EARLI SIG 15 – Special Educational Needs

Biennial Meeting 2018:

Program and Abstracts

"Inclusive education:
An integrated research framework on disability, diversity and heterogeneity in education"

12th to 14th September 2018 in Potsdam, Germany

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Timetable

Pre-Conference - Tuesday 11/09/18	
Time	**Activity**
10.00 - 11.00	Registration
11.00 - 16.00	Parallel Workshops
16.00 - 16.15	Break & Coffee
16.15 - 17.15	Informal SIG 15 JURE Meeting
From 18.00	Dinner in Potsdam

Day 1 - Wednesday 12/09/18					
Time\Location	**Foyer**	**1.12**	**1.02**	**1.14**	**2.05**
11.00 - 12.00	Registration				
12.00 - 12.30		Welcome			
12.30 - 13.45		Keynote Christoph Müller			
13.45 - 14.15	Break & Coffee				
14.15 - 15.45		S1.1	S1.2	S1.3	
15.45 - 16.15	Break & Coffee				
16.15 - 18.15		S2.1	S2.2	S2.3	S2.4
18.15 – open end	Dinner Buffet at Conference Venue				

Day 2 - Thursday 13/09/18						
Time\Location	**Foyer**	**1.12**	**1.02**	**1.14**	**2.05**	**Restaurant "El Puerto"**
09.00 - 10.30		S3.1	S3.2	S3.3	S3.4	
10.30 - 10.45	Break & Coffee					
10.45 - 12.00		Keynote Annemie Desoete				
12.00 - 13.15	Lunch					
13.15 - 15.15		S4.1	S4.2	S4.3	S4.4	
15.15 - 15.30	Break & Coffee					
15.30 - 16.15	Postersession 1 in **Room 2.03**					
16.15 - 16.20	Break					
16.20 - 17.30		Keynote Alexander Minnaert				
17.30 - 18.30		SIG 15 Meeting				
19.00 - open end						Conference Dinner

Day 3 - Friday 14/09/18				
Time\Location	**Foyer**	**1.02**	**1.12**	**1.14**
09.00 - 10.30		S5.1	S5.2	S5.3
10.30 - 10.45	Break & Coffee			
10.45 - 11.30	Postersession 2 in **Room 2.03**			
11.30 - 11.35	Break			
11.35 - 12.45		Keynote Lisa Woolfson		
12.45 - 14.00	Lunch			
14.00 - 15.30		S6.1	S6.2	S6.3
15.30 - 16.00	Break & Coffee			
16.00 - 16.30		Closing Panel JURE Awards		

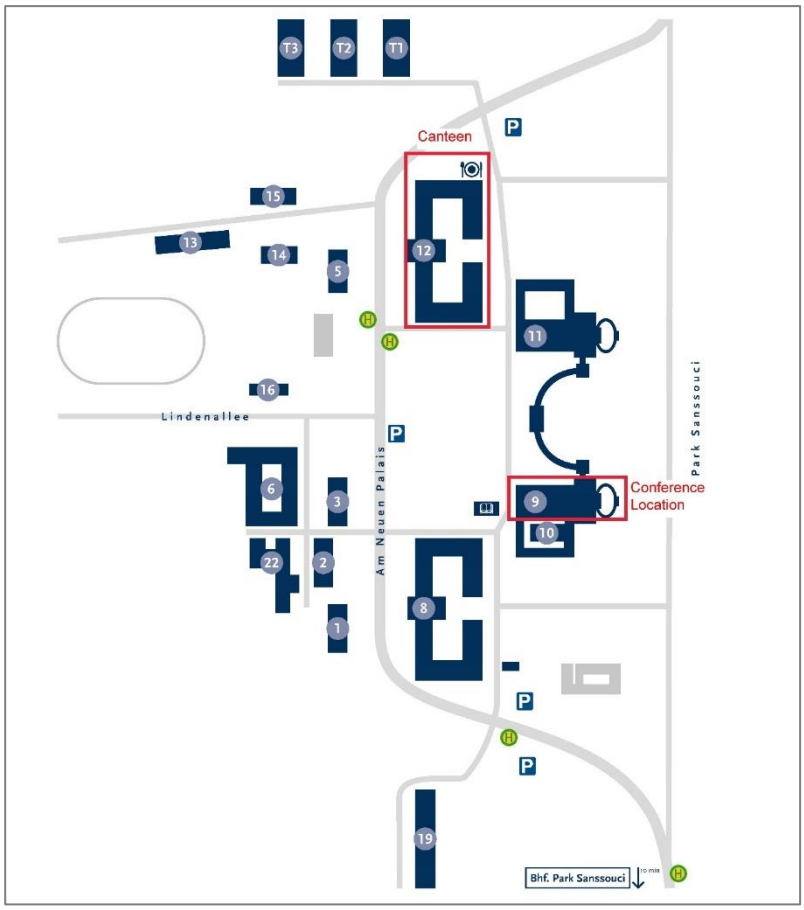
Conference Venue

The address of the conference venue is:

University of Potsdam
Am Neuen Palais 10
14469 Potsdam
Germany

The conference will take place in Haus 9 of campus “Am Neuen Palais”. It can be found on Google Maps via this link: https://goo.gl/maps/kKTiauCZLp52

The canteen can be found in Haus 12 of campus “Am Neuen Palais”. It can be found on Google Maps via this link: https://goo.gl/maps/1w2fNhiLBJu



Travelling from Berlin Airports to Potsdam

From Airport Berlin Tegel (TXL) to Potsdam

Take line 109 (destination "Zoologischer Garten") to S-Bahnhof Charlottenburg, then take the S-Bahn (line S7) destination Potsdam Hbf.

Duration: 53 Minutes

Busses and trains are going every 10 - 20 minutes depending on the time of day

From Airport Berlin Schönefeld (SXF) to Potsdam

Take line 171 (destination "U-Bf. Rudow") or walk 5 minutes to the train station Flughafen Berlin Schönefeld, then take the train (line RB22) destination Potsdam Hbf.

Duration: 1 hour

Trains are going every hour throughout the day.

Travelling from Potsdam to the Conference Location

By Bus

Lines 605/606/695 go from Potsdam Hbf to bus stop Neues Palais.

Duration: 17-22 minutes.

The busses are in general going every 10 minutes throughout and stop at the most important stations in Potsdam.

By Train

Lines RE1/RB20/RB21 go from Potsdam Hbf to Potsdam, Park Sanssouci. From there it's a 5 minute walk or bus ride to the conference location.

Duration: 5 minutes.

The trains are going every 10 to 30 minutes depending on the time of day.

Please note:

The Potsdam ABC and Berlin ABC daily tickets (€ 7.70) and individual tickets (€ 3.40) are valid in all buses, trams, regional and local trains in Berlin and Potsdam. These can be purchased from machines in all train stations and from bus drivers within Berlin buses or from machines inside Potsdam buses.

To check your route and look up schedules, you can use www.bvg.de or download the free app for German Public Transportation Service “DB Navigator” or use “Google Maps”.

In case of any other requests or queries, please feel free to get in touch with us at any time in person or via earlisig15@uni-potsdam.de!

Conference Dinner Location

The conference dinner will take place on Thursday, September 13th at the Restaurant “El Puerto”. We warmly welcome all guests from 7 p.m. onwards. The address of the conference dinner location is:

Restaurant El Puerto
Lange Brücke 6
14473 Potsdam
Germany

The dinner location can be found on Google Maps via this link: https://goo.gl/maps/b5GpVT62pon

Travelling from the conference venue to Restaurant El Puerto

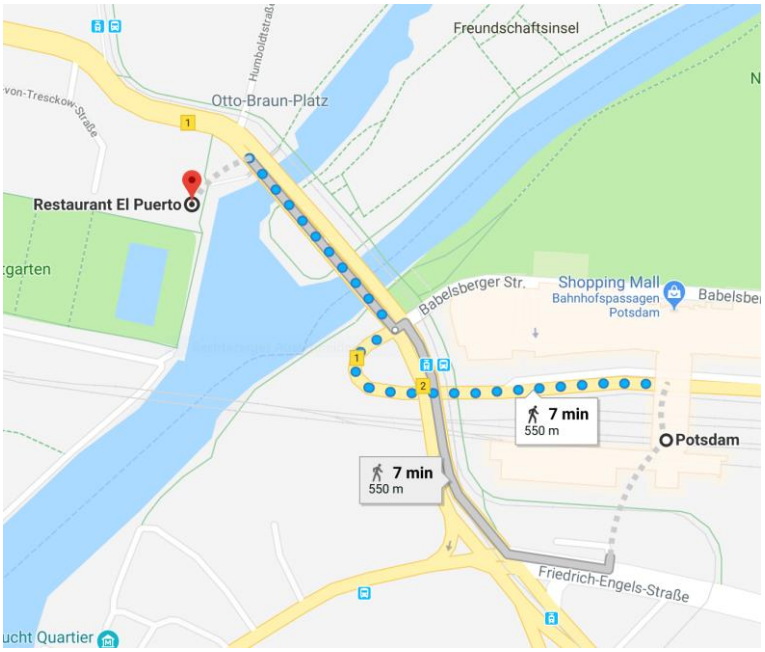
Lines 605/606/695 go from bus stop Neues Palais to bus stop Potsdam Schloßstr.. From there it’s a 5 minute walk to Restaurant El Puerto.

