated the association between high levels of prenatal family stress and low levels of child compliance. Maternal insensitive discipline predicted lower levels of child compliance, but was not influenced by prenatal family stress. These findings suggest a specific spillover of family-related stresses on maternal sensitive discipline socialization which affects child socialization.

2.2.2.4 Parenting, Attachment Security and the Mineralocorticoid Receptor Gene: Evidence for Differential Susceptibility

Maartje P.C.M. Luijk, Erasmus University Medical Center & Leiden University, the Netherlands
Anne Tharner, Erasmus University Medical Center & Leiden University, the Netherlands
Marian J. Bakermans-Kranenburg, Erasmus University Medical Center, the Netherlands
Marinus H. Van IJzendoorn, Erasmus University Medical Center, the Netherlands
Frank C. Verhulst, Erasmus University Medical Center, the Netherlands
Henning Tiemeier, Erasmus University Medical Center, the Netherlands

Abstract:

Maternal sensitive responsiveness and extreme insensitivity only partly explain the variance in attachment security. Differences in attachment security may well be rooted in the interplay of genetic variations and environmental factors. The association between parenting (observed sensitive responsiveness and extreme insensitivity) and attachment security (assessed with the Strange Situation Procedure) was hypothesized to be moderated by genes involved in the regulation of the stress response: the glucocorticoid receptor (GR) and mineralocorticoid receptor (MR) genes. A significant GxE interaction was found: Infants carrying the minor MR allele (G) were significantly more securely attached if their mothers showed more sensitive responsiveness, and significantly less securely attached if their mothers showed more extremely insensitive behaviors. These associations were not significant for carriers of the AA genotype of MR. Findings are discussed from a differential susceptibility perspective.

2.2.3 Workshop

Early childhood classroom discourse analysis

Lotte Henrichs, Utrecht University, the Netherlands
Rob Zwitserlood, Utrecht University, the Netherlands

Abstract

In this workshop, we will look more closely at the language

interactions that were part of the CLASS workshop on Monday. In the CLASS (Classroom Assessment Scoring System) 'Language Modeling' is one of many dimensions of measuring classroom quality.

In this workshop we will get to the bottom of this particular dimension, through in-depth analysis of the language modeling indicators (supporting language use, repetition and extension, self- and parallel talk and advanced language) in transcripts of classroom discourse. We will use the program CLAN (Child Language Analysis program, McWhinney 2000). In the first part we will elaborate on the basics of CLAN, and demonstrate the various uses. In the remaining part of the workshop participants will have the chance to get some 'hands on' experience and conduct their own analyses on prepared data. For this part of the workshop, participants are requested to bring their own laptops. You will be provided with the download link of the freeware to be installed mid August.

2.2.4 Paper Session

2.2.4.1 The Piagetian tasks in the context of mathematical skills in elementary school

Katharina Lambert, University of Heidelberg, Germany
Birgit Spinath, University of Heidelberg, Germany

Abstract:

Introduction: There is a growing body of research concerning the relation of math skills and visuo-spatial ability but little is known about the role of conservation skills in mathematical achievement. The present study investigated this association in elementary school children using Piagetian tasks.

One main problem of the research on visuo-spatial skills lies within the operationalisation of the construct. There is a large variety of quite diverging tasks, and often they might not be suitable for children due to a high level of abstraction. This might be the reason for the fact that some studies did find associations between math and visuo-spatial skills (e.g., Bull, Espy, & Wiebe, 2008) while others did not (e.g., Krajewski, 2003). On that account, the first aim of this study was to investigate the impact of visuo-spatial on mathematical skills using an adapted form of the Piagetian Three-Mountain-Task (Piaget & Inhelder, 1971) which involves visuo-spatial competences (McDonald & Stuart-Hamilton, 2003) and allows children to transfer from the two- to the three-dimensional space and backwards.

Furthermore, some studies found correlations of $r = .40-.70$ of conservation and math skills. However, most studies are rather old and Shayer et al. (2007) showed that conservation abilities declined during the last decade. Above, little is known about the skills of children with math difficulties. Therefore the second aim of the study was to examine the understanding of conservation principles in elementary school children using the Volume-Conservation-Task (Piaget, 1965).

Method: $N = 222$ second-, third- and fourth graders (107 girls, 115 boys), aged 6.75 to 11.75 ($M = 9.20$, $SD = 1.09$) were included. All children completed a standardized math achievement test, IQ test, the Three-Mountain-Task, the Volume-Conservation-Task and an additional task to test processing speed.

Results: Data analysis revealed significant correlations of mathematical achievement, IQ, visuo-spatial skills, conservation abilities and processing speed. Due to high multicollinearity, a relative weights analysis (Johnson, 2000) was conducted. All predictors together accounted for 44% of the variance. As expected, IQ contributed the highest proportion of the variance. However, visuo-spatial skills accounted for almost the same proportion and even conservation skills were a substantial predictor. Children who showed math difficulties (percentile < 25) mastered the conservation tasks significantly less often than children with average math skills. Children of the second grade had a lower ability level than did children of third and fourth grade.

Discussion: Results indicate that math achievement is associated to visuo-spatial skills, the understanding of the volume conservation principle and processing speed. All variables contribute to the prediction of math achievement above IQ. The Piagetian tasks proved to be suitable for children to gain information about several competences which are connected to math skills and the detection of underlying deficits in children with mathematical learning difficulties. Above this research provides evidence that conservation skills should be included in the investigation of early numeracy skills. Further research is needed to reveal causal effects.

2.2.4.2 Reciprocal relationships between various mathematical domains in situations of play and exploration

Rose Vogel, Goethe University Frankfurt, Germany
Judith Jung, Goethe University Frankfurt, Germany

Abstract:

The presentation exhibits partial results of the study "early Steps in Mathematics Learning" (erStMaL), which is one of the

research projects at the Centre for Research on Individual Development and Adaptive Education of Children at Risk (IDeA) in Frankfurt on Main, Germany.

"erStMaL" is set up as a longitudinal study, which observes children from the age of three until the third year of primary school. The superior goal of the study is to reconstruct the development of mathematical thinking from the perspective of mathematics education. Within the framework of specific developed situations of play and exploration, the children deal with mathematical problems referring to the five mathematical domains: numbers & operations, pattern & algebraic thinking, geometry & spatial thinking, measurement and data & probability. These situations create a framework for the mathematical discourse by groups of children (in pairs or small groups of four children) together with an adult.

Leading research questions for the presented analysis are:
- Do children remain in the mathematical domain of the situation or do they switch between the domains within the exploring process?
- Can types of children be identified?

Within the erStMaL research team there are various methods carried out to analyze the videotaped settings. The presented method has been developed additionally to the existing qualitative reconstructive methods and should establish preconditions for a statistical evaluation (e.g., cluster analysis). The method of analysis is inspired by the qualitative content analysis (Mayring 2000). By using a category system the video data are reduced respectively structured so that transitions between the mathematical domains become apparent. On the basis of those reciprocal relationships potential types of children can be identified.

For the development of the category system one mathematical situation of play and exploration was selected from each mathematical domain. The constellations of participators and the arranged situations of play and exploration are kept constant over all data collection points. The categories are developed in the interplay between the theoretical mathematical concepts and the observed mathematical concepts of the children and the guided adult.

The first results show that most of the children do not remain in the mathematical main focus of the situation. They switch to different domains of mathematics, for example, to edit the mathematical problem in another area or to explore the potential of the artefacts. Furthermore it emerges that children develop preferences for certain mathematical domains.

Prospectively the developed category system should be extended to more video data from further mathematical situations of play and exploration. It is also planned to develop a category system referring to another more differentiated research question, e.g., what mathematical domains can be assigned to the multimodal expressions of the children.

2.2.4.3 **Unique and shared roles of the approximate number system and working memory in children's mathematics**

Rebecca Bull, University of Aberdeen, United Kingdom
Marc Marschark, Rochester Institute of Technology, United States of America
Emily Nordmann, University of Aberdeen, United Kingdom
Wendy Skene, University of Aberdeen, United Kingdom
Patty Sapere, Rochester Institute of Technology, United States of America
Sarah Lumsden, University of Aberdeen, United Kingdom

Abstract:

The Approximate Number System (ANS) is a non-verbal approximate representation of quantity that plays a foundational role in the development of symbolic numerical abilities. Halberda et al (2008) found that acuity of the ANS (measured at age 14) had a significant retrospective correlation with math achievement even when controlling for IQ and other general measures of cognitive ability (taken at age 8). Since this study a growing number of papers have highlighted this relationship in concurrent measurements. Here we examine whether the relationship between ANS acuity and math achievement changes with age, and also consider the relationship between ANS and other cognitive skills known to correlate highly with math achievement, namely working memory. 284 children aged 5 to 12 years completed a task used to determine the acuity limits of the ANS, alongside measures of visual-spatial and verbal working memory, math achievement, and expressive language. The pattern of relationships between the measures was considered separately for 3 distinct age group; 5-7, 7-9, and 9-12 years, controlling for age and expressive language within each age group. Higher ANS acuity and higher working memory correlated with math achievement within each age group, suggesting an important role for both skills in supporting math performance across this age range. However, with increasing age the pattern of relationships between ANS and working memory changed; in the 5-7 year group ANS acuity did not

correlate with any of the working memory measures. There were weak relationships in the 7-9 group, and stronger relationships to more of the working memory measures in the oldest group, with higher ANS acuity correlating with higher working memory span. This increasing relationship between ANS and working memory may be due to the acquisition and mastery of ordinal relations among numerical symbols that link the ANS with mathematical skill; Arabic numerals are understood by mapping them on to representations of approximate quantity, but with increasing age, and with increasing higher-level cognitive abilities, children go beyond simple direct associations and infer deeper relative ordinal relationships between numerical stimuli. Lyons and Beilock (2009) found that adults higher in working memory capacity were more likely to infer ordinal relationships among novel symbolic stimuli, and they argue that this tendency allows for more accurate mapping of non-symbolic numerical content onto novel symbols. We tentatively adopt this as an interpretation of the relationship between higher ANS acuity and higher working memory in our oldest age group.

Notes

Tuesday 28th of August
12:00-14:00

Poster Session

1 **Examining differential effects of early childcare and education on child socio-emotional development**
Martine Broekhuizen, Utrecht University, the Netherlands
Marcel van Aken, Utrecht University, the Netherlands

2 **The developmental and social-emotional screening evaluation of institutionalized children; prospective three month surveillance (July-September 2011) in the Foster Care Home of Vlorë, Albania**
Aurela Saliaj, Ismail Qemali University, Albania
Alda Isaraj, Ismail Qemali University, Albania

3 **When and how children regulated each other in the classroom?**
Akiko Tonegawa, Tokyo Gakugei University, Japan
Hisashi Uebuchi, Tokyo Gakugei University, Japan

4 **A longitudinal study: The relationship between parenting and children's emerging capacity for emotion regulation**
Frances Warren, University of Reading, United Kingdom
Pasco Fearon, University College London, United Kingdom
Yaeri Kang, University of Reading, United Kingdom

5 **The teacher's invisible hand: How teacher-child interactions are related to children's social status**
Marloes Hendrickx, Utrecht University, the Netherlands
Tim Mainhard, Utrecht University, the Netherlands
Henrike Klip, Radboud University Nijmegen, the Netherlands

Eliane Segers, Radboud University Nijmegen, the Netherlands
Antonius Cillessen, Radboud University Nijmegen, the Netherlands
Mieke Brekelmans, Utrecht University, the Netherlands

6 **Can interaction training improve childhood educators' language-promoting behaviour as well as children's language skills**
Steffi Sachse, University of Ulm, Germany
Stephanie Simon, University of Ulm, Germany

7 **Conflict management in two types of after school day care, a study of how caretakers intervene in conflicts of children of 4 to 7 years**
Nynke van der Schaaf, Rijksuniversiteit Groningen & Hanzehogeschool Groningen, the Netherlands

8 **Doing and undoing gender in the nursery**
Franziska Vogt, University of Education St. Gallen, Switzerland
Julia Nentwich, St. Gallen University, Switzerland
Wiebke Poppen, St. Gallen University, Switzerland
Stefanie Schälin St. Gallen University, Switzerland

9 **The Encouragement of Cognitive Stimulation in Early Childhood at Parental Homes**
Nadine Zeidler, German Institute for International Educational Research & Center for Research on Individual Development and Adaptive Education of Children at Risk, Germany
Miriam Kachler, German Institute for International Educational Research, Center for Research on Individual Development and Adaptive Education of Children at Risk & Heidelberg University Hospital, Germany
Silke Hertel, German Institute for International Educational Research, Center for Research on Individual Development and Adaptive Education of Children at Risk & Johann Wolfgang Goethe University Frankfurt
Dr. Andreas Eickhorst, Heidelberg University Hospital, Germany

10 **Children's belief of opposing opinion in argument activities**
Ryosuke Onoda, The University of Tokyo, Japan

11 **Learning Principles of Stable Constructions in the Transition from Kindergarten to Primary School**.
Ina Plöger, Seminar für Didaktik des Sachunterrichts (department science and learning) Münster, Germany

Notes

Tuesday 28th of August
14:00-15:30

Symposium

Task-avoidance behavior in de beginning of school and its relationships with teachers' practices and perceptions
Convenor: Eve Kikas, Tallinn University, Estonia
Discussant: Helena Raski-Puttonen, University of Jyväslylä, Finland

Integrative statement:
   The development of task motivation has its onset already in the beginning of school (Eccles et al., 1993; Wigfield et al., 1997). Earlier studies have shown that children who are task-focused and persistent in the face of obstacles tend to do well at school, whereas those who exhibit task-avoidant and passive behaviours are more likely to underachieve (Georgiou et al., 2009), and that children's task-avoidant behaviours and their academic development transactionally influence each other (Aunola et al., 2002). The importance of early education experiences for learning and development is well known and children's outcomes are also affected by teachers' classroom practices and goals. The three symposium presentations contribute to previous research from two countries (Estonia and Finland) by providing insight on the role of task-avoidance in relation with teachers' practices and perceptions. Sophisticated quantitative methodology is applied and in two of the papers observed classroom practices are employed. The first paper (Soodla et al.) shows that in addition to actual reading comprehension, children's task-avoidance influences teachers' perceptions of reading comprehension. The second paper (Pakarinen et al.) examines mutual relations between task-avoidant behaviour and teachers' practices. The third paper (Kikas & Peets), additionally, shows the role of classroom context together with teachers' practices in the development of avoidance. These studies emphasize the role of teacher behaviour in development of children's achievement-related behaviour but also the role of children's behaviour in teachers' interpretations and practices. The papers point out motivational factors as critical contributors to achievement development in early school years.

Task-avoidance behaviour as predictor of students' reading comprehension and teachers' perceptions

Piret Soodla, University of Tallinn, Estonia
Katrin Mägi, University of Tartu, Estonia
Eve Kikas, University of Tallinn & University of Tartu, Estonia

Abstract:
   Purpose and Research Questions. Although teachers' judgments of their students' reading achievement are crucial for effective instructional planning, little is known about factors besides actual reading performance that influence teachers' evaluations of students' reading comprehension. The purpose of the study was to examine if students' task-avoidance behaviour together with reading fluency, linguistic comprehension, and gender (i.e., the child-related factors), and the mean level of reading comprehension in class (i.e., the class-related factor) have effect on teachers' judgments of students' reading comprehension skills. Research questions were the following. First, what are the effects of child-related factors (students' task-avoidance behaviour, reading fluency, linguistic comprehension, and gender) on teachers' judgments of their students' reading skills? Second, does the mean level of reading comprehension in class as the class-related factor have any direct effect on teachers' judgments of students' reading skills?
   Method. The participants were third-grade Estonian-speaking students (N = 656; 341 boys and 315 girls; age 9−11 years) and their classroom teachers (N = 51; all female; age 24−67 years). The students were assessed for reading comprehension, reading fluency, linguistic comprehension, and task-avoidance behaviour. For reading comprehension, two tests were used: one was specially designed for the study, and the second was Estonian translation of a subtest from the standardized Finnish Reading Test for Primary School (Lindeman, 1998). Reading fluency was assessed by the Word Recognition Test (Lindeman (1998). Finnish Reading Test for Primary School), adapted into Estonian. For linguistic comprehension, an abridged version of the Word Guessing Test was used (Männamaa et al., 2008). The teachers were asked to evaluate the students' task-avoidance behaviour by the adapted version of the Behaviour Strategy Rating Scale (Onatsu-Arvilommi & Nurmi, 2000), and to evaluate the students' reading comprehension on a five-point scale. Statistical analyses were carried out by applying path analyses in the structural equation modelling framework.
   Results. Results from path analyses indicated direct negative

effect of children's task-avoidance behaviour and low positive effects of reading fluency and linguistic comprehension, and negative effect of classmates' reading comprehension on teacher's judgment of the child's reading comprehension.

Conclusions and Implications. The results suggest that teachers tend to be misled by other factors besides the child's actual reading comprehension level, related to the child and class context. The strongest effect on teacher judgment was observed for students' task-avoidance behaviour. The findings refer to the need of development and use of reliable assessment tools for evaluation of students' reading skills and improvement of teacher education and in-service teacher training in the field of reading assessment.

2.3.1.2 **The Cross-lagged Relations between Classroom Quality and Children's Avoidance Behaviours at First and Second Grade**

Eija Pakarinen, University of Jyväskylä, Finland
Marja-Kristiina Lerkkanen, University of Jyväskylä, Finland
Anna-Maija Poikkeus, University of Jyväskylä, Finland
Jari-Erik Nurmi, University of Jyväskylä, Finalnd

Abstract:

Purpose and research questions. Achievement beliefs and behaviors refer to a variety of expectations, beliefs, and behaviours that students display in various learning situations (for a review, see Wigfield et al., 2006). Children's achievement-related behaviours have been shown to influence their academic achievement (e.g., Onatsu-Arvilommi & Nurmi, 2000). In turn, both children's motivational and learning outcomes are also affected by teachers' classroom practices and goals (Birch & Ladd, 1997; Skinner & Belmont, 1993). Therefore, teachers may play an important role in children's achievement-related self-beliefs and behaviours too (e.g., Anderman et al., 2001; for a review see, Wigfield et al., 2006). There are also some studies suggesting that students and their different characteristics influence teachers and their teaching practices (Dobbs & Arnold, 2009; Ladd, Birch, & Buhs, 1999).

The CLASS framework conceptualizes classroom quality in terms of emotional support, classroom organization, and instructional support (Pianta, La Paro, & Hamre, 2008). These three domains have shown to be influential to child outcomes. For example, emotional support and instructional quality promote both children's engagement and academic achievement (Hamre & Pianta, 2001; Pianta et al., 2008). Classroom organization is associated with children's academic outcomes, behavioural engagement and on-task behaviour (Pianta et al., 2008).

The present study examined the cross-lagged associations between classroom quality and children's avoidance behaviours during the 1st and 2nd grades. It might be assumed that classroom quality influences children's avoidance behaviours. On the other hand, children's behaviours might be assumed to influence the way teachers interact with them.

Method. The active and passive avoidance behaviours (Observer-rating Scale of Achievement Strategies; Nurmi & Aunola, 1998) of 165 Finnish children were rated by trained investigators at the end of the 1st and 2nd grades. A pair of trained observers used the CLASS-instrument (Pianta, La Paro, & Hamre, 2008) to observe classroom teachers (n = 31) on the quality of emotional support, classroom organization, and instructional support at the 1st and 2nd grade.

Results. The results of the multilevel modeling showed, first, that classrooms differed from each other in terms of children's avoidance behaviours. Second, the more active avoidance children were typically rated as showing at grade 1, the higher level of emotional support, instructional support, and classroom organization the teachers were observed as showing at grade 2. Moreover, the lower level of emotional support teachers showed in classroom situations at grade 1, the more passive avoidance children in those particular classrooms were rated as showing at grade 2.

Conclusions and implications. The present study broadens the previous research by showing that classroom quality is an important antecedent of children's achievement-related behaviours already at the very beginning of the school career. Especially emotional support provided by classroom teacher has a developmental relevance in the promotion of children's preparedness to face challenging learning situations and engage in learning. The results also suggest that classroom teachers actively adapt their teaching practices and interactional quality in accordance with children's characteristics at least in early school years.

2.3.1.3 **Classroom Context and Teaching Practices as Predictors of Elementary-School Students' Avoidance Behaviour**

Eve Kikas, University of Tallinn, Estonia
Kätlin Peets, University of Turku, Finland

Abstract:

Purpose and research questions. Research has identified individual-level predictors of task-avoidance behaviour, but less attention has been devoted to understanding how classmates and teachers shape achievement behaviour. The purpose of the study was to examine main and interactive effects of initial (first-grade) classroom-level academic skills (in math and reading), avoidance behaviour, and teacher's teaching practices (child-centred, child-dominated, and teacher-directed) when predicting second-grade task-avoidance behaviour. We also examined individual-level effects of initial academic skills and avoidance on later avoidance.

Method. Participants were 450 students (247 boys, 203 girls) from 32 classrooms across Estonia. Students' academic skills were tested and their avoidance behaviour rated in the beginning of the first grade. In the middle of the first grade, teachers' (child-centred, child-dominated, and teacher-directed) practices were observed by using the classroom observation measure ECCOM (Stipek & Byler, 2005). Students' task-avoidance behaviour was again reported by teachers in the end of the second grade. Task-avoidance behaviour was assessed with an adapted version of the Behavioural Strategy Rating Scale (Onatsu-Arvilommi & Nurmi, 2000). According to ECCOM, each teacher receives three (interrelated) scores – for Child-Centred Practices, Teacher-Directed Practices, and Child-Dominated Practices. As Teacher-Directed and Child-Centred practices were highly related, we used Child-Centred and Child-Dominated practices in our analyses.

Results. Individual-level analyses showed that avoidance was stable over time and math skills in the beginning of first grade predicted relative decreases in avoidance. Classroom-level effects were different – in classrooms with higher initial reading skills, students showed lower avoidance behaviour in the second grade. No main effects of teaching practices on second-grade avoidance were determined, but we found several interactive effects between child-dominated practices and initial class-level achievement but also between teaching practices. Namely, when initial academic skills were low, child-dominated practices predicted increases in avoidance while when the initial classroom-level achievement was high, decreases in avoidance. Also, we found that in classrooms where the initial classroom-level avoidance was low, child-centred practices predicted average decreases in avoidance behaviour while in classrooms characterized by high levels of avoidance behaviour in the first grade, engaging in child-centred practices did not have any effect on changes in avoidance. In classrooms where teachers frequently engaged in child-dominated practices, child-centred practices predicted average increases in avoidance scores while in classrooms where teachers abstained from using child-dominated practices, child-centred practices predicted average decreases in avoidance motivation.

Conclusions and implications. The findings are of practical importance in teacher education. First, they emphasize the importance of paying attention to children's avoidance behaviour already in kindergarten because it could set in motion a vicious cycle in the beginning of school. Second, our results suggest that the same teaching practices can be beneficial or harmful depending on the classroom context. For instance, in classrooms with low levels of academic skills, teachers should be especially careful not to give children too much freedom and autonomy because this can undermine children's achievement behaviour. In contrast, in classrooms with high initial skills, more autonomy and lower structure may be even beneficial in some instances.

2.3.2

Paper Session

2.3.2.1

Childcare Quality Worldwide: An International Comparison using the ITERS(-R) and ECERS(-R)
Harriet J. Vermeer, Leiden University, the Netherlands
Marinus H. van IJzendoorn, Leiden University, the Netherlands

Abstract:

Among childcare researchers, there is substantial agreement about what is considered essential in describing children's developmental needs. Although the focus may vary across countries, definitions describing childcare quality contain basic elements that have been accepted worldwide. Core elements that are universally recognized as necessary for children's positive development are: safe and healthful care, developmentally appropriate stimulation, positive interactions with adults, promoting individual emotional growth, and promoting positive relationships with other children. This international consensus in underlying constructs of childcare quality has resulted in uniformity in the use of instruments. Widely used instruments that cover these elements are the Early Childhood Environment Rating Scale (ECERS; Harms, Clifford, & Cryer, 1980, the Infant/Toddler Environment Rating Scale (ITERS; Harms, Cryer, & Clifford, 1990), and their revisions (ECERS-R; Harms, Clifford & Cryer, 1998 and ITERS-R; Harms, Cryer, & Clifford, 2003). Scores are obtained through observation using 7-point-scales, ranging from inadequate (1), minimal (3), good (5) to excellent (7).

This study serves two goals. First, childcare quality is put in an international perspective by reviewing studies in which the ITERS(R) and/or ECERS(R) were used. Second, the study provides more insight in associations between structural features of childcare (e.g., group size, caregiver-child ratio) and process quality. Within countries, the range of these structural features is usually limited because of strict governmental legislations. In this across-country approach the range of structural quality will be substantially broadened.

We systematically searched the electronic databases ERIC, Current Contents, PsychInfo, and PubMed using single and combined search terms as follows: ECERS, ITERS, childcare, daycare, center/centre care. Second, the references of the collected papers were searched for relevant studies. In the selection procedure, the following criteria were met. Studies (1) were carried out within childcare centers, (2) provide descriptive statistics for these measures, (3) include a representative sample (studies in which only higher quality or low quality centers were included were not selected for this review), and (4) report satisfactory inter-rater reliability for these measures in adequately trained observers. If a study reported on the results of a quality improvement program or an intervention, only pretest scores were used. Finally, if more than one publication was found for the same study or dataset, the most recent publication was used.

We found 62 studies with a total of 7195 childcare groups (infant groups, toddler groups, preschool groups, mixed age groups) in 21 countries covering five continents (Australia, Asia, Europe, North America, South America). Mean scores ranged from 2 to 5.3. Childcare quality did not meet custodial care needs (mean scores < 3) in the Netherlands Antilles and South-Korea. Good quality care (mean scores > 5) was reported in Australia and Canada.

Not all results are available but will be analyzed subsequently and presented at the conference. Results will be discussed in light of socio-economic differences and cultural differences in values and beliefs about child-rearing and early childhood education.

2.3.2.2 Child care quality and child wellbeing: Investigating double risk

Claudia Werner, University of Leiden, the Netherlands
Mariëlle Linting, University of Leiden, the Netherlands
Harriet J. Vermeer, University of Leiden, the Netherlands
Marinus van Ijzendoorn, University of Leiden, the Netherlands

Abstract:
The number of children attending daycare in the Netherlands has been growing rapidly. In 2010 more than 380.000 children aged 0-4 attended center-based daycare (CBS, 2010). A growing body of research has documented the impact of these environments on children's development (e.g. NICHD, 2005; 2010). Children's wellbeing and social-emotional development are at risk when experiencing both low-quality daycare and a low-quality home environment. This is often referred to as a 'dual-risk' (Clarke-Stewart & Allhusen, 2005). In a more positive light, for children from low-income families a sensitive daycare environment may serve as a protective factor or compensation. The aim of the current study was to test the dual risk and compensation hypotheses in a Dutch setting.

We investigated child wellbeing and problem behavior in the following situations: (1) relative low-quality care in both environments (dual risk); (2) relative low-quality care in either one of the environments (compensation) and (3) relative high-quality care in both environments (dual protection). In both environments, quality of care includes structural (e.g. materials) and process aspects (e.g. interactions). A main indicator of quality of care is caregiver sensitivity.

The sample includes 100 children (aged 1,5 – 4 years), their parents and their caregivers from daycare centers in a Dutch urban area. Background information was included on the children's gender, age, hours of attendance, and parental SES. With respect to daycare we collected information concerning group size, caregiver-child ratio, caregiver's ethnicity, experience and education. Children's behavior problems were measured with a 100-item questionnaire (CBCL-TRF 1,5-5yrs; Achenbach & Rescorla, 2000) that was filled out by the caregiver. Children's wellbeing was assessed from three 5-minute episodes of videotaped observation at the center with the NCKO Wellbeing Scale (Laevers 2003; De Kruif et al., 2007). Global quality of care at the center was assessed with the ECERS-R (Harms, Clifford & Cryer, 1998) during a 3-hour observation. Quality of the home environment was assessed during a 1,5 hour visit, using the IT-HOME (Caldwell & Bradley, 2003). Caregiver sensitivity at the center was assessed from three 10-minute episodes of videotaped observation with the NCKO Caregiver Sensitivity Scale (De Kruijf et al., 2007). Parental sensitivity was assessed from a 4-minute videotaped structured play episode of parent-child interaction (Egeland, Erickson, Clemenhagen-Moon, Hiester, & Korfmacher, 1990). For this nested design (children from the

same group and center) multilevel analyses were used. Not all results of the study are yet available but will be analyzed in the near future, well before the conference. We will discuss whether children's wellbeing and problem behavior differ dependent on the environments (dual risk, compensation, double protection) in which they are raised. Based on this study, methods for (preventive) interventions can be specified for those children who are most in need.

2.3.2.3 **Association between early attendance of day care centers and prevalence of eczema**
David Richter, Socio-Economic Panel Study (SOEP), Germany

Abstract
Various risk factors for childhood eczema have been discussed in the literature including sex, socioeconomic status, pet exposure, tobacco smoke, air pollution, nutrition-related aspects, and stress. Recent German research has shown that day care center attendance was associated with an increased prevalence of eczema (Cramer et al., 2011). However, the study areas – Munich, Wesel, Bad Honnef, and Leipzig – were very selective and varied systematically in the availability of day care centers as well as various background variables. Therefore, the aim of the present study was to investigate the prevalence of eczema with a national representative sample – the Socio-Economic Panel Study (SOEP).

Since 1984, the SOEP is an ongoing, nationally representative longitudinal study of private households in Germany (for details see Wagner, Frick, & Schupp, 2007). In 2003, 2005, and 2008, the SOEP introduced new questionnaires to gather data on children's development – the mother and child questionnaire for women who had given birth since the last interview, a questionnaire for mothers of children aged two to three years, and a questionnaire for mothers of children aged five to six years. These questionnaires include questions about the child's health and whether the child is attending institutional day care settings. Moreover, the SOEP provides extensive information about children's and maternal background variables, i.e. age, education, income, geographic region, and more.

The sample includes 497 children and their mothers with valid data from all three questionnaires. Of these children, 177 (35.6%) attended institutional child care settings at age 2/3 and age 5/6, 246 (49.5%) attended institutional child care settings at age 5/6 only, and 73 (14.7%) did not attend institutional child care settings. At age 5/6, 42 mothers (8.7%) reported that their child had eczema.

The analyses showed, that children who attended institutional child care settings at age 2/3 had a significantly higher probability for eczema at age 5/6 compared to children who attended institutional child care settings at age 5/6 only, or who did not attend institutional child care settings at all. The effect remained stable after controlling background variables and other risk factors of eczema, i.e. children's sex, mother's age and education at the time of birth, household income at the time of birth, socio-economic status, geographic region, whether the father was living in the household or not, whether the child had siblings or not, whether the pregnancy was planned or not, the frequency of playground visits at age 2/3 as well as whether the family relocated within the last 6 years.