Duration: 16-21 minutes.

The busses are in general going every 10 minutes throughout and stop at the most important stations in Potsdam.

Travelling from Potsdam Hbf to Restaurant El Puerto

It’s a 7 minute walk from Potsdam Hbf station to Restaurant El Puerto.



Program – Pre-Conference

The JURE pre-conference will take place on September 11th 2018 at the regular conference venue starting from 11 am. Visiting the pre-conference is free of charge when signed up to the main conference. The JURE pre-conference will feature two parallel workshops from 11 am to 4 pm (see information below) followed by an informal SIG 15 JURE Meeting. After the pre-conference we will reserve a table at a restaurant in Potsdam, so whoever is interested is welcome to join us for a common dinner.

Workshop 1: Moderation Masterclass - Key skills in English for chairpersons, moderators and discussion leaders by Mark Edwards

Learn powerful and effective methods for conducting all types of meeting from an experienced expert. Pick up the key phrases and techniques that native-speaking facilitators/ meeting leaders use in a wide variety of scenarios. Gain an understanding of a wide variety of meeting activities and agenda structures to provide desired outcomes.

- Tactful prompting of participants
- Time-efficiency and keeping to the agenda
- Maintenance of order and ethical standards
- Faciliation of decision-making and outcome generation

Workshop 2: Research-Based Learning as a Teaching Method by Wolfgang Deicke and Monika Sonntag

Why “Research-Based Learning” as a teaching method? A recurring observation that people made at university and in business world is that quite some students are not able to solve problems completely new to them - problems that cannot be looked up in literature. At the same time some students are confronted with the challenge to learn in a given way the fixed curriculum or have troubles to motivate themselves for the given content.
„Research-Based Learning” (abbreviated in the following by RBL) provides an answer to both situations: On one side, it supports the development to deal with complex and unknown topics and fosters the formation of self-confidence...

- to be able to go along one’s own paths beyond the classical didactical boundaries and
- to be strong enough to learn from one’s own mistakes.

On the other side, it provides a framework in which a learning process is an authentic and self-determined learning experience leading to a higher perception of one’s self-efficacy. It is a learning format more close to the nature of man and therefore leads to higher learning motivation in social, humanitarian as well as natural sciences. Quite often RBL processes produce new research questions that are valuable for the teachers themselves. Thus, RBL provides a central contribution to the development of competences in the fields of problem solving, learning to learn competence as well as self-motivation for learning. Being very optimistic, one could say that RBL provides a contribution to the increase of attractiveness of a University, to speeding up of student pass through times as well as a contribution to decrease student drop-outs.

Keynote Speakers

Prof. Dr. Christoph Müller

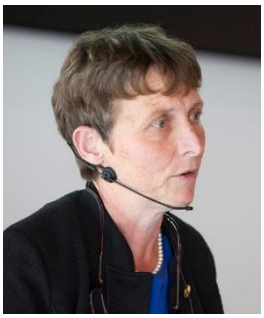
"Heterogeneous Students Among Heterogeneous Peers: Peer Socialization in Individuals with Special Educational Needs"

For typically developing students, it is well accepted that the peers have an important impact on their social and cognitive competencies. In contrast, the development of individuals with special educational needs (SEN) is often still considered to be mainly influenced by individual characteristics, family, and professional support. This may be related to the complexity of peer influence processes in students with SEN: First, students with SEN can be surrounded by highly different peer groups depending on the school type and classroom attended. Second, students with SEN themselves form an extremely heterogeneous group. They may thus substantially vary in their susceptibility to peer influence along different disability-related dimensions. In the keynote research on this topic is presented and future perspectives to better understand peer socialization in individuals with SEN are developed.

Prof. Dr. Lisa Woolfson

"When teacher and parent beliefs are barriers to inclusion of children with special educational needs"

Negative societal stereotypes towards disabilities, stigma, can influence attitudes and behaviour in teachers and parents, and act as a barrier to the effective inclusion of children with special educational needs and disabilities. Emerging evidence will be presented that examines relationships between these stereotypes and attributional beliefs about disability. How do these beliefs affect teaching and parenting behaviours, and influence learning and development in children with special educational needs? How can teachers and parents act differently to bring about positive change?



Prof. Dr. Annemie Desoete

"Inclusive education: An integrated research framework on disability, diversity and heterogeneity in education, what can we learn from the opportunity-propensity model?"

The existence of individual differences in abilities, increases the need to understand the nature of typical and atypical cognition. The Opportunity–Propensity (O-P) model supplies us with a framework to reflect on disabilitiy, diversity and heterogeneity in education. The authors of this model suggest that people are more likely to realize their potential for learning if they are provided with the right Opportunities (O) to learn and have the will (e.g. motivation) and capability (e.g. abilities) or Propensity (P) to benefit from the Opportunities provided to them (Byrnes & Miller, 2007; Byrnes & Wasik, 2009; Wang & Byrnes, 2013). Multiple predictors are taken into account in this model. Studies on predictors such as metacognition, self-efficacy beliefs, motivation, temperament/personality, welbeing and prior knowledge will be illustrated within this model.

Prof. Dr. Alexander Minnaert

"In need of a tailored Z(S)EN approach when it comes to inclusive education"

The UNESCO Salamanca Statement and the Framework for Action on special needs education (1994) and Article 24 of the UN Convention on the Rights of Persons with Disabilities (2006) paved worldwide the way for inclusive education. The point of departure of inclusive education is that the educational system should be designed and educational programmes should be implemented in such a manner that regular education takes into account the wide diversity of children's characteristics and needs, and that the child with special educational needs must have access to regular schools. A child centred pedagogy capable of meeting the needs of those SEN children is presumed and believed upon.

Based upon research we know, however, that teachers, parents and peers are not really in favour of inclusive practices and that educational practice is facing huge challenges to enhance both students' and teachers' motivation, to improve inclusion and equitable participation of all children at school and in society, to stand up against inequality, to promote learning and development of all, and to meet the diversity in special educational needs of all. Hence, society is in a deep need for experts who may efficaciously cope with the strengths and weaknesses, opportunities and threats of inclusive practices. This makes a tailored approach in inclusive education an intellectual challenging and emotional demanding quest. How to find Z(S)EN in the world of inclusion?

Session Schedule – Single Papers

Day 1 – 12/09/2018

Day 1, Session 1: 14.15 – 15.45 (90 Minutes)			
	S1.1 - Students with SEN (Room 1.12)	*S1.2 - Movement and Music (Room 1.02)*	*S1.3 - Math and Arithmetics (Room 1.14)*
14.15 – 14.45	Van Herwegen et al. - Parental views on special educational needs provision for neurodevelopmental disorders	Menke et al. - Movement-based prevention of emotional-behavioral disorders in elementary school children.	Geeler et al. - Characteristics of the development of mathematical competence among low achievement children
14.45 – 15.15	Kerbs & Böhme - School achievement of students with special educational needs and learning disabilities	Törmänen et al. – Music, movement and learning – longitudinal intervention study in primary education	Husberg et al. - Goal orientations and arithmetic fluency in children with attention difficulties
15.15 – 15.45	Nieminen - Universal Design for Self-Assessment: Perceptions of university students with learning difficulties		Hakkarainen et al. - The connection between student's arithmetical difficulties and socioemotional skills in 5th Grade

Day 1, Session 2: 16.15 – 18.15 (120 Minutes)				
	S2.1 - Symposium Knickenberg (4 Papers; Room 1.12)	*S2.2 - Symposium Aunio (4 Papers; Room 1.02)*	*S2.3 - Symposium Börnert-Ringleb & Kulawiak (4 Papers; Room 1.14)*	*S2.4 - Experience with Disabilities / Meaning of Disability (Room 2.05)*
16.15 – 16.45	The Perceptions of Inclusion Questionnaire (PIQ) – International extensions and perspectives	The effects of cognitive and mathematical skills interventions on young children's learning	Measuring and Investigating Social Inclusion	Bellert et al. - Sustainable Learning - Capabilities not disabilities.
16.45 – 17.15				Dangoisse et al. - Experiencing transition to higher education: a comparison of students with and without disabilities
17.15 – 17.45				Hinni - A latent class approach to social capital in intersectional perspectives of migration and disability
17.45 – 18.15				

Day 2 – 13/09/2018

Day 2, Session 3: 09:00 – 10.30 (90 Minutes)				
	S3.1 - Attitudes Towards Disability (Room 1.12)	S3.2 - Cognitive Learning (Room 1.02)	S3.3 - Student-Teacher Interactions (Room 1.14)	S3.4 - Inclusive Practices (Room 2.05)
09.00 – 09.30	Hellmich et al. - Children's perceived parental behavior and their attitudes towards peers with learning disabilities	Börnert-Ringleb et al. - Concrete-Operational Thinking and Differences In Strategy Use Of High- And Low-Achieving Students	Siedenbiedel et al. - Pre-service teachers` views on international ethical standards for teacher-student-interactions	Karia et al. - Disability Mainstreaming in Universities in Sub-Sahara Africa: A Case of Kenyatta University, Kenya.
09.30 – 10.00	Kopmann et al. - Teacher reactions to different dimensions of diversity in inclusive classrooms	Eberli et al. - From implicit to explicit in learning STEM subjects	Kobs et al. - The influence of situational factors on the perceived fairness of student-teacher-interactions	McKay-Brown et al. - In2School: promoting inclusion for young people who are school refusing
10.00 – 10.30	Krausz - Elementary school students attitude towards disability	Paananen et al. - Group-based Intervention on Attention and Executive Functions: Treatment Response and Moderators		Liu - Young Children's Perceptions of the Itinerant ECSE Teacher