Possible explanations, avenues for further research and implications for the practice are discussed.

2.3.3 **Symposium**

Assessing early predictors in language development
Convenor: Ora Oudgenoeg-Paz, Utrecht University, the Netherlands
Discussant: Maartje Raijmakers, University of Amsterdam, the Netherlands

Integrative statement:
Language is crucial for communication and the acquisition of (curriculum-based) knowledge, such as literacy, maths, and science. It is therefore essential to gain insight into the mechanisms of successful language acquisition. Language development is shaped by many different factors, including children's cognitive abilities, cues provided by the environment, such as amount and quality of input, and the interaction between the child and its (social and physical) environment (e.g., scaffolding and exploration). Thus, insight into language development demands longitudinal studies commencing in infancy and toddlerhood, of different populations, applying different methodologies to tap into children's skills at different ages.

The present symposium looks at language acquisition of different groups of infants and toddlers and investigates different factors contributing to language learning, using various methodological approaches. The first presentation assesses the relationship between early exploration and spatial cognition in infancy and (spatial) language outcomes at toddler age. The second paper presents findings on the relationship between early

language, verbal and spatial memory in mono- and bilingual children. The third presentation connects implicit learning, linguistic category formation and language learning in infants with a familial risk of dyslexia.

The discussant will tie the presentations together on the basis of her own work in the area of exploration, implicit learning, language acquisition, and statistical methods for developmental research. The subsequent discussion will focus on ways to assess the different underlying and possibly interacting skills in young children, as well as ways to take into account individual differences in learning in research on language development.

2.3.3.1 **Spatial cognition and exploration as early predictors of (spatial) language**

Ora Oudgenoeg-Paz, Utrecht University, the Netherlands
Chiel Volman, Utrecht University, the Netherlands
Paul Leseman, Utrecht University, the Netherlands

Abstract:

Embodiment theory suggests that language and cognition develop through sensorimotor interaction between children and their environment (Smith, 2005). This interaction takes place through children's sensorimotor actions towards objects and environments, which are part of what Gibson (1988) calls exploration behaviour. Through exploration children learn about the affordances of their environment, allowing them to develop their (spatial) cognition and (spatial) language (i.e, prepositions relating to location and verbs containing a direction such as pull). In the process of learning (spatial) language, children are expected to use spatial cognition to interpret the information from the environment and to effectively modify the environment in a way that advances their (linguistic) development (Hockema & Smith, 2009). If this is the case, a positive relationship over time between spatial cognition and exploration behaviour on the one hand and (spatial) language on the other hand is expected. This prediction was put to the test in the present study.

Two cohorts of 28 and 31 Dutch speaking children were followed from 9 to 24 months and from 20 to 36 months respectively. Five home visits (roughly every four months) were conducted to obtain measures of language skills (vocabulary, grammar and spatial language), spatial cognition (spatial memory and spatial processing) and exploration behaviour (using observations of free play with a standard set of objects). Spatial language was measured from age 24 months onwards. This intensive longitudinal design enables the study of the dynamics of development in multiple areas over time.

Results indicate that spatial cognition at 9 months positively predicts productive vocabulary at later ages. In addition, spatial cognition at 20 months positively predicts productive vocabulary and spatial language at ages 24 and 28 months, but at ages 32 and 36 months these effects decrease.

After preliminary examination of the data, the children's exploratory actions with the toys were divided into three main categories, namely: Stationary exploration with a Single Object (SSO), exploration involving Self-Locomotion in Space (SLS) and (stationary or none stationary) exploration of Combinations of objects (CO). Results show that children who exhibited more CO exploration at 9 months had larger vocabularies at 20 and 24 months. Furthermore, children who had shown more SLS and CO exploration at age 20 months had larger vocabularies at ages 32 and 36 months and higher level of spatial language at ages 28, 32 and 36 months. All of the effects were medium to large.

These preliminary results thus provide initial evidence suggesting that both early spatial cognition and (several modes of) exploration can serve as predictors of general and spatial language levels at later ages. This is in line with the predictions based on embodiment theory. The discussion will focus on the one hand on the implications of these findings for future research. On the other hand we will discuss methodological issues related to longitudinal studies of this kind, namely: the choice of instruments appropriate to different age groups and designing test materials suitable for infants and toddlers.

2.3.3.2 **Phonological memory and the acquisition of grammar in mono- and bilingual preschoolers**

Josje Verhagen, Utrecht University, the Netherlands
Hanna Mulder, Utrecht University, the Netherlands
Marielle Messer, Utrecht University, the Netherlands
Paul Leseman, Utrecht University, the Netherlands

Abstract:

Phonological memory (PM) has been shown to play a pivotal role in language acquisition. It has, for instance, been shown that PM is involved in lexical acquisition such that children with large PM spans are better word learners than children with smaller spans, both in mono- and bilingual acquisition (Cheung, 1996; Gathercole, 2006). There is increasing evidence that PM is also related to the acquisition of grammar. Children with large PM spans produce longer and grammatically more complex sentences (Adams & Gathercole, 1996, 2000) and perform better on sentence comprehension tasks (Ellis Weismer, Evans &

Hesketh, 1999) than children with smaller PM spans. However, the available evidence is based on relatively old children (i.e., four years or above), who are most often monolingual, and it is not always clear if the effects of PM are mediated by vocabulary knowledge.

In this presentation, data from two studies on the relation between PM and the acquisition of grammar in preschoolers will be discussed. In the first study, we ask whether PM is related to grammar learning in two-year old monolingual Dutch children. A task of phonological memory, measured through non-word repetition, and a receptive grammar task, measured through a picture selection task, were presented to 546 children between two and three years of age. The results show that children's PM scores are moderately correlated with their scores on the grammar task, after controlling for vocabulary. Correlations for children aged between 2;6 and 3 years are stronger than for children aged between 2;0 and 2;5 years, suggesting that the role of PM becomes more prominent over time.

In the second study, we investigate if PM is related to the acquisition of grammar in four-year old bilingual children. Specifically, the question is if PM correlates with differences in the production of verb placement and verb morphology by Turkish-Dutch bilinguals. A group of 54 Turkish children with Dutch as their non-dominant language performed serial word and nonword recall tasks to tap PM and a narrative production task to tap the production of grammar. The results show moderate to strong correlations between children's PM spans and their ability to produce correct verb placement and verb morphology, after controlling for differences in vocabulary. The strongest relationships were found with PM measured by recall of existing words as opposed to recall of nonwords.

Taken together, these findings indicate that PM is related to the acquisition of grammar in mono- and bilingual preschoolers, both at the level of language comprehension and production. Implications of these findings for theories of grammatical acquisition will be discussed as well as the use of different methods to tap children's language skills at different ages.

2.3.3.3 **Category formation in infants with a familial risk of dyslexia**

Elise de Bree, Utrecht University, the Netherlands
Annemarie Kerkhoff, Utrecht University, the Netherlands
Maartje de Klerk, Utrecht University, the Netherlands
Desiree Capel, Utrecht University, the Netherlands
Frank Wijnen, Utrecht University, the Netherlands

Abstract:

Language and literacy acquisition have often been found to go hand in hand. Children with dyslexia have been found to exhibit wider language and cognitive difficulties next to reading and spelling difficulties. They are, for example, poorer at judging the grammaticality of sentences with agreement violations (e.g. van Alphen et al., 2004; Rispens & Been, 2007). Furthermore, previous research indicates that infants at family-risk of dyslexia (FR_Dys) are less sensitive to morphosyntactic dependencies in Dutch (Wilsenach & Wijnen, 2004). A possible explanation for these findings is that dyslexia is (partly) caused by a general deficit in procedural learning (e.g. Nicolson & Fawcett, 2007; Ullman & Pierpont, 2005), which leads to difficulties with forming phonological or grammatical categories (Wijnen, to appear).

The current research was aimed at finding out whether FR_Dys infants differ from their typically developing (TD) peers in the use of distributional cues for phonological and grammatical categorisation, from an early age onwards. Results of four experiments will be reported to show that FR_Dys infants perform more poorly on tasks that tap distributional learning.

Whereas both TD and FR_Dys infants between 5 and 10 months show intact discrimination of native and non-native speech sounds (experiment 1), group differences arose when distributional learning of these sounds was tested (experiment 2). Eleven-month-old infants were exposed to either a unimodal or a bimodal frequency distribution of non-native consonants and vowels (after Maye et al., 2002). Results show that TD infants used the frequency distribution to form two speech sound categories, as only children exposed to the bimodal rather than the unimodal distribution discriminated the sounds. In contrast, FR_Dys infants could not categorise the contrasts, regardless of the type of exposure.

The groups were also compared on grammatical category formation. In experiment 3, we tested whether infants are able to categorise novel words into nouns and verbs, using distributional properties of the input (after Mintz, 2006). Sixteen-month-old TD and FR_Dys infants were exposed to novel words embedded in Dutch 'frequent morpheme frames' that either host verbs (e.g. we X-en 'we X') or nouns (e.g. het X-je 'the X-dim'). Results show that TD infants listened longer to sentences that were consistent with training (e.g. a novel 'noun' in a noun frame), whereas FR infants had no preference. Eighteen-month-old TD and FR_Dys infants were also tested on a task measuring sensitivity to non-adjacent dependencies in an artificial language (experiment 4). Such dependencies (e.g. the relation between 'is' and '-ing' in 'she is singing') often mark grammatical

(agreement) relations and categories. Infants were exposed to one of two novel languages, containing dependencies of the type A-X-C, B-X-D or A-X-D, B-X-C, with 24 different X elements (after Gómez, 2002). Results show that TD infants listened longer to ungrammatical (or untrained) sentences. Again, FR_Dys infants were not sensitive to the dependencies, which may impact on their ability to form grammatical categories.

Taken together, these findings are taken to support the hypothesis that a deficit in implicit sequence learning underlies developmental dyslexia, leading to a delay in category formation. The implications of these findings in relation to dyslexia and other language-based disorders are discussed.

2.3.4

Paper Session

2.3.4.1

Digital technology in informal settings in early childhood: preparing children for school?

Sarah Eagle, University of Bristol, United Kingdom
Rosamund Sutherland, University of Bristol, United Kingdom

Abstract:

Harris (2000) argues that for young children imaginative play has a particular importance in developing abilities to learn about things that they have not experienced themselves, making the point that this ability is required if a child is to benefit from instruction from other people. Pretend or imaginary play allows children to explore the possible outcomes and consequences of actions in an imaginary world, and so to think about situations that they have not experienced. Significantly, children engaged in imaginative play with other people have a receptive stance to premises that introduce information that is outside their experience. This is particularly interesting given the observation that in situations that are not framed as play, young children are less receptive to information that they have not asked for. These observations are relevant to those concerned with early childhood education, given that school is a context in which children are expected to learn from instruction, a form of interaction which is initiated, determined and led by an adult, with an expectation that the child acts in such a way to enable the adult to lead and sustain the interaction (Nilholm & Säljö, 1996). Harris's work suggests that what children need in order to participate successfully in the teaching and learning culture of school is the experience of thinking about things they have not experienced, and an insight into school as a context in which they are expected to be receptive when others offer information and knowledge that is outside their experience. Imaginative play, and playful talk with others are a means to develop these skills.

Much contemporary software designed for young children is marketed as educationally valuable in the sense that it can help to prepare children for school (Eagle et al, 2008). Two assumptions implicit in the design of many products are (1) that the goals of schooling are the acquisition of a body of knowledge, and (2) the conception of school as an environment in which instructional approaches predominate. Related to the first point preparedness for school equates to young children knowing about, for example, the alphabet and number. Related to the second point, preparedness for school relates to young children learning about specific forms of instructional dialogue. This is in contrast to Harris's emphasis on young children learning to engage with information and knowledge that is beyond their experience through imaginative play.

We use these contrasting conceptions of preparedness as a framework to critique a range of software for early years children. Technological developments such as touch screens have opened up multiple possibilities, and new genres are emerging. Drawing on earlier work (Eagle et al, 2008) and ongoing case studies we investigate whether new developments in technology for young children are old fashioned ideas packed in new digital boxes, or if fresh ideas are emerging.

2.3.4.2

Formative Assessment in the Transition from Kindergarten to School – Development and Validation of the Instrument ILEA T

Katrin Liebers, Martin-Luther-Universität Halle-Witteberg, Germany

Abstract:

Between kindergarten assessment and assessment for learning in primary schools in Germany seems to be a traditional gap. The purpose of this study was to develop in the first step the observation instrument "Individual Learning- and Development-Analysis during Transition" (ILEA T).

The ILEA T-manual should enable teachers to learn how and what young pupils know and can do and how they can give them effective support. ILEA T combines a broad perspective on children's early literacy and numeracy development in their everyday life - while children make their everyday sense of the world that surrounds them - with a narrow point of view with planned assessment. This planned assessment incidents includes careful planned tasks focused on early literacy und numeracy

skills. The ILEA T-manual contents several observing designs, for example checklists, a standardized diagnostic storybook and a standardized diagnostic dice game. Developing these instruments entailed systematic fieldwork in kindergartens, schools and workshops with teachers.

In the second step a validation study takes place. It examines the quality and the benefit for teachers of the standardized instruments. The study is drawing on a sample of 812 preschool-aged children in 60 preschools. Data are collected at the beginning of the last preschool-year, in the middle of the last preschool-year and after enrollment. There are direct measures of literacy und numeracy skills as well as questionnaires for parents and teachers.

In the end the study aims at Rasch-scaled items for observation for the hand of teachers. First Results from the validation study show that the measure is internally consistent and show a good factor structure. Correlations with other tests shows initial evidence for construct validity.

2.3.4.3 **Validation of the CBeMo Questionnaire, an instrument that allows teachers' assessment of motivation of Kindergarten students**
Diny van der Aalsvoort, Saxion Hogeschool, the Netherlands
Lisette Overtoom, Saxion Hogeschool, the Netherlands

Abstract:
Motivation is considered as fuel that drives a person to fulfil his goals, wants and needs. Supposedly, young children have a natural need to get a grip on their environment, and their personal goals are aimed at controlling their environment in order to reduce their uncertainty (Boekaerts & Simons, 2007). They are optimistic about their own capabilities, and have high expectations of success when they are asked to fulfil a task (Berk, 2006). A failure in performing a task may decrease their optimism about their own capacity, which may cause development of feelings of inability to perform the task themselves. In the worst case scenario they may avoid the task completely. In the case of academic tasks this is an unwished-for attitude. Lepola (2000) designed a questionnaire to assess Kindergarteners' motivation in order to reveal whether motivation and emergent literacy are related, called the Child Behaviour Motivation (CBeMo) questionnaire. Based upon his findings with Finnish preschoolers the questionnaire was translated into Dutch and applied to a small sample (Overtoom & Van der Aalsvoort, 2010). The findings of the second study that will be presented, was carried out with 210 students between 4 to 6 years old from 85 teachers of Kindergarten classes in the Netherlands. Cronbach's Alpha was calculated per group of items that loaded on each factor and this indicated reliability of three scales: Mastery orientation; Passive elicitation of helping behavior, Active elicitation of helping behavior. Comparison of the Finnish and Dutch sample demonstrated that the same three factors were found in both samples. This result will be discussed with regard to the value of the instrument for the Dutch population.

3.1.1   **Paper Session**

3.1.1.1   **Cardinal-Principle Knower's Knowledge About Ordinal Numbers**
Nitza Mark-Zigdon, Levinsky College of Education, Tel-Aviv

Abstract:
   Two basic features of natural numbers are those of *cardinality*, which represents the number of discrete entities in a set, and *ordinality*, which refers to the relations of *greater than* or *less than* between distinct numbers. Not much is known about the developmental relationship between these two number properties in the course of the development of numerical cognition in young children. Studies investigating whether the understanding of cardinal and ordinal number relations occur simultaneously or consecutively, and which one occurs first, have been inconclusive. The aim of this study was to shed light on these questions, and to find out what *cardinal-principle-knowers* (CPKs) who have the ability to generate the correct cardinality for number sets know about ordinal numbers. The main research questions were: 1. What do CPKs know about ordinal number relations? **2**. Was there a difference between verification and performance tasks in the level of CPKs' understanding of ordinal numbers?
   Participants in the study included 56 preschool children: 29 4-5-year-olds and 27 5-6-year-olds. All children were native speakers of Hebrew. The experiment included 3 tests (1) Pre-knowledge test: The aim of the test was to investigate if children understood the concepts that would be in used in the main task; (2) Cardinal principle knowledge test: The purpose of this test was to find out if the child was a CPK. This test included two tasks: (a) The *Give-N* task; and (b) The *How many* task; (3) The main test— the ordinal relations test—included the following tasks: A magnitude comparison, order of magnitude, unit tasks, adding and taking away cubes, and *how- many-more* tasks. All tasks were administered at two levels of performance: verification and production. The results revealed that all children knew the concepts required for the main test, and that all of them were CPKs.
   Regarding research question no. 1 above, the results of the

ordinal number tasks showed that while 5-6 year-old children had acquired the understanding of ordinal relations, 4-5 year-old children are still in the process of acquiring this knowledge. All the children in both age groups were just beginning to understand the $N+1$ rule pertaining to ordinal numbers. Regarding research question no. 2, the results showed that in the more difficult tasks (which differed in the two age groups), there was a lower success rate on the production tasks as opposed to the verification tasks. In view of these results, it seems that these two levels of performance must be taken into consideration in designing and administering developmental tests. The results demonstrate that knowledge about ordinal numbers also continues developing after children become CPKs and that the acquisition of knowledge about ordinal relations is a much longer process than that of the acquisition of knowledge about cardinality.

3.1.1.2 Development of young children's ability to use evidence in the science domain of elasticity: A cross-sectional study

Ilonca Hardy, University of Frankfurt, Germany
Simone Stephan-Gramberg, University of Frankfurt, Germany
Steffen Tröbst, University of Münster, Germany
Christin Robisch, University of Münster, Germany
Kornelia Möller, University of Münster, Germany

Abstract:
Learners' coordination of their (naïve) theories with corresponding evidence has been repeatedly stated as a core goal of science education (Harlen, 2001; Duschl, 2008). An appropriate use of evidence refers to a person's judgment of whether a presented piece of evidence is confirming, disconfirming or irrelevant to a given hypothesis. While research has shown that young children are able to differentiate between theory and evidence in certain content-lean task settings (Koerber & Sodian, 2011; Zimmermann, 2007), their ability to use evidence in specific science content domains has rarely been examined. Accordingly, little is known about the individual and systemic conditions in which a correct use of evidence is facilitated, and whether an early confrontation with science evidence in preschool age is justified. In the present study, we focus on young children's capability to use evidence in the context of elasticity ("Why does a ball bounce?"). We presume that young children's use of evidence shows developmental patterns found with content-lean tasks of deductive reasoning (e.g., Barrouillet et al., 2008) and that it shows systematic relations to measures of domain-general scientific reasoning, working memory, and prior content knowledge. We tested children's use of evidence following the scheme employed in the literature on deductive reasoning, where an antecedent (p/-p; e.g. ball with/without air) needs to be related to a consequence (q/-q, e.g. bounces/doesn't bounce) in order to form a judgment with respect to a given hypothesis (e.g., "if a ball is with air, it will bounce"). The consideration of two states and their respective judgment with regard to a given hypothesis is presumably especially difficult for young children. In a cross-sectional study of four groups of children in preschool and elementary school age (total N = 142), we administered the test of use of evidence as well as a test of domain-general scientific understanding, working memory capacity and domain-specific knowledge as control variables in order to explore developmental patterns and specific relations between the constructs. As hypothesized, analyses showed a highly significant effect of age with regard to the frequency of six patterns of deductive reasoning (F (5, 134) = 53.96, p < .001), with preschool children showing mainly patterns of judging evidence with regard to the antecedent (p/-p), a conjunctive relation between antecedent and consequence, or else in unsystematic ways. During elementary school age, these patterns decreased, while patterns of biconditional and conditional reasoning increased. Similarly, children's ability to coordinate and use evidence in content-lean tasks increased significantly with age (F (4, 134) = 1041.28, p < .001). Preliminary analyses of the relation between the two constructs showed low but significant correlations for the older children, suggesting that in younger age, children's individual cognitive resources and domain-specific knowledge may be more appropriate correlates of their use of evidence. In addition, preschool children's patterns of use of evidence suggest that interventions in which children learn to differentiate between the two states of a given piece of evidence may be fruitful in furthering a coordination of theory and evidence in applied settings.

3.1.1.3 Young children's naïve theories and learning on shadow size

Tessa J.P. van Schijndel, University of Amsterdam, the Netherlands
Ingmar Visser, University of Amsterdam, the Netherlands
Bianca M.C.W. van Bers, University of Amsterdam, the Netherlands
Maartje E.J. Raijmakers, University of Amsterdam, the Netherlands

Abstract:

The last decade there has been an increased interest in preschool science education. This development asks for detailed descriptions of young children's science knowledge. Several studies have addressed preschoolers' naïve theories in domains such as balance (e.g. Siegler, 1981; Jansen & Van der Maas, 2002) and the earth (e.g. Straatemeier, Van der Maas & Jansen, 2008). However, there is considerable debate on the optimal assessment method for these theories (Van der Maas & Straatemeier, 2008). Most studies adopt the Rule Assessment Methodology (RAM; Siegler, 1976, 1981), which makes use of matching observed to expected response patterns. Recently an alternative for pattern matching has been proposed: Latent Class Analysis (LCA; Boom, Hoijtink, & Kunnen, 2001; Jansen & Van der Maas 1997, 2001, 2002). One of the advantages of LCA over pattern matching is that the technique makes it possible to detect unanticipated response patterns, or theories (Van der Maas & Straatemeier, 2008).

The first goal of this study is to re-investigate young children's naïve theories on shadow size by using a combination of RAM and LCA. To this end, the shadow task was used (Inhelder & Piaget, 1958; Siegler, 1978, 1981). The set up for this task consists of two light sources, a screen placed at a fixed distance of these light sources, and objects of different sizes (size dimension) that can be placed at different locations in between the light sources and the screen (distance dimension). For each item the experimenter puts two objects in place and asks the child which of two shadows would be the biggest. Previous studies using RAM, fount that young children either did not give systematic answers on this task, or had one of two naïve theories: they took into account the size dimension, or they took into account both the size and distance dimension (e.g. Chen, 2009; Ebersbach & Resing, 2007; Siegler, 1981). The present study used a combination of RAM and LCA and replicated the finding of these three groups. However, in addition a fourth group was distinguished: children took into account the size dimension in the right direction, but the distance dimension in the wrong direction (Rule 2-reversed). The finding of this additional theory illustrates the advantage of using LCA over pattern matching in describing children's science knowledge.

The second goal of the study was to investigate young children's learning on shadow size. Specifically, we studied relations between children's prior knowledge (naïve theory on shadow size), the evidence they observed (consistent with or inconsistent with their theory), the quality of their free exploratory play, and their learning on shadow size. Results showed that children applying the Rule 2-reversed were affected differently by evidence and free play than children applying other rules. Possible explanations for these results will be discussed.

3.1.2 Paper Session

3.1.2.1 The impact of professional development programs on Pre-K teacher performance, quality, and child outcomes. A meta-analysis.

Franziska Egert, German Youth Institute (DJI), Germany
Andrea G. Eckhardt, University of Applied Science Zittau-Görlitz, Germany

Abstract:

Over the last decades, correlational and experimental research clearly indicates that training and qualification of child care providers matter and lead to enhanced quality and child outcomes. However, less is known on training mechanism that makes professional development effective for pre-k teachers. The meta-analysis contributes to the identification of effective provision models and professional development components for pre-k teacher in-service programs by combining empirical data on child, teacher, and quality outcomes with theoretical knowledge of professional development content model for pre-k teachers (Buysse, Winton & Rous, 2009). The meta-analysis of studies, published between 1970 and 2011, investigates the effects of in-service professional development programs for pre-k teachers on teacher performance, pre-k quality measures and child outcomes. Approximately 1.500 articles, identified by electronic and hand search, were reviewed by two independent coders. Overall, 24 (quasi-)experimental studies were identified including 235 effect sizes. Using a randomized multi-level approach, the preliminary aggregation of the findings clearly

indicate positive impact of in-service professional development on teacher performance (ES= .29), quality ratings (ES= .70) and child development (ES= .29). However, variations in the effects size, ranging from small to large, were found to depend on structural features of the professional development program and outcome domain. In particular, larger impacts were encountered for programs using as main delivering format courses instead of workshops. Studies on quality improvement that provide follow up data demonstrate that the impact of training rise (ES= .81) and needs time to be implemented. Comparing the impact of several outcome domains, the findings clearly indicate that the positive effect of professional development is stronger related to quality measurements than to teacher performance or child outcomes. Evidence based conclusions, retrieved from meta-analysis, can be used by policy makers and professional development providers to offer appropriate in-services trainings and programs for pre-k teachers to enhance their abilities to provide enriched learning experience for pre-k students. This meta-analysis provides the first evidence of the positive impact of in-service professional development models on several outcome domains and how they should deliverd to pre-k teachers. Furthermore, it supports the assumption that in-service trainings have the strength to improve child outcomes sustainable.

3.1.2.2 Evaluation of two early prevention programs with children at risk: a cluster-randomized trial

Sophia Becke, Sigmund-Freud-Institute, Germany
Yasaman Soltani, Sigmund-Freud-Institute, Germany
Marianne Leuzinger-Bohleben, Sigmund-Freud-Institute, Germany

Abstract:
Numerous studies of randomized empirical studies have shown the importance and efficacy of prevention in early childhood. Experiencing stable emotional relationships from an early stage in life promotes successful psychological, cognitive and psychosocial development. Numerous prevention programs based on these empirical findings aim to support children in daycare centers but fail to reach all families, especially those probably gaining the most from them.

In our research project EVA we address children in daycare centers who are exposed to various risk factors such as unemployed parents, immigration or low SES in neighborhoods where these problems are most salient.

EVA is part of the interdisciplinary research center IDeA, a

research network of the German Institute for International Educational Research (DIPF) and the Goethe Universität Frankfurt. The Sigmund-Freud-Institut (SFI) initiated the project in close cooperation with the Institut für Analytische Kinder- und Jugendlichenpsychotherapie (IAKJP) and the municipal education authority.

EVA reviews and evaluates the differential effects of two established prevention programs FAUSTLOS (cp. Cierpka & Schick, 2006, the German adaptation SECOND STEP) and FRÜHE SCHRITTE (cp. Leuzinger-Bohleber, Staufenberg & Fischmann, 2008) implemented in daycare centers. FAUSTLOS is a standardized violence prevention program aimed at promoting socio-emotional skills and empathy. FRÜHE SCHRITTE is a psychoanalytical early prevention program with an individual approach with the following components: bi-weekly team supervision for the teachers, weekly counseling for parents by experienced adolescent, and child psychoanalysts, and in individual cases the option of on-site therapy for both children and their parents. Finally children transitioning from the daycare center to school will be supported.

Our scientific aim is to evaluate the differential effectiveness of the aforementioned early prevention programs for children at risk. The individual approach of FRÜHE SCHRITTE is hereby expected to result in a significant decrease in psychopathological symptoms in children compared to the more general and broad prevention approach of FAUSTLOS. Additionally we compare the distribution of the children's attachment classifications before and after the intervention. We expect the more individual approach of FRÜHE SCHRITTE to increase the likelihood of a change in attachment patterns from unsecure to secure attachment.

The sample consists of 3- to 4-year-old children (N = 281). The study design is a cluster randomized controlled trial (CRCT-design), with 7 daycare centers per treatment.

To measure the differential effectiveness of the two interventions on the children's development, psychopathological symptoms such as aggression and hyperactivity we use questionnaires completed by parents and teachers. These include the Caregiver-Teacher Report Form C-TRF (Achenbach, 1997), the perik (Mayr & Ulich, 2007) and the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997). To measure the children's attachment type, we administer the video-based attachment instrument MCAST (Manchester Child Attachment Story Task, Green, Stanley, Smith & Goldwyn, 2000).

The longitudinal study design comprises a pre- and post-measurement design.

In the lecture the design of the study is presented and

discussed. First findings and results of the pre and post-measurements are presented. The results are discussed with regard to their implications for this specific population at hand, namely children at risk.

3.1.2.3 Preschool quality in an evaluation of an early childhood care and education programme

Siobhán Keegan, Dublin Institute of Technology, Ireland
Iram Siraj-Blatchford, University of London, United Kingdom
Noirin Hayes, Dublin Institute of Technology, Ireland

Abstract:
   The research was undertaken to evaluate the implementation of a manualised Early Childhood Care and Education (ECCE) Programme, which was developed as part of a suite of measures intended to remove the barriers to the well-being and educational achievement of children in a disadvantaged community in Ireland.The programme was community-based and family-centred and offered a heavily subsidised two-year ECCE programme to participating children. In addition to providing training to preschool staff, the programme included a parent component, which consisted of home visits and a parenting course. It also facilitated increased access for children and families to health professionals such as psychologists and speech and language therapists.
Methods:
   Design: A cluster randomized trial design was used to evaluate the programme. Preschool settings (n=17) were matched in pairs based on criteria such as staff qualifications, child: staff ratio and service capacity. This information was used by our advisory group to randomly assign preschool settings to control and intervention conditions. Those centres in the intervention condition received substantial support, training and funding to implement the ECCE programme, while those in control settings continued with preschool provision as normal. Environmental setting quality was assessed at the same three points (2 points on one instrument) in time and was also compared across conditions.
   Instruments: Setting quality was assessed using the Early Childhood Environmental Rating Scale – Revised Edition (ECERS-R), (Harms, Clifford & Cryer, et al 1998) and Early Childhood Environmental Rating Scale – Extension (ECERS-E), (Sylva, Siraj-Blatchford & Taggart, revised ed., 2003, 2006, 2009). Preschool staff (intervention group) were also interviewed at the end of each year of programme implementation to provide data

for the process evaluation on programme implementation.
Results:
   There was a (positive) programme effect on the type and range of activities that intervention preschools carried out (ECERS-R Activites subscale). There was also a (positive) programme effect on the overall planning and curricular quality(ECERS-E total). Intervention settings tended to have an improvement in literacy environment(ECERS-E Literacy subscale) scores over time, while control settings had no improvement in literacy scores over time. Preschool staff provided supporting process information in focus group that helped to elucidate the mechansims behind the quatitative changes in environmental quality.
Conclusions and implications:
   Implementation of the ECCE programme resulted in quantitive changes in preschool quality, which, when combined with the qualititative information from staff on programme implementation, helps to elucidate key mechanisms that support quality preschool provision.