Day 2, Session 4: 13.15 – 15.15 (120 Minutes)				
	S4.1 - Symposium Zurbriggen (4 Papers; Room 1.12)	S4.2 - Symposium Balt (4 Papers; Room 1.02)	S4.3 - Language Acquisition / Hearing (Room 1.14)	S4.4 - Attitudes Towards Inclusion / Meaning of Inclusion (Room 2.05)
13.15 – 13.45	Social participation – key themes. aspects and perspectives	Assessing progress in numeracy learning to support appropriate learning opportunities for all	Karia et al. - Provision of Inclusive Learning Environments for Children with Hearing Impairment	Meyer et al. - Attitudes towards Disability and Inclusion: Results from a Longitudinal Study on Young Volunteers
13.45 – 14.15			Espinoza et al. - Relations between family enviroment, sign language and reading precursors in deaf children	Gorges et al. - Testing factorial and convergent validity of three instruments assessing attitude towards inclusion
14.15 – 14.45			Pinstock et al. - Early Vocabulary Acquisition: Structural Equation Analysis of Longitudinal Data from German Children	Pit-ten Cate et al. - Changes in preservice teachers´ attitudes toward inclusion: the role of competence
14.45 – 15.15			Skerra - The impact of a developmental language delay on the ability to understand and produce texts	Przibilla et al. - Teachers' Subjective Definitions of Inclusion – An Exploratory Study

Day 3 – 14/09/2018

Day 3, Session 5: 09.00 – 10.30 (90 Minutes)			
	S5.1 - Symposium Voß, Casale & Blumenthal (3 Papers; Room 1.12)	*S5.2 - Teacher Education (Room 1.02)*	*S5.3 - Universal Design and Differentiated Instruction (Room 1.14)*
09.00 – 09.30	Behavior Problems in Inclusive Settings: Psychometric Properties of Formative Behavior Assessments	Koskela - Parents view to co-operation with teachers	Vantieghem et al. - Professional vision of inclusive education: teachers' reasoning on instruction & interaction
09.30 – 10.00		Urton et al. - What's important to implement inclusion: Indications on the basis of the theory of planned behavior	Freixenet et al. - Interrelationship of Universal Design for Learning and Differentiated Instruction: systematic review
10.00 – 10.30			

Day 3, Session 6: 14.00 – 15.30 (90 Minutes)			
	S6.1 - Teacher Behaviour (Room 1.12)	*S6.2 – Educational Practices for Students with Disabilities (Room 1.02)*	*S6.3 - Differentiated Instruction (Room 1.14)*
14.00 – 14.30	Fischer - Teacher misbehaviour in heterogeneous classrooms: The impact of self-efficacy and teaching methods	White et al. - Developing and Validating a Digital Literacy Assessment and Progression for Students with Disability	Ozdogan et al. - Drawing as a Fresh Start for Learning Ratio Concept: The Case of Maya
14.30 – 15.00	Richey et al. - When student-teacher-interactions fail - Aggressive Teacher Behaviour from different perspectives	Canonica et al. - How to improve educational practice for students with Autism Spectrum Disorder in school	Guajardo et al. - Examining the practice of within-class differentiation within the National Educational Panel Study
15.00 – 15.30	Wysujack et al. - When student-teacher-interactions fail: Patterns of teacher behaviour in the classroom	Altmeyer et al. - Effectiveness of Special Educational Measures in Integrated Mainstream Classes	Struyven et al. - Differentiated Instruction in secondary schools: beliefs, practices and concerns of teachers

Session Schedule – Poster Presentations

Postersession 1 (13/09/18, 15.30 - 16.15)

- Adjustments of the School System due to the Convention on the Rights of Persons with Disabilities. - Jennifer Lambrecht (presenting author), Stefanie Bosse, Helvi Koch, Thorsten Henke & Nadine Spörer
- Conception of the E-CIR "Measuring and supporting students' social participation" - Nadine Spörer (presenting author), Alexander Minnaert, Carmen Zurbriggen, Christian Huber, Christoph Stadtfeld, Julia Eberle, Anke de Boer, Katja Petrry & Thorsten Henke
- Constructing a New Transition Service Model for Young Children with Disabilities - Lin Hsiu Chen (presenting author)
- Descriptive exploration of the parenting experience of a mother of a twice-exceptional child - Ho Yu Lin (presenting author)
- Effects of a reading comprehension training for students with low levels of comprehension - Helvi Koch (presenting author) & Nadine Spörer
- Performance Outcomes and Well-Being of Students With and Without Learning Difficulties in Math - Linda Salihu (presenting author)
- Pre-service Teachers' Training for Inclusive Science Learning in Primary School - Frank Hellmich (presenting author), Fabian Hoya, Eva Blumberg, Susanne Schwab & Marwin Felix Löper
- Using an iPad Application to Promote Phonological and Reading Skills in Children With Down Syndrom - Jean Ecalle (presenting author), Monique Sanchez, Blandine Hubert & Annie Magnan
- Spelling Strategies of Primary School Students: A Comparison of Different Criteria of Classifications - Jessica Jaeuthe (presenting author), Katja Bodga, Stefanie Bosse, Thorsten Henke, Jennifer Lambrecht & Nadine Spörer
- Collaborative Case Reflection as a Tool to Promote Teacher Students' Beliefs about Reflexion - Karsten Krauskopf (presenting author) & Michel Knigge

Postersession 2 (14/09/18, 10.45 - 11.30)

- Adapting and Validating the SWANs Assessment and Reporting Tools for Germany - Emily White (presenting author) & Miriam Balt
- Association of symbolic and non-symbolic numerical abilities in children with and without MLD - David Braeuning (presenting author), Caroline Hornung, Danielle Hoffmann, Katharina Lambert, Sonja Ugen, Antoine Fischbach, Christine Schiltz & Korbinian Moeller
- Barriers and Enablers of Implementing/Sustaining SWPBS – First Results from a Systematic Review" - Pascal Kleeberg (presenting author), Michael Paal & Anna-Maria Hintz
- Involving Teachers and Elementary School Students in the Development of a Digital Educational Game - Janine Schledjewski (presenting author)
- Relations of co-teaching and academic achievement in inclusive primary schools - Stefanie Bosse (presenting author), Thorsten Henke & Nadine Spörer
- Students' knowledge and emotions about SEN - Anita Krausz (presenting author)
- Teachers' Classroom Behavior in Inclusive Primary Schools - A Systematic Narrative Literature Review - Katja Bogda (presenting author), Thorsten Henke, Stefanie Bosse, Jennifer Lambrecht, Jessica Jaeuthe & Nadine Spörer
- Teachers' perceptions of classroom related antinomies in an inclusive context - Johanna Pirsch (presenting author), Janine Schledjewski & Michael Grosche

Abstracts – Single Papers

Day 1 – Session 1

S1.1 – Students with Special Educational Needs (SEN)

Paper 1: Parental views on special educational needs provision for neurodevelopmental disorders
- Jo van Herwegen (presenting author), Maria Ashworth & Olympia Palikara

Abstract:
The current study examined parents' views about their child's education provision for children with Williams syndrome (WS), Down syndrome (DS), and Autism Spectrum Disorders (ASD). Aims: This cross-syndrome comparison explored the specific and general difficulties that parents of children with special educational needs and disabilities (SEND) experience about their child's educational provision. Parents of children aged 4 to 18;11 years old, including 99 with WS, 88 with DS, and 82 with ASD completed a survey. Children with DS were more likely to access mainstream settings during primary school and 1-to-1 support compared to those with WS and ASD. There were also group differences for access to specialist support but overall access to occupational therapy and mental health was low. Parental satisfaction was lowest for those with ASD but all parents mentioned concerns about professionals' knowledge of how to support children with SEND in the school. In contrast to previous studies, and despite the efforts for SEN inclusion, educational provision and satisfaction with educational provision are syndrome-specific. These results also highlight the need for training and raising awareness about the specific needs of children with neurodevelopmental disorders. In addition, our findings suggest improved communication between parents and the school is required about the type of support children with SEND are receiving.

Paper 2: School achievement of students with special educational needs and learning disabilities
- Oksana Kerbs (presenting author) & Katrin Böhme (presenting author)

Abstract:
Schools are characterized by a high level of heterogeneity, e. g. students differ in terms of socioeconomic status and cultural backgrounds as well as in cognitive and physical abilities (Scholz, 2016). In Germany, students with special educational needs (SEN) in expressive language often attend schools for special education. By contrast, students with learning disabilities (SLD) in the area of literacy skills attend regular schools (KMK, 2016). Yet, it is unclear whether disabilities in reading and/or writing and language impairments are distinct disorders (Bishop & Snowling, 2004; Catts, Adlof, Hogan & Weismer, 2005; Messaoud-Galusi & Marshall, 2010). The present study examines to what extent students with SEN in expressive language who attend different school settings and students with SLD in literacy skills differ regarding school achievement. Based on data from the *IQB-Bildungstrend 2015*, a national assessment in German secondary schools, the achievement of both, students with reading and writing disabilities (n = 856) and students with SEN (n = 80), were compared. Propensity score matching was applied to adjust for the sample sizes of n = 80 per group and to control for group differences in various educational achievement related characteristics. After matching, there were no significant differences in test scores between the groups. With reference to student immigration background, meaningful differences occur. Implications of these findings for inclusion practices in the school context will be discussed.

Paper 3: Universal Design for Self-Assessment: Perceptions of university students with learning difficulties

- Juuso Henrik Nieminen (presenting author)

Abstract:

Today's undergraduate students are increasingly more diverse in their background. At the same time, to meet financial pressures, large courses with hundreds of students are taught. Earlier studies have shown that it is possible to promote inclusion in large university courses by applying the principles of Universal Design in teaching methods and materials (e.g. Dean, Lee-Post, & Hapke, 2017). However, little is known about inclusive assessment methods in higher education. Universal Design for Assessment (UDA; Ketterlin-Geller, Johnstone, & Thurlow, 2015) aims to make assessment accessible and inclusive for all learners. I apply this theory in the field of self-assessment, which is seen reflecting the principles of UDA. Here, self-assessment is characterized as a cyclical process where internal and external feedback sources support self-reflection (Yan, & Brown, 2016). Learning requires skills that are needed to access the content; traditional mathematics exams measure mathematical knowledge but also, for example, reading comprehension. These kinds of *access skills* are known to cause bias when testing students. The research question in this study was: What kind of access skills do the students with learning difficulties need when participating the process of cyclical self-assessment? The research was a part of the Digital Self-Assessment (DISA) project at the University of Helsinki. Students taught by the DISA model are offered various feedback on their learning, which forms the base for further self-reflection. After engaging in self-assessment tasks, in the end of the course they award their own grade. In 2017, a large undergraduate mathematics course (Linear Algebra and Matrices, 400 participants) was taught with the DISA model. 41 students participated in semi-structured interviews concerning the self-assessment process. Of these students, six described having learning difficulties; these interviews were used in this study. The students self-identified themselves as having, for example, ADHD and dyslexia. A data-driven qualitative content analysis followed. Replacing exam with self-assessment decreased a need for traditional access skills apparent in testing situations. However, many skills were needed to participate the self-assessment process. Studying alone because of social barriers was reported by all of the students. This reduced external feedback sources and was also connected with biased internal feedback, thus acting as an access skill for self-reflection. These results extend the theory of UDA by discussing new kinds of inclusive assessment methods. The study underlines the importance of hearing the voice of underrepresented groups to validate the inclusiveness of large courses, as earlier studies mainly concentrate on quantitative measurements.

References:

Dean, T., Lee-Post, A., & Hapke, H. (2017). Universal Design for Learning in teaching large lecture classes. *Journal of Marketing Education*, *39*(1), 5-16.

Thurlow, M. L., Johnstone, C., & Ketterlin-Geller, L. (2015). Universal design of assessment. *Universal design in higher education: From principles to practice*, 73-81.

Yan, Z., & Brown, G. T. (2017). A cyclical self-assessment process: towards a model of how students engage in self-assessment. *Assessment & Evaluation in Higher Education*, *42*(8), 1247-1262.

S1.2 – Movement and Music

Paper 1: Movement-based prevention of emotional-behavioral disorders in elementary school children

- Anne Menke (presenting author) & Satyam Antonio Schramm

Abstract:
Only one quarter of all children meet the demands of 60 minutes daily movement activity as required by the World Health Organization (WHO; Manz et al., 2014). Especially seated activities can lead to problems in posture and movement coordination (Ludwig, 2009; Kid-Check Study, 2003). Furthermore, an increasingly important aspect is the interaction between physiological and mental development. The positive relation between general fitness, cognitive functioning and psychological wellbeing has been found in several studies (Knutson u. a., 1998; Kubesch, 2007; Kubesch, 2016). In the light of these findings, the present study evaluates the efficacy of a movement-based prevention program for emotional behavioral disorders in elementary school children (n = 60; age 4-10 years). Outcomes evaluated the participant's coordinative skills as well as their social emotional problem behavior rated by their parents in a pre-post design. The evaluated program took place in a group setting consisting of 12 weekly sessions in which children participated for 3-4 months. Statistical analyses (t-tests) revealed positive effects not only for the outcome of coordinative skills but also for social-emotional problem behavior. Results will be discussed and the concept of a revised indicated movement-based prevention program focusing attentional and self-regulational skills will be presented.

References:
Knutson, B., Wolkowitz, O. M., Cole, S. W., Chan, T., Moore, E. A., Johnson, R. C., … Reus, V. I. (1998). Selective Alteration of Personality and Social Behavior by Serotonergic Intervention. *American Journal of Psychiatry*, *155*(3), 373–379.
Kubesch, S. (2007). *Das bewegte Gehirn: körperliche Aktivität und exekutive Funktionen*. Schorndorf: Hofmann.
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Paper 2: Music, movement and learning – longitudinal intervention study in primary education

- Minna Törmänen (presenting author), Mari Tervaniemi, Eeva Anttila, Marja-Leena Juntunen, Kaise Tiippana & Tanja Linnavalli

Abstract:
The realisation of inclusion is a major challenge for educational systems. Importantly, inclusion doesn`t only refer providing an educational support for children with SEN. It should be seen more broadly as a reform that supports diversity amongst all learners, and aiming to benefit children through improvements in their learning outcomes, including their social skills, academic achievement and personal development.
Previous literature indicates positive effects of musical training in brain structure and functional plasticity (i.e. Jäncke 2009). Transfer effects have been found on academic skills (Moreno ym 2009;

Bahr & Christensen 2000) and social capability (Kirschner & Tomasello 2011). In addition, positive impacts have found of movement activities on academic skills. (i.e. Mullender-Wijnsma et al 2016).
The aim of this longitudinal intervention study (2016-2018) is to examine the impacts of added music, movement, and music-and-movement intervention on children`s academic skills and capacities (learning competencies, cognitive skills, social interaction, motivation, well-being). The approach of the study is highly inclusive, it is conducted in classroom context (3rd, 4th grades) pupils having different mother tongue and SEN status.
A pre-tests-intervention-post-tests–design with a waiting control group (N=66) is used. Experimental group takes part either in music, movement or music–and–movement interventions, which are integrated in general education thrice-a-week, for 15 minutes. The control group doesn`t receive any other instruction, all groups have arts education according to curriculum. Interventions are taught by the teachers and they are easy to implement in school environment.
As outcome measures, extensive batteries of cognitive and behavioral tests are used. There are different neurocognitive measurements of executive functions, and brain activation using EEG measurements, in addition to measurements of academic skills, social cognition, and motivation. The qualitative data include interviews with teachers and pupils. Data collection will be completed in May 2018 and first results will be presented during fall 2018.
This study applies expertise from arts education and the fields of psychology, neurosciences and special education. It is conducted collaboratively by the University of the Arts Helsinki and the University of Helsinki, as part of the ArtsEqual-project financed by the Academy of Finland/Strategic Research Council.

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S1.3 – Math and Arithmetics

Paper 1: Characteristics of the development of mathematical competence among low achievement children

- Susanne Kuratli Geeler (presenting author), Elisabeth Moser Opitz (presenting authors), Franziska Vogt, Aiso Heinze, Anke Lindmeier & Miriam Leuchter

Abstract:
Research shows that numerical competencies like counting, or numeral comparison in kindergarten are crucial for further mathematical development (Watts, Duncan, Siegler & Davis-Kean, 2014). However, mathematical development is also influenced by factors like SES, first language, cognitive ability etc. (Schuchardt, Piekny, Grube, & Mähler, 2014 or Anders et al. 2012). In addition, the concepts of kindergarten in Europe varies, ranging from a more school oriented and education based approach to an approach grounded in social pedagogy (Rossbach & Grell, 2012). Even though there is an increase of studies on the mathematical development of kindergartners, the following research gaps are identified: Firstly, it is unclear whether the tests to measure mathematical competences are suitable for longitudinal testing.
Secondly, less is known about differences between countries with a differing education system and tradition regarding kindergarten (education vs social pedagogy). Therefore, we carry out the study

in two countries. In country A, kindergarten is a part of primary school and many of the kindergarten teachers have an academic qualification. In country B, the approach in kindergarten is based on social pedagogy, and most of the Kindergarten teachers completed vocational training.
We investigate two research questions:
1) Is the test „TEDI-Math“ suitable to measure mathematical competences of kindergarten students longitudinally?
2) What is the impact of individual and contextual characteristics on the mathematical development of low achieving kindergarten students
The research design is a longitudinal study with three measurements over 1.5 years in two countries. The mathematical competence of 894 (male 457, female 437, county A 596 und country B 549) kindergarten students was measured with the test TEDI-Math (Kaufmann et al., 2009). In addition, the following variables were included:
-Individual characteristics: cognitive ability (CFT-1), first language
-Contextual characteristics: Kindergarten teachers' formation (academic or vocational training), years of professional experience, country
-Research question 1: To answer research question 1, IRT-analysis were conducted with the whole sample. The results show that the instrument is suitable to measure mathematical competences longitudinally. Only 12 out of 81 items had a low itemfit or had the problem of measurement invariance. Therefore, based on 69 anchor items, person ability could be estimated for three measurement points.
Research question 2 (sample of low achieving students at t1, n = 224). Analyses with latent growth curve models (LGM) were carried out to measure the impact of variables capturing individual and contextual characteristics on the mathematical achievement at t1 (intercept) and the mathematical development (slope).
The model fits the data well (X^2=7.31, *df*=7, *p*=0.40; *CFI*=1.00; *RMSEA*=0.02; *SRMR*=0.02). Regarding individual characteristics, it was found that cognitive ability has a significant impact on intercept as well as on the mathematical development. Language has only an impact on intercept. Regarding the contextual characteristics, it was found that the formation of the teacher did not have a significant effect. Countries differ however: students in country B had higher numerical competencies at t1 but showed less progress over time than students in country A.
The discussion outlines possible interpretations of these findings.