3.1.3 Symposium

Language exposure in preschool predicting first and second language development in bilingual children

Convenor: Paul Leseman, Utrecht University, the Netherlands
Discussant: Rob Schoonen, University of Amsterdam, the Netherlands

Integrative statement:
   The symposium focuses on the strategies of second language exposure in preschool and at home for bilingual immigrant children and the (middle) long term outcomes in primary school in three countries: Germany, The Netherlands and Norway. Two presentations, from Germany and Norway, focus on the details of language exposure in the preschool classroom, by looking into teacher-child communication patterns and types of talk that might be most conducive for balanced bilingual development, using observational data. The Dutch study uses teacher self-reports and classroom composition measures. Two presentations, from the Netherlands and Norway, look into the role of the first language, assessing transfer effects from first to second language. The Dutch study also details the contribution of home language and literacy activities in first and second language to long term second language development, focusing on transfer on

the level of academic language use. The three studies together provide a comprehensive overview of the importance of high quality preschool language exposure for bilingual immigrant children.

3.1.3.1 Structures and strategies of language provision – A comparison of preschool settings

Katja Koch, Technische Universität Braunschweig, Germany
Oliver Hormann, Technische Universität Braunschweig, Germany

Abstract:

Purpose: The study to be presented is the final part of a five-year project that aims to advance our comprehension of the quality of structures and processes underlying the support of language acquisition in daycare centers in the state Lower Saxony in Germany (with a focus on children of multilingual family background). Hitherto presented findings indicate that children – aged 3 to 5 years – attending to daycare centers with explicit language training programmes perform better on language tests than children from other daycare centers. Contrary to our expectations, the effects of such programmes were largely the same for both monolingual *and* multilingual children, i.e. they did not benefit those more who are supposedly of greater need. Other findings underscore the importance of (potentially language-enhancing) educator-child activities (ECAs) with size and direction of effects depending on the pedagogical situations in which the activities are embedded. While the frequency of activities carried out in language training units contribute to the language development of multilingual children *independently* of the (kind of) language training offered, activities during free-play exert, on the whole, detrimental effects on the acquisition of language skills. Another unexpected result was that the *mean* qualification level of the personnel was *negatively* related to the increase of language skills, supporting the view that less qualified personnel might also play a crucial role for organisation of day-to-day routines.

In the light of these preliminary results, the concern of the current part of the project is to deepen our understanding of the processes (i.e. communications between educators and children), that facilitate (or hamper) the acquisition of language skills in German, as well as of the interlinks between these processes and pedagogical contexts. Another focus of our analysis rests on the teamwork of the personnel with a view to the question, how qualification level is related to it.

In detail we would like to answer the following two research questions:
Do more "effective" pre-schools or pedagogical settings (in terms of children´s language progression) distinguish themselves by unique patterns of educator-child-communication
How do less qualified personnel contribute to success of language support, especially to the quality of teamwork?

Method: Regarding the first question we extend the corpus of research strategies already in use – comprising standardized enquiry into the conceptual and environmental aspects of second language trainings, measurement of children´s language skills as well as participant observations and interviews – to include video analysis of interaction between educators and children and the role these conversations play in supporting language acquisition in different settings. We are particularly interested in coding utterances for properties, such as discourse complexity or the appearance of "vertical constructions" (alternate provisions of words or phrases to joint utterances), that point to moments of *shared attention* between educators and children. Shared attention is considered to be pivotal for child development including language skills. The second question will be answered by drawing on interviews as well as participant observations.

3.1.3.2 Second language preschool talk exposure and first- and second language vocabulary skills – any concurrent or longitudinal relationships?

Veslemøy Rydland, University of Oslo, Norway
Vibeke Grøver Aukrust, University of Oslo, Norway
Joshua Lawrence, University of California, United States of America

Abstract:

Purpose and research question: Important questions that pertain to bilingual children concern the role of cross-linguistic transfer of vocabulary knowledge and the role of input in vocabulary acquisition. The present study addresses these question concurrently and longitudinally by looking at the vocabulary trajectories of Turkish immigrant children in Norway from preschool to 5th grade. The study examines the extent to which children's first language (L1) vocabulary skills and second-language (L2) preschool talk exposure interact in explaining the children's L2 vocabulary development. More specifically we ask the following two research questions:
Does Turkish vocabulary at the end of preschool (age 5) predict Norwegian vocabulary concurrently and longitudinally up to age

10?
Is the relationship between Turkish and Norwegian vocabulary moderated by preschool talk exposure in Norwegian?

Method: The sample consisted of 26 children with Turkish as L1 and Norwegian as L2, attending 20 preschool classrooms in multiethnic Norwegian neighborhoods. The students were observed from age 5 (preschool) to 10 (fifth grade) across four waves of data collection. Predictors at age 5 were Turkish vocabulary skills (PPVT-III) and Norwegian talk exposure during teacher-led circle time (density of tokens and types). Outcome measures were Norwegian vocabulary skills (PPVT-III) assessed at each wave of data collection. Control variables were SES (parental education and neighborhood).

Results: Turkish vocabulary skills at age 5 predicted baseline vocabulary scores in Norwegian and this early effect was maintained up to age 10 controlling for concurrent L2 vocabulary skills, teacher-led talk exposure and SES.

Teacher-led talk predicted baseline vocabulary scores in Norwegian and this effect was maintained up to age 10 (controlling for concurrent vocabulary skills and SES).

Interactions effects were found – indicating that children with higher Turkish vocabulary skills benefited more from having a talkative teacher (in Norwegian) than their peers with lower Turkish vocabulary skills.

Conclusions and implications: Although we cannot determine questions of causality, the findings suggest that L1 vocabulary skills at the end of preschool predicted L2 vocabulary skills in a long term perspective and that initial differences in L1 vocabulary skills at age 5 determined the extent to which bilingual children were able to benefit from L2 talk exposure in preschool.

The children's L1 skills did not however affect the growth in L2 vocabulary skills across the study period. The study is in this regard in line with previous longitudinal studies which have demonstrated that growth in both languages is tied to same language skills and with studies pointing to the importance of L2 exposure for L2 vocabulary acquisition. The present study extends previous studies by revealing that L1 vocabulary skills impacted children's ability to make use of L2 input.

3.1.3.3 **First and second language academic language input at home and in preschool: effects on literacy development of native Dutch, Moroccan-Dutch and Turkish-Dutch children.**

Paul Leseman, University of Utrecht, the Netherlands
Lotte Henrichs, Utrecht University, The Netherlands

Abstract:
Purpose: The persistent disadvantages in reading of low income children and immigrant children with a minority language are a matter of concern. We propose that the core problem is insufficient experience with the 'academic language register', a register that contains many features of written language, such as specialized vocabularies, rare verb tenses, explicit space-time references, syntactic means to condense information, and strategies to structure discourse. This paper examines the impact of early academic language on language development and reading achievement from first through third grade of primary school.

Method: 95 Dutch, Moroccan-Dutch and Turkish-Dutch children were followed from age 3 to age 9 years. Questionnaires were used to assess language input in first and second language at home and in preschool. Story comprehension and story (re)telling tasks were used to assess children's emerging receptive and productive use of academic language in first and second language. Dependent measures were emergent literacy at the end of preschool and first, second and third primary school grade word decoding and reading comprehension.

Results: Children become increasingly skilled in using academic language in the preschool years. Specific language input mediates effects of socioeconomic and ethnic-cultural family background. Compared to parents, preschool teachers initiate more academic discourse, but in addressing Dutch-as-second-language-learning children, they simplify the lexical and grammatical forms. For these children, moreover, there is a competition between first and second language for scarce input time, but also transfer of skills from first to second language, at least for Turkish-Dutch children. In predicting literacy development in primary school, oral academic language skill in preschool is a stronger predictor than vocabulary and phonological awareness. For Turkish-Dutch children, moreover, academic language skill in the first language is an equally strong predictor of literacy development as academic language skill in Dutch, confirming transfer from first to second language.

Conclusion: Emergent academic language predicts first grade reading. Input matters. Academic language skill in L1 transfers to L2, at least for minority languages with a literary and academic tradition such as Turkish.

3.2.1

Symposium

Activity-based learning opportunities in science and math
Convenor: Mirjam Steffensky, IPN Kiel, Germany
Discussant: Paul Leseman, Utrecht University, the Netherlands

Integrative Statement:
    Science and mathematics are important goals in early childhood education, but only little is known about how to support learning in this age. In the first two contributions in this symposium different features of learning environments are compared on development of knowledge. The first paper focuses on effects of two learning opportunities in kindergarten on learning achievement. The two learning opportunities are a) discussions on everyday science related situations and b) hands-on activities. The second paper, based on a microgenetic study with first graders, investigates the contribution of gestures of the experimenter and children's actions to the development of explicit and implicit science knowledge. Findings about such features that support learning are helpful for the design of learning environments. Besides that it is essential for example for adaptive teaching to learn more about the analyses and the process of knowledge development. The third study in this symposium aims to this and focuses on the learners. Here, types of gestures of kindergarten children in the context of geometrical understanding are explored as well as their relation to geometrical knowledge.

3.2.1.1   **Discussions on science related everyday situations and hands-on activities: How can we support science learning?**
Mirjam Steffensky, IPN Kiel, Germany
Eva-Maria Lankes, Technical University München, Germany
Claus Carstensen, University of Bamberg, Germany

Abstract:

Possible opportunities for science learning in kindergarten are hands-on activities. Besides that, discussions on science related situations in daily life, e.g. a frozen puddle, can be a learning opportunity in kindergarten. Situated learning theories suggest that authentic contexts promote learning processes (Cobb & Bowers, 1999). On the other side authentic contexts can be puzzling, because they include many details, which are not all meaningful for the actual problem (Taasoobshirazi & Carr, 2008). Unlike many hands-on activities can present the issue of interest in a clear way, which might be especially for younger learners helpful. However, little is known about the effect of these learning opportunities on the development of knowledge.

The research project SNAKE compares learning outcomes across these two learning opportunities and across a combination of both. In a quasi-experimental study with 245 children three experimental groups, in which the learning situations were varied, where compared with a control and a baseline group. Children in the last year of kindergarten took part in three 90-minute learning settings on the topics 'melting and freezing water', 'evaporation and condensation of water' and 'solubility and insolubility in water'. Learning gains were measured using a pre-post-follow-up design with a Rasch-scaling (SNAKE-test). Cognitive performance and family background were controlled for. For analysis of the immediate effects of the treatments tests for each topic were used directly after the instructional units (mini-tests).

Differences in achievement gains (SNAKE-test) between the four groups were analyzed in comparison to the baseline group controlling for cognitive performance and family background using a covariance analysis design. For example, in the post test results controlling for pretest results and general cognitive abilities, only the Group with the combination treatment (hands-on activities and everyday situations) shows significantly higher results than the baseline group (T=3.181, p<.003). However, in the follow-up SNAKE-test the effects of the five groups do not differ significantly, hence the positive effect of the treatment in the combination group is not observed any more four months after the treatments

It must be considered that our instructional units are very short, which may explain why we only find effects in one group and none in the long run. However, typical science learning environments in kindergarten are probably often not much longer. An analysis of teaching material for kindergarten showed that there are many suggestions for hand-on activities, but only very few clues are given to situations in daily life where there phenomena is observable. This would suggest that the potential of learning possibilities is not used to its full extent.

In the presentation we will report results of the SNAKE- and mini-tests as well as results of differentiated analysis of the effects of the instructional units.

3.2.1.2 **Acquisition of explicit and implicit knowledge concerning the surface orientation of liquids**

Miriam Leuchter, University of Münster, Germany
Ina Plöger, University of Münster, Germany
Henrik Saalbach, Eidgenössische Technische Hochschule Zürich (ETH), Zürich, Switzerland

Abstract:

Explicit and implicit knowledge are often dissociated particularly in science learning and its sub-domains such as spatial learning (Wilkening & Cacchione, 2010). Explicit knowledge can be expressed by using words or sketches. Implicit knowledge may be called either „tacit knowledge" which refers to the difficulty to express it, or "embodied knowledge" which refers to its embodied quality. . Matching explicit and implicit knowledge is an important target of the learning process.

Concerning the horizontality of the water level studies have shown that 6-year old children lack explicit knowledge: They cannot draw the water surface horizontally in a depicted tilted glass or predict if the narrower or the wider glass should be tilted more with an imagined same water level. However, they have acquired implicit knowledge: Preschoolers have shown to be able to actually tilt glasses with imagined same water level and different diameter the correct way (Frick, Daum, Wilson, & Wilkening, 2009; Schwartz & Black, 1999).

How can we help young children to integrate their explicit and implicit knowledge of the orientation of water surface? Previous studies have shown that gestures may enhance spatial learning (Goldin-Meadow, 2009). We thus conducted a micro-genetic study with first graders to examine how different usage of gestures in instruction contributes to the development of explicit and implicit. A microgenetic study design, enables us to observe rapid changes differentially and infer the processes that gave rise to them (Siegler & Crowley, 1991).The sample consists of 164 children including 4 experimental groups and one control-group. In the experimental groups, the children played with a glass filled half with water, in the control-group the children were allowed to play with a ship in water. Instructions of the experimental groups varied either in the experimenters' gesturing (none vs. iconic gesture), or in the children's actions (acting vs. observing). During five consecutive occasions within

half an hour the children were allowed to play and were tested afterwards on their explicit and implicit knowledge gain.

Preliminary results revealed differences between the learning gains of the experimental groups compared to the control group. Analyses of individual learning trajectories will give close insights into the affordances of the tasks.

3.2.1.3 **Exploring the gestural dimension of kindergartners' geometrical activity**

Iliada Elia, University of Cyprus, Cyprus
Athanasios Gagatsis, University of Cyprus, Cyprus
Marja van den Heuvel-Panhuizen, Utrecht University, The Netherlands
Kyriacoulla Evangelou, University of Cyprus, Cyprus
Katerina Hadjittoouli, University of Cyprus, Cyprus

Abstract:

The use of gestures in mathematical thinking has received increasing attention in recent years. Several studies on this issue suggest that gestures not only are communicative tools but also constitute forms of reasoning and problem solving (e.g., Radford, 2009).

Compared to other topics in mathematics the nature and role of gestures in early geometry learning has received limited attention. This study explores kindergartners' gestures in a semiotic transformation activity of communicative character, involving the use of a digital mathematical applet which includes shape composition tasks.

In this we follow the cognitive analysis of geometrical thinking by Duval (1998) including four types of apprehension of "geometrical figures": perceptual, sequential, discursive and operative. In the kindergarten children are more likely to develop two basic types of geometrical figure apprehension: the perceptual apprehension, i.e., recognizing and naming geometrical figures, and the operative apprehension with emphasis on reconfiguration, i.e., investigating and predicting the results of putting together and taking apart geometrical figures.

Specifically, the study aims, firstly, to identify the types of gestures kindergartners produce in the particular geometrical context; secondly, to investigate the interrelations between children's geometrical understanding and gesturing; and thirdly, to explore the relationship between verbal and non-verbal expressions. The participants were one 3,5 year-old boy and one 4,5 year-old girl. During the geometrical activity, each child separately had to give instructions to an experimenter, so that the experimenter could compose the given figure using the applet. The activities with the two children were videotaped. Results showed that both kindergartners spontaneously produced gestures throughout the whole activity. However, the 3,5 year-old child produced a greater amount of gestures (n=72) than the 4,5 year-old child (n=50). Both children used more often deictic and iconic gestures (McNeill, 1992). The older child, though, produced considerably more iconic gestures and fewer deictic gestures than the younger child. Iconic gestures were found to have a dynamic character and represent more often children's thinking based on the operative apprehension of shapes (e.g., rotation and translation of a shape). Deictic gestures conveyed information drawing on the perceptual apprehension of shapes (e.g., recognition of a shape and identification of its location). Finally, while in most cases the meanings conveyed by speech and gesture coincided, there was also a gesture-speech mismatch, which was detected to a greater extent in the younger child's actions (46%) compared to the older child (33%). The above findings and particularly the differences between the two children raise the need for further research regarding the role of gestures in the development of geometrical understanding in the early years.