Paper 2: Goal orientations and arithmetic fluency in children with attention difficulties
- Henrik Husberg (presenting author), Pirjo Aunio & Markku Niemivirta

Abstract:
Children with ADHD often have lower academic performance than typical children (eg. Daley & Birchwood, 2010) and seem to focus more on demonstrating performance or avoiding failure than on learning in studies of achievement goal orientations (Barron et al, 2006; Dunn & Shapiro, 1999). However, previous studies have not differentiated hyperactivity symptoms from difficulties with attention and executive functions when studying these relationships. In this study, we address these limitations by studying the relationships between executive functions, attention, hyperactivity, arithmetic fluency, and achievement goal orientations. In addition, because these children seem to experience difficulties with initiating action or tend to give up easily when faced with difficult tasks (Olivier & Steenkamp, 2004) we also examine the role of a work avoidance orientation which has not been done in previous studies.
As part of a larger, 3-year research project studying self-regulation in primary school, children in regular education aged between seven and 12 years (*n* = 119; M_{age} = 9,66) were selected by teachers for participation in a cognitive-behavioral intervention. Criteria for inclusion were symptoms of inattention, hyperactivity and/or executive difficulties to such a degree that they impair the children's academic progress. At the time of measurement, no intervention had yet been provided and all children were included in the cross-sectional analyses. Teacher rating scales were used to assess hyperactivity, attention and executive functions (ATTEX; Klenberg et al, 2010) as well

as four aspects of achievement goal orientations (mastery, performance-approach, performance-avoidance, work avoidance; Niemivirta, 2002). Arithmetic fluency was assessed using timed tests of basic arithmetics (Koponen & Mononen, 2010; Aunola & Räsänen, 2007).
Analyses were conducted using structural equation modeling. Preliminary results indicate the level of hyperactivity positively predicted mastery, performance-approach, and performance-avoidance orientations. The level of attentional and executive difficulties predicted mastery and performance-approach orientations negatively, and work avoidance positively. Arithmetic fluency was negatively predicted by the level of attentional and executive difficulties, and positively by the level of hyperactivity. Arithmetic fluency did not significantly predict any goal orientations when controlling for age and gender. These results indicate differences in how specific difficulties predict academic achievement and achievement goal orientations. Motivational interventions are common for children with attentional difficulties and our results show that these interventions need to take into consideration the specific type of difficulties.

Paper 3: The connection between student's arithmetical difficulties and socioemotional skills in 5th Grade

- Airi Hakkrainen (presenting author) & Kristiina Lappalainen

Abstract:
Achieving fluent arithmetical skills is one of the core aims during primary school in order to ease the learning of more complex mathematics later on (Jordan et al., 2017). In order to succeed in their studies, students need also to learn to adjust their behavior in classroom and peer context (Denham & Brown, 2010). Students with learning difficulties often struggle with their school work (Hakkarainen et al., 2015), and, thus, experience more negative emotions associated to learning. In this study, instead of examining socioemotional problems, the aim is not only to assess deficits in students' socioemotional skills but also their strengths. To our knowledge, the connection between students' emotional and behavioral strengths and arithmetic difficulties has been studied quite rarely.
Research Questions: In this study, we examined, first, to what extend are student's self-ratings and teacher ratings in students' emotional and behavioral strengths in connection to students' arithmetic difficulties in fifth grade. Second, the possible differences in this connection between girls and boys were viewed.
Methods: The data are part of the Eastern Finland Education Development Project (ISKE). Participants were fifth grade students (N = 733), and their classroom teachers (N = 54). Arithmetic difficulties were assessed with a standardized test of basic arithmetic skills (RMAT; Räsänen, 2004) and students' emotional and behavioral strengths with BERS-2 rating scale (Epstein, 2004).
Structural equation modeling was used as an analyses method. Confirmatory factor analyses with regression model were used in examining the connection between arithmetic difficulties and BERS-2 ratings. Differences between girls and boys were investigated with multigroup-analysis.
Results: In SEM model, the main findings suggest that the more a student has arithmetic difficulties, the lower both students themselves and their teachers rate student's intrapersonal strengths and school functioning. In addition, the more a student has arithmetical difficulties, the higher a student rates his or hers family involvement. The results and the implications of these results will be discussed more in detail.

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Day 1 – Session 2

S2.1 – Symposium Knickenberg

The Perceptions of Inclusion Questionnaire (PIQ) – International extensions and perspectives
- Margarita Knickenberg (Chair) & Ineke Pit-ten Cate (Discussant)

Abstract:
The Perceptions of Inclusion Questionnaire (PIQ; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015) – based on the German Questionnaire for Assessing Dimensions of Integration of Students (FDI 4-6; Haeberlin, Moser, Bless, & Klaghofer, 1989) – is used to assess three central dimensions of school inclusion. This short questionnaire is applicable to students in grades three to nine and addresses three subscales; each of them includes four items operationalising the students' emotional attitudes towards school (emotional inclusion), their social relationships with other students (social inclusion) and the students' perceptions of their academic abilities (academic self-concept). The PIQ shows excellent psychometric properties (Zurbriggen, Venetz, Schwab, & Hessels, 2017). Further, it is available in more than ten languages and in three versions, viz., the students', parents' and teachers' versions. Due to its brevity, the quality standards and its linguistic simplicity, the PIQ can be applied not only to inclusive research issues, but also to practical implementations.
This symposium aims to present and discuss different international extensions and perspectives of the PIQ use. The first presentation deals with the examination and validation of a newly developed Finnish version of the PIQ. The second considers an adapted PIQ version for pre-schoolers and first year students in Switzerland. The third presentation deals with the question whether or not the PIQ can be administered to children with special educational needs concerning learning in inclusive and special classes in Switzerland and Germany. The fourth is about the agreement of four different perspectives – student, teacher, mother and father – concerning the three dimensions of inclusion in Austrian schools. To conclude this symposium, the discussant will pick up the central points and perspectives of all four presentations and discuss them against the current theoretical and empirical background.

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Paper 1: Assessing dimensions of inclusion–Measurement invariance between students with / without disabilities

– Margarita Knickenberg (presenting author), Carmen Zurbriggen, Martin Venetz, Susanne Schwab & Markus Gebhardt

Abstract:

Approximately 40% of all students with Special Educational Needs (SEN) in Germany are affected by learning difficulties (see Bildungsbericht [National Report on Education], 2014). In general, students with learning difficulties often exhibit lower intelligence, lower academic achievement, lower attention capacity as well as lower reading and language comprehension than their classmates without SEN (e.g., Gruenke, 2004).

It is hence an important issue of empirical research on teaching and learning to apply appropriate measurement instruments, to compare academic, social and emotional outcomes of students with and without learning difficulties. Therefore, we wish to outline the importance of measurement invariance of measurement instruments, particularly when comparing outcomes of students with and without SEN in the field of learning.

For this purpose, fourth- through sixth-graders were asked to complete the German version of the Perceptions of Inclusion Questionnaire (PIQ; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015). The questionnaire consists of four short and easily comprehensible Likert-type items for emotional inclusion, social and academic self-concept. The PIQ was administered to N=675 students (M_{age}=11.91 years, SD=1.34) with learning disabilities from Germany and Switzerland. In detail, the sample consists of 348 students of special classes in Germany, 129 students of special classes in Switzerland and 189 students who attend inclusive classes in Switzerland. Confirmatory factor analyses and measurement invariance analyses were computed in Mplus (Muthén & Muthén, 1998–2017) referring to the WLSMW estimator and theta parameterisation.

First of all, two comparative confirmatory factor analyses – one model with negative-wording factor and one without – were calculated for the sample in total. The results indicate that the model including a negative-wording factor [χ^2(48, N=675)=117.23, p<.001; RMSEA=.46; CFI=.987] shows a better model fit in contrast to the model without a negative-wording factor [$\Delta\chi^2$(3, N=675)=44.98, p<.001]. Subsequently, measurement invariance models by means of multi-group analyses were specified for all three subsamples. Configural measurement invariance [χ^2(48, N=675)=206.83, p<.001; RMSEA=0.44; CFI=.989] as well as metric measurement invariance [$\Delta\chi^2$(20, N=675)=18.43, p=.559] can be confirmed. However, the scalar model does not fit the data as well as the metric model [$\Delta\chi^2$(44, N=675)=132.46, p<.001]. As the differences between the two models are marginally concerning the CFI (ΔCFI=.012) and RMSEA (ΔRMSEA=.012), measurement invariance for all the three subgroups can be validated. Therefore, one can assume that the PIQ can be administered to students with learning disabilities both in special and inclusive classes.

Moreover, comparisons of means indicate that students in special classes both in Switzerland and Germany do not differ regarding the three dimensions of inclusion. Swiss students from inclusive classes, however, exhibit lower self-concepts than their peers in special classes at a significant level (ΔM=-.35; z=-4.69, p<.001).

Since the effect of the negative-wording factor is less pronounced for students in inclusive classes in contrast to students in special classes (ΔM=-.43; z=-2.45, p<.014), there seems to be a methodological impact. In order to assign these findings to the current empirical research, the results of our study will be discussed.

Paper 2: Perceptions of Inclusion Questionnaire in Finland–Adaption and examination of the student version

- Teija Koskela (presenting author), Margarita Knickenberg & Sinkkonen Hanna-Maija

Abstract:

Specialized instruments are necessary to capture and to listen to the voices of children, especially in inclusive education. Children's experiences should be recognized both in research and in practical schoolwork as a starting point to develop inclusive schools. Adults' and professionals' interpretations of everyday experiences do not always correspond with children's experiences (Messiou, 2002, 2006). Therefore, appropriate instruments are required to measure the child's perspective concerning different dimensions of inclusion. The Perceptions of Inclusion Questionnaire (PIQ; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015) represents such a possible instrument in educational contexts. This questionnaire is already available in several languages, nevertheless, the Finnish version's examination and validation is currently missing.

This paper pursues the objective of examining and validating the Finnish version of the PIQ in Finnish compulsory education. In order to compare the adapted Finnish version with the PIQ's original German version, the exploration of measurement invariance is another aim of this paper.

The data acquisition of the Finnish sample is still going on at this point in time. So far, *N*=127 third and fourth graders in inclusive schools in Finland were asked to complete the Finnish version of the PIQ (we anticipate a total sample of approximately 350 students in May 2018).

For the current Finnish sample, an initial examination of the factorial structure – as part of exploratory factor analyses – suggests a three-factorial structure of the twelve items. The scales' internal consistencies have been evaluated using Cronbach's Alpha. The results indicate reliable measurements of social inclusion, emotional inclusion and academic self concept from Finnish students' perspectives ($.72 \leq \alpha \leq .83$).

To contrast the adapted Finnish and the initial German version concerning the three dimensions of inclusion in schools covered in the PIQ, all three subscales have to show measurement invariance. A sample of students from inclusive primary schools in Switzerland has already been collected to validate the German version (see Zurbriggen et al., 2017) which will serve as comparison group. As soon as the Finnish sample is completely collected, confirmatory factor analyses and multi-group analyses will be computed in order to compare the results to those of the German version.

Paper 3: Measuring perceptions of social inclusion–Development of PIQ for kindergartens and first grades

- Reto Luder (presenting author) & Andre Kunz

Abstract:

In inclusive education, social inclusion of children with special educational needs is an important issue. Children with special educational needs are often not very well included among the students in class (Huber & Wilbert, 2012). Therefore, it is important to know more on the one hand about various aspects of social inclusion and on the other hand about the factors affecting social inclusion of students with and without special needs in inclusive classrooms.

Social inclusion is usually measured with sociometric methods, asking the students whom of their peers they like or dislike, using this information to determine the social status of a student within his peer group. Those methods, however, do not encompass the subjective views of the students concerned. Nevertheless, it is important to know the subjective perception of social inclusion by the children themselves. Previous studies show that those subjective views and feelings are not necessarily in line with the results of sociometric measures to determine social inclusion in class (Martschinke, Kopp, & Ratz, 2012).

The Perceptions of Inclusion Questionnaire (PIQ) represents an instrument to measure the subjective perception of social inclusion of students among their peers (Venetz, Zurbriggen, & Eckhart 2014; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015). The questionnaire consists of a set of twelve text-items that have to be answered by ticking a box on a four-level Likert-Scale. While the instrument is valid and reliable for children who are able to read and write, in its current form it is not suitable for children in kindergarten and first grade who are not yet able to fill in a paper-pencil questionnaire on their own.
The aim of the present study was therefore to adapt the instrument and to develop and test a form of the PIQ that can be used in kindergarten and first grade. In two empirical studies with 219 kindergarten and first grade students (age of 4 up to 7 years) in Switzerland, a version of the PIQ for younger children without reading competences was developed (N=177; Year 2015/16) and tested (N=42, Year 2017/18). The children were asked the items in face-to-face interviews, supported by visualization of the four-level Likert-Scale and practical material. The standardized form of PIQ-interviews – standardized after an experimental phase of development – proved as feasible in kindergarten and in school context. The results of the test-group show satisfying reliabilities of the subscales "social inclusion" (α=.71) and "emotional inclusion" (α=.75). It is concluded that, in the current form as individual interview, the PIQ can – with minor restrictions – also be used with younger children in kindergarten and first grades.

Paper 4: Consistency of inclusion assessment: Contrasting students' reports with teacher and parents ratings

- Carmen Zurbriggen (presenting author), Martin Venetz, Susanne Schwab & Mike Trauntschnig

Abstract:
Referring to current studies relating to inclusive education, one can see that studies concentrated on students' academic achievement. In the previous decades, however, not only achievement variables but also socio-affective aspects have often been analysed. In tune with the findings of Haeberlin, Moser, Bless, and Klaghofer (1989), three variables are especially in the focus of socio-affective outcome variables of inclusive education: academic self-concept, social inclusion and emotional inclusion (i.e., school well-being). The aim of this study is to investigate the perspectives of students, parents (mothers and fathers) and teachers with respect to these three variables. Our research question focuses on the consistency of the different ratings.
Therefore, a multiple-indicator correlated trait-correlated method model with one method factor less than methods (CT-C[M-1]; Eid, Lischetzke, Trierweiler, & Nussbeck, 2003) was employed. To assess emotional inclusion, social inclusion and academic self-concept, the German version of the Perceptions of Inclusion Questionnaire (PIQ; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015) was administered to students, their parents and teachers from 48 primary schools in Austria. Data were collected from 721 students (age = approx. 10.5 years).
The results indicate that the PIQ represents a reliable instrument for capturing social inclusion, emotional inclusion and academic self-concept from students', parents' and teachers' perspectives (.77≤ω≤.97). The multitrait-multi-method analysis shows high to moderate correlations between the four different perspectives for the three subscales (.32≤r≤.69, p<.01). With regard to the academic self-concept (.59≤r≤.69, p<.01), the correlations were higher compared to social inclusion (.44≤r≤.55, p<.01). Concerning emotional inclusion (.32≤r≤.53, p<.01), the correlations among the four perspectives were a bit lower. The results of the CT-C(M-1) model indicate a substantial overlap of the four perspectives. Finally, implications for assessing the effectiveness of inclusive education, further research and practice will be discussed.

S2.2 – Symposium Aunio

The effects of cognitive and mathematical skills interventions on young children's learning
- Pirjo Aunio (Chair) & Annemie Desoete (Discussant)

Abstract:
Educational research-based interventions have been found to be effective in enhancing academic performance, especially in early grades and for at-risk students (Dennis et al., 2016). The aim of this symposium is to report and discuss about the effects of cognitive and mathematical interventions on children's learning. The quasi-experimental research design were applied in all four papers. The studies were done with various children's groups (average performing, low performing, low socio-economic status, SES) and in different educational contexts, which offers important viewpoints for comparison. In three papers (Korhonen et al.; Lopez-Pedersen et al.; Aunio et al.) ThinkMath intervention materials were used in three countries (Finland, Norway, South Africa), which provides valuable possibilities to evaluate the effects of intervention material. In first paper (Baeyens et al.) the intervention focus on executive functions, which are also used in second paper (Korhonen et al.) as prediction variable.
The first paper by Baeyens et al. presents the results from a study investigating the effects of educational executive functions intervention on performance in children with low socio-economic status. The HTKS, BRIEF and SDQ were used as outcome variables. The second paper by Korhonen presents a research results from a study which investigate effects of the ThinkMath intervention on low performing South African first graders' early numeracy skills while controlling for individual differences in language skills, executive function (EF) skills, and prior learning opportunities. The third paper by Lopez-Pedersen et al. presents a randomized controlled trial where short and long term effects of a numeracy intervention (ThinkMath) for low performing children in first grade were studied. The fourth paper by Aunio presents results from a set of intervention studies using early numeracy intervention programs (ThinkMath) applying explicit instruction principle.
These papers offers several viewpoints to discussion about which intervention approaches serve best children with different needs for educational support. Results from different educational contexts challenges us to think what is universal (and what is not universal) in children's developing cognitive components and mathematical skills.

Paper 1: The effectiveness of an EF-intervention program for early childhood education.
- Dieter Baeyens (presenting author), Sanne Feryn, Johan De Wilde & Jantine Spilt

Abstract:
Theoretical background and research questions: The negative impact of low socio-economic status (SES) on children's school outcomes is high and one of the key explanations for this achievement gap is the lagging executive functions (EF) of low-SES children (Fitzpatrick et al., 2014). In Belgium, 98.7% of all 3-year-olds are enrolled in free of charge early childhood education (ECE). ECE classrooms can provide powerful experiences that can either hinder or boost children's EF. In this study we set out to determine whether an ECE EF-intervention can boost the EF-development of all children but in particular those of low-SES children.
Methods: In a quasi-experimental design with a pre-post interval of 6 months, 139 3-6 year old children were enrolled in the experimental condition and 85 in the control condition. In each condition about half of the children were raised in a low-SES family. In the experimental condition, teachers were trained in the EF-program (a 14-week program with targeted EF-activities and instructional/behavioral support by the teacher). Schools in the control condition where on a waiting list for training. The HTKS, BRIEF and SDQ were used as outcome variables.