3.2.2 **Paper Session**

3.2.2.1 **Do preschoolers form abstract or stimulus specific representations of sorting rules in the Dimensional Change Card Sorting (DCCS) task?**

Bianca van Bers, University of Amsterdam, the Netherlands

Abstract

In this project the representation of the sorting rules in the Dimensional Change Card Sorting (DCCS) task is studied. This task reveals that 3-year old children are inflexible in sorting cards to different dimensions. Typically, 3-year-olds perseverate by sorting cards according to the pre-switch relevant dimension (e.g. Zelazo, 2006). It is unclear, however, which information 3-year-olds attend to and get stuck on before they have to switch. Is the representation of the sorting rules they form at the level of dimensions (e.g., color or shape), at the level of the values of dimensions (e.g., blue or rabbit), or at the level of individual pictures (e.g., blue rabbit or red frog)? Results of earlier studies point in different directions. (Zelazo, Müller, Frye and Marcovitch, 2003; Zelazo et al., 2003; Hanania, 2010). According to Kharitonova, Chien, Colunga, and Munakata (2009)

children who successfully switch have a more abstract representation of the sorting rules than children who perseverate.

Method: In the current project we asked children (N = 77 3-year old children; N = 90 4-year old children) to generalize the sorting rules to new stimuli immediately after the pre-switch phase without making a switch first. In combination with a separate switch task we look at the relationship between the representation of the sorting rules and the capability to switch. All children performed a standard DCCS task and a generalization task in counterbalanced order. Children were randomly assigned to one of three conditions. In the relevant change condition the values of the relevant dimension change. In the irrelevant change condition the values of the irrelevant dimension change, and in the total change condition the values of both dimensions change. The switch task was the same for children in all three conditions.

Results: Almost all children show high performance, which suggests that the representation of the pre-switch sorting rules in the DCCS task is at the level of dimensions. Model-based analyses, equivalent to the model-based analysis presented in van Bers, Visser, van Schijndel, Mandell and Raijmakers (2011), show that there is a significant difference between the three conditions. Performance in the relevant change condition is better than performance in the other two conditions. Analyses of the Reaction Time (RT) scores confirm these results. The performance on the generalization task is not related to the performance in the switch task.

Results on the generalization task suggest that the representation of the sorting rules in the DCCS task is at the level of dimensions. A small group of children, however, appears to be distracted by changes in the irrelevant dimension. A possible explanation of this result is weak selective attention. Less strong selective attention helps to make a switch of sorting rules in the switch task but makes it harder to keep sorting according to the same rules when irrelevant information changes.

3.2.2.2 **The relationship between the development of motor response inhibition and intelligence**

Hon Wah Lee, National Central University, Taiwan
Yu-Hui Lo, National Central University, Taiwan
Kuan-Hui Li, National Central University, Taiwan
Wen-Shin Sung, National Central University, Taiwan
Yi-Chin Lin, National Central University, Taiwan
Chun-Ming Shih, National Central University, Taiwan
Hwa-Wei Ko, National Central University, Taiwan
Ovid J. L. Tzeng, National Central University & National Yang-Ming University & Academia Sinica, Taiwan
Daisy L. Hung, National Central University & National Yang-Ming University, Taiwan
Chi-Hung Juan, National Central University & National Yang-Ming University, Taiwan

Abstract:

Emerging evidence has suggested that inhibitory efficiency contributes to individual differences in cognitive processing and predicts one's academic performance and future life outcomes independently of IQ or more accurately than IQ does. However, instead of considering inhibitory control and intelligence as two distinct processes, we take the view that it is more plausible to conceive the two as similar and partially overlapping constructs based on neural, developmental and clinical findings. Building on the theoretical framework that inhibition is "a neglected dimension of intelligence" (Dempster, 1991) and "a stable component of intelligence" (Harnishfeger & Bjorklund, 1994), the present study attempted to test the hypothesised relationship between intelligence and inhibitory control by using motor response inhibition as an example. Specifically, we were interested to find out if there is any relationship between the development of motor response inhibition and the development of intelligence in preschool children, and in what ways the two constructs are related. The participants of this study were 151 normal developing preschool children between the ages of 3.6 and 6.6 years. They completed a child version of the stop-signal task and two measures of intelligence, the short form of the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) and the Raven's Colored Progressive Matrices (CPM). Results from our cross-sectional study demonstrated that preschool children's ability to inhibit a prepotent motor response is closely linked to their general intellectual ability in the context of development. Stop-signal inhibition develops at a rate similar to the age-related changes in intelligence as measured by the WPPSI-R within the age range studied. A breakdown of the IQ scores further indicated that age-related improvements in both the stop signal reaction time (SSRT) and the verbal IQ (VIQ) score show the greatest similarity. Participants' performance on the stop-signal task is inversely correlated with all IQ measures, illustrating that participants with more efficient stop-signal inhibition showed higher intelligence. This negative correlation remains significant for VIQ even after controlling for age ($r = -.16$, $p = .05$). This seems to suggest that, in addition to the age

factor, the ability to inhibit a prepotent response is connected to one's verbal intellectual ability in the preschool period. To examine the overall contribution of age and SSRT in accounting for VIQ, these two factors were entered into a multiple regression model as the predictor variables and VIQ as the outcome variable. Age and SSRT combined to explain 30.9% of the variance in VIQ ($R^2 = .31$, $F 2, 148 = 33.07$, $p < .001$). It was found that age significantly predicted VIQ ($\beta = .47$, $p < .001$), as did SSRT ($\beta = -.15$, $p = .05$). These results converge to provide evidence that there is a close relationship between an individual's development of motor response inhibition and intelligence, especially verbal intellectual ability, during the preschool period. These findings seem to lend support to the hypothesis that inhibitory control could be a dimension or component of intelligence.

3.2.2.3 Dynamic testing of analogical reasoning: the relationship with working memory and school performance

Claire Stevenson, Leiden University & Free University Amsterdam, the Netherlands

Carlijn Bergwerff, Free University Amsterdam, the Netherlands

Wilma Resing, Leiden University, the Netherlands

Abstract

Dynamic testing is a diagnostic method used to assess developing abilities by incorporating training into the assessment procedure. In this study we use dynamic testing to assess children's learning of analogical reasoning. Previous research shows that working memory capacity and age are related to children's ability to solve analogies. Yet, large individual differences are present both in children's initial ability, instructional-needs and performance change. The aims of this experiment were (1) to investigate whether working memory capacity, age or training-type were sources of individual differences in children's instructional-needs during training and in performance change on a dynamic test of analogical reasoning and (2) which variables best predicted the children's performance at school. School children (M=7 years, SD=11 months) were dynamically tested using a pretest-training-posttest design and administered verbal and visuo-spatial working memory measures. The children were randomly blocked into a training condition: graduated-prompts (N=127) or feedback (N=123). All children solved the figural analogies pretest without help or feedback. The children then received

either graduated-prompts or feedback training on the analogy task, followed by the figural analogies posttest. Explanatory item response theory models showed that working memory and school-year were related to initial ability and that training-type influenced instructional-needs and performance change from pretest to posttest, with greater improvement in the graduated-prompts condition. Initial ability also influenced instructional-needs and performance change, where children with lower initial ability improved more. Working memory capacity was related to instructional-needs yet did not explain individual differences in performance change. Furthermore, the dynamic measures of instructional-needs and performance change formed unique predictors of school achievement scores in math, reading and spelling for both conditions. The prediction of school achievement was not moderated by working memory scores. Working memory and reasoning ability are well-established constructs in psycho-educational assessment. The dynamic measures of instructional-needs and performance change may form separate constructs important in the assessment of learning potential.

3.2.3 Paper Session

3.2.3.1 Using gaze-following to learn words at 18 months: relationships with later vocabulary

Beth Law, University of Reading, United Kingdom

Carmel Houston-Price, University of Reading, United Kingdom

Tom Loucas, University of Reading, United Kingdom

Abstract:

Previous research has demonstrated that by 18-19 months of age, infants are able to use the gaze of a speaker to correctly infer the referent of a novel label (e.g. Baldwin, 1991, 1993). The current study aimed to determine the extent to which infants' ability to learn a novel word through gaze-following at 18 months relates to their receptive and expressive vocabularies at 18 months, 24 months and 30 months.

42 monolingual infants aged 18 months took part in a word-learning task that required gaze-following. They were shown two novel toys and saw a speaker look towards one of them and utter a phrase containing six repetitions of a novel label. They were then asked to retrieve the toy that had just been labelled. Following this, the procedure was repeated with the second toy, using a different novel label, and the infant was then asked to retrieve the second toy. Infants were given one point for each correct response. At this visit, parents were also asked to

complete the Reading Communicative Development Inventory (CDI), a checklist of over 600 words commonly used by infants and toddlers, to indicate words that were understood, or understood and also said, by their child. Infants' scores on the CDI were used to split them into high and low groups for receptive and expressive vocabulary separately. Results showed that infants in both the high receptive and expressive vocabulary groups performed significantly better than chance on the word-learning task, whereas infants in the low receptive and expressive groups performed at chance level. There were also significant associations between task score and vocabulary group, whereby the high groups were associated with better performance.

41 children returned to the University aged 24 months to complete the Receptive One-Word Picture Vocabulary Test (ROWPVT-4), a normed vocabulary assessment, and parents completed the CDI once again. However, the ROWPVT-4 was used as the main measure of receptive vocabulary, as the CDI checklist showed evidence of ceiling effects for both comprehension and production. There was a significant association between task performance at 18 months and receptive vocabulary group at 24 months, with the high group being associated with better performance.

Finally, 36 children repeated the ROWPVT-4 aged 30 months and 34 children also completed the Expressive One-Word Picture Vocabulary Test (EOWPVT-4). There was no significant association between task performance at 18 months and receptive vocabulary group at 30 months. However, there was a significant association between task performance at 18 months and expressive vocabulary group at 30 months, whereby the high group was associated with better performance. This provides evidence that a child's ability at 18 months to use the gaze of a speaker to attach labels to novel objects is related to their expressive vocabulary as much as one year later.

3.2.3.2

Precursors to speech and language development in typically-developing infants, and infants with Down syndrome

Emily Mason-Apps, University of Reading, United Kingdom
Vesna Stojanovik, University of Reading, United Kingdom
Carmel Houston-Price, University of Reading, United Kingdom

Abstract:

The focus of the study is to investigate the role of a variety of cognitive factors that are known to be related to language and vocabulary development in typically-developing infants and infants with learning difficulties. These factors include hearing, attention-following, the ability to request and comment, responding to joint attention, parental responsivity, speech segmentation ability, non-verbal mental ability, object categorisation, and symbolic play. The primary aim of the project is to determine which of these factors in the first 2 to 3 years of life are the strongest predictors of later language ability in typically-developing infants and infants with Down syndrome, and therefore to elucidate potential causes of the language difficulties seen in individuals with Down syndrome.

Thirty Five typically-developing infants (aged 9-10 months), and two groups of infants with Down syndrome (14 aged 18-20 months & 7 aged 30-32 months), are being assessed at three time points over the course of one year. Analyses from Time Point 1 shows that our typically-developing group, and our younger group of infants with Down syndrome are matched on all measures apart from receptive vocabulary, while the infants with Down syndrome were found to have significantly larger receptive vocabularies (on a parent-report measure). It was also found that parents of infants with Down syndrome responded significantly more with linguistic contingent information to their infant's focus of attention or communication acts compared to parents of typically-developing infants. Non-verbal mental ability was found to be related to concurrent language scores, and receptive vocabulary in both groups. In the typically-developing group concurrent relationships were revealed between performance on a speech segmentation task, and receptive language scores, as well as parental responsivity being related to total and expressive language scores. These relationships were not found for the group of infants with Down syndrome. The only measure (other than non-verbal mental ability) that was shown to be related to language in this group was responding to joint attention, which was found to be significantly related to total and expressive language scores. These findings will be discussed, along with the proposal that responding to joint attention seems to be of increased importance for the group of infants with Down syndrome.

By August 2012, we will also be able to present analysis on the predictive relationships between these measures and language performance for both groups 6 months later (at Time Point 2), and 1 year later (at Time Point 3). This will enable us to see if the concurrent relationships that have been found will remain longitudinally. We shall also be able to present a

3.2.3.3 **Developmental associations between inference making, vocabulary knowledge, and narrative listening comprehension in 4- to 6-yearold children**

Janne Lepola, University of Turku, Finland
Julie Lynch, Saginaw Valley State University, United States of America
Eero Laakkonen, University of Turku, Finland
Maarit Silvén, University of Turku, Finland
Pekka Niemi, University of Turku, Finland

Abstract:

Purpose and reseacht questions: The purpose of this two-year longitudinal study was to examine reciprocal relations between narrative listening comprehension, inference making skills, and vocabulary knowledge for children who are not yet readers. In this study we ask, whether inference making skills and listening comprehension are developmentally related to each other. Secondly, we ask whether the development of other language skills that is vocabulary knowledge support the development of listening comprehension and inference making and vice versa.

According to multicomponent model, as a child attempts to construct a coherent, meaning-based representation of a narrative, a number of cognitive processes are at work at word, sentence, and text levels (Perfetti, Landi, & Oakhill, 2005). Previous studies indicate that the child's ability to draw inferences is related to developing comprehension skills (Cain & Oakhill, 1999; Kendeou et al., 2008). Regarding the reciprocal relationship between reading comprehension and inference skills in school-age children, the study by Oakhill and Cain (2011) showed that inference skills at age 8 partially mediate the contribution of comprehension at age 7 to comprehension at age 10. Vocabulary and listening (or reading) comprehension have also been shown to have a reciprocal relationship (Cain & Oakhill, 2011; Verhoeven & Leeuwe, 2008). Thus, better listening comprehension leads to greater opportunities to learn new vocabulary, and increased vocabulary size, in turn, seems to result in better listening comprehension. Although our recent study showed (Lepola, Lynch, Laakkonen, Silvén, & Niemi, in press) that inference making skills contributed both directly and indirectly, through vocabulary, to later narrative listening comprehension, possible reciprocal relations among listening comprehension, inference skills and vocabulary from preschool to kindergarten were not fully examined.

Method: 130 Finnish-speaking children from 16 day-care centers participated in the study. The children's vocabulary, inference making, and narrative listening comprehension skills were assessed individually at age 4 (Time 1), at age 5 (Time 2) and at age 6 (Time 3). Inference making skills were assessed by five implicit questions (Paris & Paris, 2003) after the child had viewed the picture book with 18 pages. The questions about the characters' feelings, causal relations, dialogues, predictions and the theme of the story were used to assess inference making. Listening comprehension was assessed by a retelling task and four prompted literal comprehension questions about the narrative texts each 91 words long (Vauras et al, 1995; Silvén & Rubinov, 2004). An age-appropriate *word definition task* was used to assess children's knowledge of word meanings at each of the three time points (WISC—III; Wechsler, 1999; see Silvén & Rubinov, 2010).