Results and interpretation of findings: Findings indicate that in the control condition the poverty gap in EF between low- vs non-low-SES children in ECE is 0,6 standard deviation and that this gap increases up to 1,0 standard deviation after 6 months. In the experimental condition, however, the poverty gap in EF remained stable. These findings suggest that our ECE EF-intervention has a preventive effect but did not normalize EF-development. No effects on SDQ were found.

Paper 2: Early numeracy intervention for South African first graders with mathematical learning difficulties

– Johan Korhonen (presenting author), Pirjo Aunio, Lara Ragpot & Minna Törmänen

Abstract:
Theoretical background and research questions: Educational research-based interventions have been found to be effective in enhancing mathematics performance, especially in early grades and for at-risk students (Dennis et al., 2016). At the same time, previous research has shown that individual differences in language skills, cognitive skills, and prior educational opportunities are related to children's mathematical development and intervention effects (Bailey et al., 2016). Consequently, the aim of this study was to investigate effects of the ThinkMath intervention on low performing South African first graders' early numeracy skills while controlling for individual differences in language skills, executive function (EF) skills, and prior learning opportunities. More specific research questions:
1. How does the intervention effect vary across early numeracy skills (counting- and relational skills)?
2. How do prior educational opportunities, language and EF skills predict the level and development of early numeracy skills?
Methods: Participants. A total of 267 first graders (132 girls) from 14 different schools from the Gauteng province (South Africa) participated in the study. Based on pretest results the children were divided into three groups: intervention (N=40), low-control (N=32), and average-control (N=195).
Measures. Early numeracy skills were assessed using an English version of the ThinkMath test (Aunio & Mononen, 2012). Language skills were measured with a listening comprehension test (Ragpot & Brink, 2016). In addition, information regarding home language was reported by educators. EF skills were measured with the Flanker test (Roebers & Kauer, 2009) and prior educational opportunities were operationalized with kindergarten attendance (yes/no).
Intervention. This small-group intervention program (Aunio & Mononen, 2012) focused on numerical relational and counting skills and applied explicit instruction (i.e., sequencing of instruction in to logical sequences, providing clear presentation of subject matter, guided practice, independent practice and using CRA teaching materials). Intervention children participated in supplementary sessions twice a week for approximately 8 weeks. The study applied a pre-, post-, and delayed test design.
Results and interpretation of findings: To answer our research questions, we utilized latent growth curve modeling. The intervention group developed more in their relational skills compared to the low-control group when controlling for individual differences in language skills, EF skills, and prior educational opportunities [$\chi^2(8) = 14.67$, $p = .07$, CFI = .99, TLI = .96, RMSEA = .06]. Listening comprehension, EF skills, and kindergarten attendance positively predicted the initial level (intercept) of relational skills but not the development (slope). The intervention group developed more in their counting skills compared to the average-control group [$\chi^2(8) = 25.18$, $p < .001$, CFI = .97, TLI = .90, RMSEA = .09]. Listening comprehension and kindergarten attendance positively predicted the initial level (intercept) of counting skills. Higher EF skills and not attending kindergarten were related to bigger growth in counting skills.
In sum, the intervention program had a positive effect on low-performing first graders' early numeracy skills. Prior individual differences in language skills, EF skills, and early educational

opportunities mostly explained the initial level of early numeracy skills with the exception of EF skills also predicting counting skills development.

Paper 3: Improving Numeracy Skills in Low Performing First Graders: A Randomized Controlled Trial

- Anita Lopez-Pedersen (presenting author), Riikka Mononen, Pirjo Aunio & Monica Melby-Lervåg

Abstract:
Theoretical background and research questions: Well-functioning early numeracy is a foundation for later mathematical skills (Aunio & Niemivirta, 2010; Jordan, Kaplan, Ramineni, & Locuniak, 2009), which in turn is a vital gate to STEM subjects but also for employment in a society where the demands for mathematical literacy are steadily increasing. Learning to master early numeracy skills is for most children a natural process, but not all children develop this knowledge spontaneously and many children struggle developing this. Unfortunately few studies have examined in a well-controlled way what can be done to prevent and ameliorate difficulties. Here we present a randomized controlled trial where we have examined the effects of a numeracy intervention for low performing children in first grade.
Methods: Parents of children in 1st grade from two municipalities outside Oslo were asked for their consent to participate in the study. In the first phase early numeracy skills of first grade students (N = 369, 20 classrooms, 9 schools) were screened with ThinkMath test (Aunio & Mononen 2012 a & b). The ThinkMath screening test measures of counting, relational and basic arithmetic skills. The cut off score to be identified as low performing was below 30th percentile in ThinkMath total score, as a result 120 students were identified as low-performers. These students were randomly allocated to intervention and control groups. In this study assessments of children's skills were conducted at four time points: pre-intervention, after eight weeks of intervention, after six weeks of boost phase, and six months after intervention. In addition to early numeracy skills, non-verbal IQ and decoding skills were measured at all time points. Students in the intervention group were taught three hours a week for eight weeks and an additional boost phase for six weeks (one hour a week). Intervention materials originated from Finnish ThinkMath materials (Mononen & Aunio 2012a, b) and targeted counting skills and counting strategies, estimating numerosity and word problem solving. Intervention materials applied explicit instruction (i.e., sequencing of instruction in to logical sequences, providing clear presentation of subject matter, guided practice, independent practice and using CRA teaching materials).
Results and interpretation of findings: The preliminary analysis show that after 8 weeks of intervention, the intervention group showed significantly greater results in counting and mathematical word problem tasks than the control group. Also gains were largest in counting and mathematical word problems tasks in intervention group. In EARLI SIG 15 meeting we will present the main analysis with cognitive and early numeracy variables. Based on this preliminary analysis with data from randomized control trial with ThinkMath intervention material it is possible to state that early numeracy intervention applying explicit instruction principles was beneficial for supporting the development of early numeracy in skills in low performing.

Paper 4: The effects of explicit early numeracy intervention in K-2 students with low performance

- Pirjo Aunio (presenting author)

Abstract:
Theoretical background and research question: Dennis et al. (2016) replicates the results of previous meta-analysis concerning group-based interventions for children with mathematical learning difficulties. These studies show that interventions that used explicit instructional procedures with students with learning difficulties had larger effect sizes compared to other

instructional approaches (Baker et al., 2002; Codding et al., 2011; Gersten et al., 2009; Kroesbergen & Van Luit, 2003; Kunsch et al., 2007; Maccini et al., 2007; Mononen et al., 2014; Zhang & Xin, 2012). Explicit interventions included: sequencing of instruction in to logical sequences, providing clear presentation of subject matter, guided practice, independent practice and evaluating student learning on a regular basis, using of Concrete-representational-abstract (CRA) teaching materials and peer-assisted instruction. The aim of this study is to investigate if the ThinkMath intervention programs with explicit instruction are effective in enhancing the level of performance in children grades K-2 with low early numeracy skills.
Methods: Participants. Data sets from kindergarten, first and second grade were combined, together there were 384 children. The cut-off criteria – 1.0 SD below the age group mean score in mathematical performance Time 1 assessment was applied to identify children with low performance (n=80). In EARLI sig 15 we will be able to report results from additional data (n=389).
Measurements. Mathematical skills were assessed with a group-based paper-and-pencil in all age groups (Aunio & Mononen 2012a, b, & c). The test measures: (a) numerical relational skills; (b) number sequences both forward and backward; (c) counting skills; and (d) word problems. Teachers did the assessment in their own schools.
Intervention. In this study ThinkMath: Mathematical skills intervention programs for kindergarten, first and second grade were used (Mononen & Aunio 2012a, b, c). They include 12-15 lessons of around 45 minutes. Intervention programs focused on age relevant early numeracy skills and applied explicit instruction (i.e., sequencing of instruction in to logical sequences, providing clear presentation of subject matter, guided practice, independent practice and using CRA teaching materials). Intervention children participated supplementary sessions twice a week for approximately 8 weeks.
Procedure. Teachers received free of charge professional training days (3) for participating in the study. The low performing children were divided into control (n=16) and intervention groups (n=64) in each school/kindergarten randomly. All children's mathematical skills were assessed before intervention (Time 1), immediately after intervention (Time 2) and one month after the intervention (Time 3).
Results and interpretation of findings: The preliminary results show that there was a statistical significant difference in mathematical performance between groups in Time 2 [F (2,327) = 91.73, $p < .001$] and Time 3 [F (2,338) = 114, 37, $p < .001$]. However, there were no significant differences in mathematical performance between low performing children in intervention and control groups at the post- ($M_{control}$= -1.43, $SD_{control}$=0.69; $M_{intervention}$=-1.07, $SD_{intervention}$=0.91) or delayed-test ($M_{control}$= -1.32, $SD_{control}$= 0.99; $M_{intervention}$=-1.20, $SD_{intervention}$=0.97, standardized values). With the analysis conducted for this paper it was not possible to confirm that explicit instructional approach was effective in supporting the early numeracy skills learning of low performing children.