Results: The research questions are answered using path analysis with observed variables (Mplus 5,1; Muthén & Muthén, 2008). The cross-lagged effects between inference making and narrative listening comprehension indicate that these skills stand in a perfect reciprocality from age 4 to age 6. The longitudinal relations between vocabulary knowledge and listening comprehension showed that prior listening comprehension made a significant contribution to subsequent vocabulary knowledge, but that vocabulary did not add to later listening comprehension over and above the autoregressor. In our paper, these two models will be merged in one structural model to delineate the developmental associations between text-level skills (i.e., listening comprehension and inference making) and vocabulary knowledge among prereaders.

Conclusions and implications: The findings of the present study add to previous knowledge by showing a reciprocal relationship between inference making and narrative listening comprehension among prereaders. Thus, the more skilled the children were in integrating information during picture book viewing at preschool-age, the more proficient they were in retelling a story and answering questions about it at Kindergarten age. And likewise, the better the children's listening comprehension skills were at preschool age, the more skilled they were in inference making later on. In our paper, we will also shed light on the developmental relationship between vocabulary knowledge and early comprehension skills. The findings have implications for assessment and instruction of listening comprehension skills.

comparison between the typically-developing infants at Time Point 2 and the older group of infants with Down syndrome at Time Point 1.

Round Table

Professionalization and ECE staff competences in European perspective: the CoRe report
Moderators: Katrien van Laere & Jan Peeters, University of Ghent, Belgium

Abstract:

There is a general consensus among researchers and policy makers that high quality early childhood education and care can be highly beneficial for

children. There is also a large consensus that staff competences are one of the more salient predictors of quality and therefore of outcomes for children. Yet, in many European countries, we find a huge diversity of staff qualifications and large parts of the early years workforce are often low or even unqualified. This represents serious challenges for the years to come. Considering the increasing importance of the educational function of ECEC , as well as its social function early childhood professionals work in increasingly complex and changing contexts. In professionalism debates, we often associate the term professional 'competence' with the qualities of an individual practitioner, something that can be acquired through training and professional preparation (i.e. the integration of knowledge, skills, attitudes, motivation, …). The difficulty with this concept is that it is rather narrow. Especially in the English language context, 'being competent' (a fully human attribute) is often reduced to 'competencies' – a series of skills and pieces of knowledge that individuals need to 'possess' in order to perform a particular task.

A key finding of the CoRe study is that 'competence' in the early childhood education and care context has to be understood as a characteristic of the entire early childhood system. The competent system develops in reciprocal relationships between individuals, teams, institutions and the wider socio political context. A key feature of a 'competent system' is its support for individuals to realise their capability to develop responsible and responsive practices that respond to the needs of children and families in ever changing societal contexts. At the level of the individual practitioner, being and becoming 'competent' is a continuous process that comprises the capability and ability to build on a body of professional knowledge, practice and develop and show professional values. Although it is important to have a 'body of knowledge' and 'practice', practitioners and teams also need reflective competences as they work in highly complex, unpredictable and diverse contexts. A 'competent system' requires possibilities for all staff to engage in joint learning and critical reflection. This includes sufficient paid time for these activities. A competent system includes collaborations between individuals and teams, institutions (pre-schools, schools, support services for children and families…) as well as 'competent' governance at policy level.

CoRe is a study on competence requirements in early childhood education and care, commissioned by the European Commission, Directorate General for Education and Culture, and conducted jointly by the University of East London and Ghent University. The study is based on an international literature review, a survey on competence requirements in 15 countries, and in-depth case studies in 7 countries. In this round table we will, based on the main findings of the CoRe study, discuss challenges of the professionalisation of the early years workforce.

Notes

Poster Session

12 **The first Discernment into " the interactional Niche in the development of Mathematical Thinking (NMT) in the familial Context"**
Ergi Acar Bayraktar, Goethe University Frankfurt, Germany

13 **The project erStMaL (early Steps in Mathematics Learning)**
Ergi Acar Bayraktar, Goethe University Frankfurt, Germany
Judith Jung, Goethe University Frankfurt, Germany

14 **Early symbolic understanding of number**
Silvia Cavalcante, University of Barcelona, Spain
Eduardo Martí, University of Barcelona, Spain

15 **Effects of different mathematical educational concepts in day care centers**
Claudia Hildenbrand, Institute for Teacher Training and School Development Hamburg, Germany

16 **Picturebooks with text or without text to learn mathematical language**
Nathalie Martel, Utrecht University, the Netherlands
Marja van den Heuvel-Panhuizen, Utrecht University, the Netherlands
ILiada Elia, University of Cyprus, Cyprus

17 **Characteristics of mathematical creativity and the function of attachment style in early childhood**
Melanie Münz, Goethe University Frankfurt, Germany

18 **Siyakhulisa: Towards quality Early Childhood Education**

J.E. Fourie, North West University, South Africa

19 **Siyakhulisa: Towards quality Early Childhood Education: Emotional intelligence**
U. Fourie, North West University, South Africa

20 **The Role of Play in Teaching English as a Foreign Language in Early Childhood Settings in Indonesia**
Dewi Mulia, Deakin University, Australia

21 **Bilingual toddlers reap the language they sow: ethnic minority toddlers' childcare attendance increases maternal host language use**
Prevoo, M.J.L., Leiden University, the Netherlands
Mesman, J., Leiden University, the Netherlands
Van IJzendoorn, M.H., Leiden University, the Netherlands
Pieper, S., Leiden University, the Netherlands

22 **Bringing out the point of the story - Evaluative devices in narratives from children with and without language impairments**
Juliane Stude, TU Dortmund University, Germany
Fangfang Zhang, Nanjing Normal University, China
Allyssa McCabe, University of Massachusetts Lowell, United States of America

3.3.1 **Paper Session**

3.3.1.1 **Fostering early mathematics in Kindergarten: outcomes for children with low, medium and high level of competencies**

Karin Rechsteiner, University of teacher education, Switzerland
Franziska Vogt, University of teacher education, Switzerland

Abstract:
Research into early childhood education has repeatedly shown the great importance of that phase for later learning in school and beyond (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2008). For mathematics achievement of 8 years old children at school, precursory mathematical skills explain much of the variance (Moser & Bayer, 2010).

Over the last decade various programmes and teaching materials have been developed for mathematical learning in early childhood education. Evaluation results however are inconclusive (Pauen & Pahnke, 2008; Friederich & Galgoczy, 2008; Krajewski, Nieding & Schneider, 2007; 2008). There is a lack of comparative studies on the effectiveness of these interventions for fostering mathematical skills. In addition, these interventions tend to focus on an instructional approach and are less compatible with a pedagogy of play for early childhood education. As several authors proposed the use of games to improve children's basic number skills (Ainley, 1990; Bragg, 2006; Kamii & Yasuhiko, 2005; McConkey & McEvoy, 1986) we developed an intervention of fostering mathematical precursory skills based on games only (Hauser, Vogt, Stebler, Rechsteiner& Lehner, 2010).

Research questions: The research project seeks to address the following research questions:

What is the effect of play-based vs. training- oriented early mathematical fostering on children with low-medium and high precursory skills?

Which method of early mathematical fostering (play-based or training) is suitable for children with low-medium and high competence levels in precursory mathematical skills?

Method & Design: The quasi experimental design involved two intervention groups (play-based versus training) and a control group. A total of 35 kindergarten teachers with 324 children with an average age of 6:3 took part. The intervention involved a two-day in-service teacher training in either the training programme by Krajewski et al. (2007; 2008) or the play based fostering developed by Hauser et al. (2010). Both interventions focused on the same numerical skills such as acquiring a quantity-number concept and number relationship following Krajewski et al. (2007) model of development in mathematics. A control group of 12 kindergarten teachers worked with their classes as usual. In order to assess the effectiveness, mathematical competencies of the children were tested before and after the intervention, in March and June 2010 using an adaptive test (Moser & Berweger, 2007). A parent questionnaire provides data on the home-learning environment and teacher questionnaires capture teachers' pedagogical beliefs. During the intervention, each class was visited and 30 min. were videographed.

Results: The results of the two factor analysis of variance with repeated measure show a significant interaction effect (time*group) [N=324, F=5.184, df=319, p=0.006, eta2 =0.031] and a significant interaction effect as well (time*competence-level) [N=324, F=9.699, df=319, p=0.000, eta2 =0.057]. There is evidence, that over 8 weeks, all children from all groups (play, training and control) improve their mathematical skills. Focusing on children with low level competences in mathematics both interventions (play-based or training) increase their mathematical skills more than the traditional kindergarten does (F=4.896, df=2, p=0.12). For children with medium and high precursory competences in mathematics no significant effect was found. The analysis of the videos also included the foucs on children's time on task. Patterns of children's acitivities and time on task differ significantly between intervention groups, but less so between low and high levels of pre-test competencies.

Conclusion & implication: The results demonstrate the potential of a play-based approach for mathematics in using board and card games in a structured play setting. The higher competency gains of low achieving children in both interventions, play-based and training, highlight the importance of the quality of teaching and learning for early years.

3.3.1.2 Preschoolers Logical Reasoning in the Maths Garden

Maartje Raijmakers, University of Amsterdam, the Netherlands

Abstract:

Logical, abstract reasoning is a cognitive domain that gets little attention in formal education at primary school. We developed a deductive reasoning task in the adaptive train and game environment of mathsgarden.com (rekentuin.nl) has been played by a large number of children (N = 7093), among which children in grade 1 to 3 (N = 450). The Mathsgarden is a computerized adaptive practice and monitoring environment (Klinkenberg et al., 2011). The logical reasoning task, flower code (bloemencode), is known in the literature as static mastermind. The items range from very easy tot very difficult. Consequently, the task is very well playable for preschool children but still a challenge for adults. The aim of the study is to understand children's reasoning strategies while playing this task and the relation to executive functions, such as working memory.

We find a clear relation between age and player ability, but the individual differences within age groups are large. Simple features of the items already explain large part of the variance in the item ratings, as they result from the empirical data (R^2 = .83). By logical analysis of the domain we try to get a better insight in the strategies that children follow for solving items. We could formalize strategies in the task dependent on the sequence of information processing. That is, strategies need more or less resources dependent on the efficiency of selecting the relevant information. We compare predictions of logical analysis with the item rating as they result from the empirical data.

Finally, from a pilot study, we will discuss how a task that is difficult for teachers to understand could be incorporated in a teaching program at primary schools. Showing various ways how computerized training and classroom interactions mutually support each other.

3.3.1.3 Mathematics: fun or fear? Math-related emotions, beliefs and pedagogical content knowledge of preschool teachers

Yvonne Anders, University of Bamberg, Germany
Hans-Guenther Rossbach, University of Bamberg, Germany

Abstract:

With respect to preschool teachers, different aspects of their professional knowledge are regarded as important prerequisites. Based on the work of Shulman (1986, 1987) the components general pedagogical knowledge, content knowledge and

pedagogical content knowledge are distinguished. In addition, pedagogical beliefs and orientations as well as emotional and motivational aspects are discussed as important competencies (e.g. Siraj-Blatchford et al., 2002).

In this study we focus on the educational objectives in the area of emerging mathematics and investigate the following aspects: emotional attitudes and pedagogical beliefs towards mathematics as well as the sensitivity of early childhood professionals for the mathematical potential of children's activities in play situations which is regarded as one aspect of preschool teachers' pedagocial content knowledge for preschool mathematics (McCray, 2010). It is often assumed that the majority of early childhood professionals has negative math-related emotions (e.g. fear and anger) and is critical towards or neglects mathematics as an educational objective in preschools. As a consequence their sensitivity for mathematical potential in children's activities is also assumed to be rather low. However, only few empirical findings exist related to the described attitudes and apects of knowledge. The existing findings seem to show indeed that early childhood professionals put higher emphasis on the promotion of social skills compared to academic skills (e.g. Tietze, Rossbach & Grenner, 2005). But early childhood professionals don't seem to have necessarily negative emotions towards mathematics (e.g. Thiel, 2010). Few studies point to general low levels of preschool teachers' pedagogical content knowledge in mathematics (e.g. Aubrey, 1997; Lee, 2010).

This study was set up to shed light on the structure and interrelations of early childhood professionals' emotional attitudes, pedagogical belies and pedagogical content knowledge in the area of preschool mathematics. The following research questions are addressed:
 Which emotions and school experiences are related to mathematics in the case of early childhood professionals?
What is the relevance of emerging mathematics as an educational objective of preschool from the perspective of early childhood professionals?
 How sensitive are early childhood professionals for the mathematical potential in children's activities in play situations?
 How are emotional attitudes, pedagogical beliefs and the sensitivity for the mathematical potential interrelated?

The study draws on a sample of 200+ early childhood professionals who work in 28 German preschools. The participants answered questionnaires regarding their emotional attitudes and pedagogical beliefs towards mathematics and solved scenario-type problems related to their content and pedagogical content knowledge in mathematics. Data collection

has been finished recently and data processing and analysis are currently undertaken. A previously conducted pilot study with a small number of preschool teachers points to unexpected positive attitudes towards preschool mathematics and a high sensitivity for the mathematical potential of children's activities in play situations. The final results will show whether these first impressions can be confirmed. The impact of the findings for the current debate about the training and professional development of early childhood staff will be discussed.

3.3.2

Symposium

Self-regulation in early childhood
Convenor: Hanna Mulder, Utrecht University, the Netherlands
Discussant: Lex Wijnroks, Utrecht University, the Netherlands

Integrative statement:
 Self-regulation has been defined as 'the ability to modulate behaviour according to the cognitive, emotional, and social demands of specific situations' (Ruff & Rothbart, 1996, p.7). Early individual differences in the ability to control one's actions and self-regulation have proven to be powerful predictors for socio-behavioural development and academic attainment (Blair & Razza, 2007; Espy et al., 2004; Kochanska et al., 2000; Murray & Kochanska, 2002; Ponitz et al., 2009). Given the importance of self-regulation for later functioning across developmental domains, there is increasing interest in the early development of self-regulation and intervention in this area (Diamond & Lee, 2011). As such, the current symposium is focused on self-regulation in the first few years of life, from infancy to toddlerhood. First, Hanna Mulder will discuss the assessment and development of self-regulation at toddler age. Second, Pauline Slot will focus on the role of pretend play in day care settings in self-regulation in toddlers. Third, Roseriet Beijers will present a longitudinal study on the influence of non-parental care provision in the first year of life on self-regulation in toddlerhood. Finally, Lex Wijnroks will lead the discussion on some of the key issues in self-regulation research in early childhood addressed in this symposium, i.e., assessment, development, and the role of the early care giving environment.

3.3.2.1 Assessment of executive function in toddlers: factor structure and developmental trends

Hanna Mulder, University of Utrecht, the Netherlands
Josje Verhagen, University of Utrecht, the Netherlands
Jan Boom, University of Utrecht, the Netherlands
Paul Leseman, University of Utrecht, the Netherlands

Abstract:

Executive functions (EFs) are cognitive control functions needed for goal-directed action and self-regulation. Executive function skills are related to adaptive functioning across developmental domains, such as scholastic achievement (St Clair-Thompson & Gathercole, 2006). Given the importance of the early development of executive function, there is increasing interest in the assessment of executive function in young children. For example, previous studies have shown that the factor structure of executive function at preschool age and beyond is best characterized by separate but interrelated 'hot' and 'cool' factors, relating to the emotional-temperamental and cognitive aspects of control, respectively (Willoughby et al., 2011). However, although executive function skills emerge in the first year of life, current assessment tools are mostly available for testing EF in children aged 3 years and older, when children can understand more complex verbal instructions and comply with test situation demands. As such, little is known about the development and factor structure of executive function at toddler age.

In the current study, a test battery was adapted to assess executive functioning at age 2-years, including both emotional-temperamental and cognitive measures, as part of the Dutch national cohort study preCOOL. The executive function tests involved a selective attention visual search task (Scerif et al., 2004), an updating task to assess visuospatial working memory (Diamond et al., 1997), a memory for location task to assess visuospatial short-term memory span (Vicari et al., 2004), and a snack and gift delay task to assess self-control (Kochanska et al., 1996). In total 2447 children completed at least one of the EF tasks. Children were aged 2.3 years on average (SD=0.3). Parents filled in the Inhibitory Control and Attentional Focusing Scales of the Early Childhood Behaviour Questionnaire (Putnam et al., 2006).

To improve our knowledge of executive function development in toddlers, the factor structure of executive function is investigated at age 2-years, using information from multiple sources (i.e., child assessment and parental questionnaires).

Also, the development of executive function at the latent factor level is investigated between age 2 and 3 years. Discussion will relate to the large-scale assessment of executive function at this young age in a field-based study.

3.3.2.2 Complexity of pretend play and its relation with children's self regulatory skills

Pauline Slot, Utrecht University, the Netherlands
Paul Leseman, Utrecht University, the Netherlands
Hanna Mulder, Utrecht University, the Netherlands

Abstract:

Several studies have shown the importance of self-regulation in predicting children's academic and social-emotional outcomes. Self-regulation develops rapidly in the first three years and depends highly on the guidance and nurturing of the caregiver. According to Vygotsky pretend play is very important in children's self-regulatory development because this allows them to specify their own challenges, objectives and actions toward their goals. In pretend play children have to follow social rules and coordinate their behavior in accordance with these rules in order to sustain a satisfactory play episode with peers, and therefore provides a platform for children to develop self-regulatory skills. Few studies to date have addressed the relation between pretend play and self-regulation and found supportive evidence. This paper seeks to extend the existing studies by providing more insights in the relation between pretend play and self-regulation in two- and three-year-old children.

An in-depth study was conducted in about 64 ECEC groups of daycare centers and preschools. Two different play settings were videotaped for about 15-20 minutes. The first is a free play setting in which children were free to choose in which play corner they wanted to play and with whom. The second was a more structured play setting in which the researcher asked the caregiver to select some children and provided her with some kitchen play materials and asked them to play with it as usual. Using an observational instrument the children's (N=100) behaviour was coded afterwards. With this observational instrument, based on the Smilansky Scale for Evaluation of Sociodramatic Play the complexity of children's pretend play was coded, focusing on imitative role-play, make believe with objects and actions, children's persistence and (verbal) interaction with peers and caregivers. Also the caregiver's role was coded on the same aspects of pretend play. Furthermore, children were given a test battery of self-regulation measures adapted for Dutch toddlers. Five different measures were used: a visual search task

assessing selective attention, a task to assess visuospatial working memory, a memory for location task to assess visuospatial memory span, and a gift and snack delay task to assess self-control.

Complexity of children's pretend play will be related to their self-regulatory skills and the results will be discussed in light of the different play settings and the caregiver's role. Implications for classroom practices will be discussed as well.

3.3.2.3 **Early Non-parental Care and Toddler Behavior Problems: Links with Inhibitory Control and Temperamental Negative Affectivity**

Roseriet Beijers, Radboud University Nijmegen, the Netherlands
Marianne Riksen-Walraven, Radboud University Nijmegen, the Netherlands
Samuel Putnam, Bowdoin College, Brunswick, United States of America
Marjanneke de Jong, Utrecht University, the Netherlands
Carolina de Weerth, Radboud University Nijmegen, the Netherlands

Abstract:
Background: Several studies suggest that early non-parental care impacts different aspects of children's development, including their socio-emotional adjustment (i.e. behaviour problems). However, questions remain about the underlying mechanisms linking early non-parental care to internalizing and externalizing behavior. As non-parental care, and especially centre-based care, is often characterized by challenges (i.e. separation from the parents, different caregivers and routines, and larger group sizes), it might be seen as a source of early life stress for young children. In turn, exposure to stress early in life might compromise the development of the neurobiological systems that are responsible for later regulatory capacities including inhibitory control, potentially impacting the likelihood of behavior problems (Loman & Gunnar, 2010). Therefore, the aim of this study was to investigate inhibitory control as a mediator of the link between early non-parental care and toddler behavior problems. The effects of stress, however, may not be the same for all children, but instead might be moderated by early-appearing individual differences. It is suggested that infants with a more difficult temperament might encounter more challenges in non-parental care than infants with a less difficult temperament, increasing the risk of regulation and behavior problems. Therefore, we additionally explored early temperamental negative affectivity as a moderator.

Methods: Participants were 193 mothers and their infants (91 girls; 79 firstborn). Infant negative affectivity was measured with a temperament questionnaire at 3 months of age. Information on early non-parental care was obtained through monthly maternal interviews across the first year of life. The following non-parental care measures were used in this study: type of non-parental care, the number of hours in centre-based care and non-parental care, the number of concurrent arrangements, the instability of care over time, and the age of entry into non-parental care. At 30 months of age, toddlers' inhibitory control was measured with observational tasks, and behavior problem questionnaires were filled in by the mothers and the child care caregivers.

Results: Early non-parental care was not related to observed inhibitory control in toddlerhood, such that the mediational model was not supported. Greater observed inhibitory control, however, was related to less caregiver-reported internalizing and externalizing behavior. Furthermore, negative affectivity moderated the effect of early non-parental care on behavior problems. Non-parental care was unrelated to behavior problems in toddlers who displayed low or mean levels of negative affectivity as infants. For infants high in negativity, however, centre-based care was associated with higher mother-rated internalizing and externalizing problems, while higher number of non-parental care hours was associated with lower mother-rated internalizing problems.

Discussion: The link between non-parental care during the first year of life and toddlers' behavior problems was not shown to be mediated through inhibitory control. Instead, inhibitory control and non-parental care, in conjunction with negative affectivity, appear to be two independent predictors of toddlers' internalizing and externalizing behavior problems. As such, the results suggest two different and independent entries for parenting and interventions to prevent the early development of internalizing and externalizing problems.

3.3.3 # Workshop

Longitudinal growth modeling

Lecturers: Jan Boom, Utrecht University, the Netherlands
Ora Oudgenoeg-Pas, Utrecht University, the Netherlands

Abstract

   Longitudinal data analysis with latent growth modeling LGM) is becoming increasingly popular. In this hands-on computer workshop you will learn the basics of LGM by playing with simulated data (using Excel) and graphing the results. By seeing the effect of dynamic manipulation of e.g. the increase per measurement occasion and variation therein in the sample, it is possible to achieve quite thorough understanding without bothering too much with formulas. No previous experience with Amos or Mplus is required but at the end you will be able to run a simple growth model in either AMOS or Mplus. It would, however, be helpful to refresh your knowledge of Excel a bit (how to compute an average etc. and how to copy or drag this to a whole range).

   We start with the ins- and outs- of a basic 4 time-point linear growth model, next we move to more realistic models with e.g. intercept-slope covariation, finally we will address bivariate models. Instruction will be provided to implement a personalized basic LGM yourself in either AMOS or Mplus. You can use the data that you yourself have created in the simulation runs of part two, but feel free to bring you own data, as long as it (for the occasion) that can be reduced to 4 normally distributed interval variables representing repeated 4 measurements, and give that a try too.

Demo materials will be provided. Due to the demanding hands-on-character only 15 places will be available in this workshop.

3.3.4

Workshop

Moving beyond null hypothesis testing

Lecturer: Rens van de Schoot, Utrecht University, the Netherlands

Abstract

   Half in jest I use a story about a black bear to illustrate that there are some discrepancies between the formal use of the p-value and the way it is often used in practice. The null hypothesis can be useful in some cases on the condition that it is used in the correct way. However, in practice, researchers tend to forget what they have been taught about null hypothesis testing. I argue that more can be learned from data by evaluating informative hypotheses, than by testing the traditional null hypothesis. Evaluating informative hypothesis formulated with inequality constraints is at the forefront of statistical research (see for an overview of publications Van de Schoot, Hoijtink and Romeijn, Moving beyond traditional null hypothesis testing: Evaluating expectations directly. Frontiers, 2011). All criticisms of classical null hypothesis testing aside, the best argument for evaluating informative hypotheses is probably that many researchers want to evaluate their expectations directly, but have been unable to do so because the statistical tools were not yet available. As I will illustrate, these tools are ready to be used for any researcher within the social sciences.

3.3.5 (SIG-15: 1.2.2)

Workshop

Training and tracking maths performance in Maths Garden

Sanne van der Ven, University of Amsterdam, the Netherlands

Abstract

   Obtaining optimal measures of a child's performance and capacities, while minimizing the burden of the time-consuming and costly testing procedure itself, is a challenge that many researchers and practitioners face. Math Garden (mathsgarden.com, Dutch: rekentuin.nl) is a web-based tool that enables just this. Initially developed to obtain reliable high-frequent measures of children's math performance, Math Garden has evolved into a tool that tens of thousands of school children use in their daily routines to practice their math skills. Children can play independently, eliminating the need of the presence of a researcher or assistant in the room. Every attempted problem is logged on the server: we are approaching 100 million solved problems. This way, the boundaries between testing and practicing disappear, as the log files enable teachers and researchers to track each child's development over time: both overall development and specific difficulties that a child faces.

   Math garden is based on well-grounded methodological techniques: a combination of traditional Item Response Theory and the Elo system, originally developed to compare chess players. This combination enables Math Garden to offer each child math problems that are tailored to their ability. Moreover, an improvement to other computer-adaptive tests is the on the fly item calibration that the Elo system allows: costly item pre-calibration is no longer necessary. Instead, math items can be added to the system at any time; their difficulty rating are continuously estimated, in a process highly similar to the estimating procedure of the abilities of the children.

   While initially being applied to mathematics only, the underlying mechanism is far from domain-specific. Currently the technology is applied to other domains: language, statistics and even touch typing. A 'Science Garden' with executive functioning,

working memory, reasoning, and planning is currently under development.

In the workshop, the possibilities that Math Garden offers are demonstrated: both for practitioners and for researchers. In addition, participants will be introduced to the principles of on the fly item calibration, and there will be time to discuss how this can be applied to their own research.

Paper Session
Mathematical difficulties 1

3.3.6.1

IQ in children with mathematical learning disabilities: Does intervention make a difference?
Katharina Lambert, University of Heidelberg, Germany
Birgit Spinath, University of Heidelberg, Germany

Abstract

Introduction: In many studies, the mean IQ-score of children with mathematical learning disabilities (MLD) proved to be lower than of typical achieving children. This might be due to IQ-subtests which contain arithmetical or numerical items. Some IQ-subtests require competences which might be impaired in MLD children, e.g., working memory or visuo-spatial abilities (e.g., Geary et al., 2000; Swanson & Sachse-Lee, 2001; Fias & Fischer, 2005; Geary & Hoard, 2005; Rourke, 1993). However, in most studies, IQ-scores are assessed only once before the intervention onset, and therefore, we know little about the effect of MLD-interventions on IQ-scores. Fischer-Klein (2007) reports significant IQ-improvements (CFT 1) after a math training which provides an indication for an underestimation of IQ-scores in MLD children. The present study investigated the impact on WISC-IQ-Scores of a specific therapy program – the Waterglass Intervention Program (WIP; Schlotmann, 2004) – for children with MLD in a pre- and posttest control group design. Lambert and Spinath (subm.) showed that children treated with the WIP improved their math skills significantly more than children who received private tutoring. Therefore, we expected that IQ gains would be higher within the experimental group.

Method: N = 45 children (7-12 years) diagnosed with MLD were included in the study. N = 25 (15 female, 10 male) children attended the WIP. The control group consisted of n = 20 children who had been enrolled in private tutoring by their parents. Full-Scale IQ, all indices and all subtest scores were obtained before and after the intervention (M = 22.89 months, SD = 8.05) using the WISC-III or –IV.

Results: Children of the WIP group showed an average Full-

Scale IQ gain of more than 10 points whereas the IQ of children who had received private tutoring remained stable over time. The analyses revealed significant improvements for the indices of Verbal Comprehension (VCI), Perceptual Reasoning (PRI), and Working Memory (WMI) but not Processing Speed (PSI) for the WIP group. The highest effect sizes were observed for the subtests "Similarities", "Information", "Picture Completion" and "Picture Arrangement". 17 children of the WIP group but only 2 children of the control group showed improvements of more than 7 IQ scores.

Discussion: Results indicate that the WISC-IQ-score of MLD children might be underestimated, and that effective math intervention can improve IQ-test achievement scores. Considering several limitations of the study, the use of the achievement-discrepancy criterion in research and practice will be discussed.

3.3.6.2

Special education students' ability to solve elementary combinatorics problems
Marjolijn Peltenburg, Utrecht University, the Netherlands
Marja van den Heuvel-Panhuizen, Utrecht University, the Netherlands
Alexander Robitzsch, Federal Institute for Education Research, Innovation and Development of the Austrian School System, Austria

Abstract

Introduction: Research on supporting special education (SE) students' performance in mathematics hardly ever focuses on higher order thinking processes. Nevertheless, some studies have shown that low achieving students in mathematics may have a higher mathematical potential than assumed.

The aim of the present study was to further investigate SE students' mathematical potential in the domain of elementary combinatorics. In particular, it was examined whether the performances of SE students in solving combinatorics problems differ from those in regular education (RE) and how the performances in both groups change over grades.

Method: In total, 84 students from five SE schools and 76 students from five RE schools participated in the study. In each school four students were randomly chosen who scored near the 50th percentile on the mathematics mid-grade levels M2, M3, M4, and M5 of the CITO LOVS test.

We developed an ICT-based assessment, including a series

of six combinatorics problems. For each problem the students had available an infinite supply of little puppets. To dress these puppets the students could use clothing items of different colours. In the first three problems, involving respectively a 2x3, 3x2 and 3x3 structure, t-shirts and skirts were available. In the last three problems, involving respectively a 2x2x2, 2x2x2 and 2x3x2 structure, shoes were added. In each problem the students had to figure out the maximum number of different outfits.

Results: The SE students solved 56% of all cases (students x problems) correctly and the RE students 57%. Although at the lower mathematics levels the RE students surpassed somewhat the SE students, at the M5 level the SE students solved slightly more combinatorics problems correctly than the RE students did.

To further investigate the success rate of the SE and RE students, we carried out an analysis of variance for which we specified three different models containing different predictors. In the model with mathematics level and school type, the mathematics level was found a significant predictor of the success rate. The same was found for the model with age instead of mathematics level. When all three predictors were in, only mathematics level appeared to be significant. In all three models, school type was not a significant predictor.

Conclusion: This study has (again) revealed that SE students have a higher mathematical potential than generally is assumed and has provided evidence for revisiting the mathematics program in SE.

3.3.6.3 Research into commonalities of computational skills of students with severe computational difficulties or dyscalculia in upper secondary school and in upper vocational education

Mieke van Groenesteijn, University of Applied Sciences Utrecht, the Netherlands

Abstract

Due to changes in the Dutch system of mathematics education in secondary school and vocational education, students will be tested on their computation skills as part of their exams, starting in 2014, in addition to mathematics exams. The expectation is that students who experience severe problems on this subject and students having dyscalculia, will not pass their exams. Teachers are very concerned about this situation. Our research concerns the determination of commonalities between the results of these students in order to be able to find criteria by which these students may receive facilitations during their exams. For this research an experimental test was developed. This research will be executed during April and May 2012. The first results will be available in August 2012.

Notes

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