S2.3 – Symposium Börnert-Ringleb & Kulawiak

Measuring and Investigating Social Inclusion
- Moritz Börnert-Ringleb (Chair), Pawel R. Kulawiak (Chair) & Christoforos Mamas (Discussant)

Abstract:
Current research findings show an increased risk of social exclusion for children with special educational needs (SEN) in mainstream schools (Krull et al. , 2014). However, systematic reviews have concluded that some studies also report positive results in relation to the social inclusion of children with SEN (Koster et al., 2009). This contradictory evidence could be attributed to the way social inclusion is operationalized and measured, e.g., sociometric studies have overwhelmingly

produced negative results while studies using social cognitive mapping have shown mixed to positive results (Elias et al., 2016). Social inclusion is a multidimensional construct which describes manifold aspects of interpersonal relationships and psycho-social feelings (Koster et al., 2009). Thus, an unidimensional assessment is an insufficient conceptualization and simplifies the multidimensional nature of social inclusion.
Another criticism of social inclusion research is the lack of theoretical framework for explaining social inclusion and exclusion of children with SEN (Chambers & Kay, 1992). Most of the studies compare the social inclusion of children with and without SEN. This type of studies provides a description of the social situation of both groups, but it neither answers the question why the social inclusion differs between the two groups nor how to promote the social inclusion of children with SEN. Just a minority of studies pay attention to variables of potential relevance in the development of social relations, e.g. teacher attitudes or the role of specific child behaviors.
In light of the lack of sufficient conceptualization of the construct of social inclusion, the symposiums' contributions focus on comparing different methods of assessing social inclusion. Paper 1 examines the social inclusion of children with SEN and compares different measurement approaches (e.g., peer ratings vs. self-perception of social inclusion). Paper 2 compares two different sociometric techniques and discusses the methodological impact on the study of social inclusion. In view of the lack of theoretical framework for explaining social inclusion, the symposium's contributions also focus on a theory-driven explanation of social inclusion. Paper 3 examines the importance of social group norms for social inclusion in school classes and thus focusses on the class as a normative reference group. Paper 4 examines, in the sense of social referencing theory, the effects of teachers' feedback and child's school performance on social inclusion.

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Paper 1: The social participation of pupils in inclusive classrooms from a multidimensional perspective

- Ariana Garrote (presenting author) & Elisabeth Moser Opitz

Abstract:
Many studies claim that social participation in inclusive classrooms is difficult for pupils with special educational needs (SEN). They show that these pupils are less chosen as friends or seating neighbours (Krull, Wilbert, & Hennemann, 2014), and are more rejected and less popular than their classmates (Huber & Wilbert, 2012; Koster, Pijl, Nakken, & van Houten, 2010). However, drawing general conclusions on the social participation of pupils with SEN is not beyond doubt because the construct is often assessed unidimensional and studies differ in their choice of dimension. Thus, we assume that a multidimensional assessment, as suggested by Koster, Nakken, Pijl, and van Houten (2009), could help to gain a more differentiated view and comparable findings on the social participation of pupils with SEN and of their peers. This approach, which includes the dimensions of

friendships, interactions, social acceptance, and self-perception, was implemented on a sample of inclusive classrooms in Switzerland.
Research Question
How does the social participation of pupils with SEN and of their peers appear in inclusive classrooms from a multidimensional perspective?
Method: In a sample of N = 692 pupils (46 with SEN) in 38 inclusive classrooms (grade 1-4), social participation was assessed along four dimensions: friends (reciprocal play partner nominations), interaction partners (play partner nominations), social acceptance (peer ratings), and perceived social acceptance (five items). A comparison between pupils with SEN and their peers was made regarding the number of friends and interaction partners, the number of highest (popularity) and lowest peer ratings (social rejection), as well as the average score of the items on perceived social acceptance.
Results: In terms of social acceptance pupils with SEN were more socially rejected and less popular than their classmates. No differences were found regarding the perceived social acceptance, the number of friends and the number of interaction partners.
Discussion: Whether pupils with SEN have difficulties in their social participation compared to their peers depends on the dimension that is investigated (i.e., friends, interaction partners, social acceptance, and perceived social acceptance). This result speaks for the use of a multidimensional approach when studying and assessing social participation.

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Paper 2: Limitations in Social Status Classification
- Pawel R. Kulawiak (presenting author) & Jürgen Wilbert

Abstract:
Background: Neglected children are, in the sense of sociometric peer nominations, not often liked and not often disliked by their peers (Brown, 2015). This kind of social information is known as social status (Terry & Coie, 1991). Evidence concerning internalizing behavior of neglected children is as yet equivocal (Rubin, Hymel, Lemare, & Rowden, 1989). On the one hand, neglected children are considered to have higher levels of internalizing symptoms (Hecht, Inderbitzen, & Bukowski, 1998), and, on the other hand, further studies have found no supportive evidence for neglected children's increased vulnerability to internalizing behavior problems (Cantrell & Prinz, 1985). Rubin et al. (1989) mention the disunity of different social status classification rules as one potential reason for the contradictory research results. Hence, contradictory evidence concerning the internalizing behavior of neglected children could possibly be attributed to methodological ambiguities across social status classification procedures. Thus, the focus of the paper at hand is on identifying methodological limitations of social status classification methods and introducing a new procedure to quantify a child's social status.
Research Questions

What methodological limitations are associated with social status classification methods?
Are the limitations in social status classification possibly related to contradictory research results?
How can a new social status procedure overcome current limitations in social status classification?
Methods: The performance of the social status classification method is compared to the new social status procedure (using some empirical exemplary data).
Results: Since arbitrary cutoffs (sociometric data) provide the basis for the categorical classification of social status groups, the classification approach lacks precision and consistency. Furthermore, social status classification discounts the multidimensional nature of a child's social status (social status group affiliation is mutually exclusive), disregards between-peer-group differences in the sociometric data, and offers a peer-group-norm-referenced interpretation. This kind of vague social status information might be problematic in the prediction of child behavior (e.g., internalizing behavior). By contrast, the newly introduced social status extreme points procedure describes a child's social status in terms of the child's adaptation to sociometric extreme points. The continuous social status extreme points variables offer a criterion-referenced interpretation (multidimensionality: degree of adaptation to each and every sociometric extreme point).

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Paper 3: Social norms and their influence on social inclusion in primary school classrooms - Anja Schaefer (presenting author), Christoph Müller, Jürgen Wilbert

Abstract:
Already in primary school children spend a lot of time at school and in their class. Therefore the class becomes an important context for academic learning and furthermore for social experiences through interactions with peers. However, in almost every class there are children who are rejected and excluded by their peers (Fend, 2006; Ulich, 2001). Research has mainly investigated social exclusion as a result of individual differences regarding personality traits (Killen, Mulvey & Hitti, 2013), while the importance of the group context and especially of social norms are often not explicitly considered. This is surprising because even younger children justify their decision to exclude another child also by social norms (Killen & Stangor, 2001). Social norms provide guidance on how to behave and act in a group and become criteria for acceptance and rejection. Social norms negotiated by students may also differ from social norms set by school (Petillon, 1980). In view of these facts questions arise about what social norms are important for primary school students to be popular in their class and whether classes differ regarding the importance of social norms for popularity. These research questions are addressed in the present study. For this purpose a questionnaire was designed. Until now 221 grade 3 to 6 students (mean age: 9,97 years, 52,04% female) in 15 primary school classrooms participated in the study. Preliminary descriptive findings indicate that social norms such as sportiness or having „cool clothes" seems to be more important for popularity than academic achievement for the children surveyed so far across all

grades. Within the presentation descriptive findings as well as final results of multilevel analysis examining the influence of social norms on popularity will be presented and critically discussed.

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Paper 4: Effects of School Achievement and Teacher Feedback on Social Acceptance

- Philipp Nicolay (presenting author) & Christian Huber

Abstract:
Both, national and international studies show that in inclusive schooling settings children with special educational needs (SEN) are more likely to be rejected (Kavale & Forness, 1996; Huber & Wilbert, 2012). Focusing on rejected children and their classmates, the relationship between school achievement and social acceptance is a well-documented finding. It's still unclear, though, whether social rejection is a result of underperformance in school or, vice versa, underperformance in school is a result of social rejection.
However, further studies suggest that the role of teachers also has to be taken into account in explaining social acceptance of children (McAuliffe, Hubbard & Romano, 2009). Based on social referencing theory (Feinman, 1992), teachers' feedback can be understood by fellow classmates as a social reference for the teacher's social relationship with a particular child (Webster & Foschi, 1992). Children who receive positive feedback by teachers thus would be more likely to be socially accepted by their classmates than those who receive negative feedback. Previous studies suggest this relationship, however, don't consider present feedback research (White & Jones, 2000).
The present study tries to clarify these findings and will present first results of two pilot studies of a research project funded by *Deutsche Forschungsgemeinschaft (DFG)* examining the influence of school achievement and teachers' feedback on social acceptance in an experimental setting.
As part of the project several animated videos were produced and tested. N_1=90 and N_2=120 children at primary schools participated in two experiments using a pre-post-design. Experiment I examines the question if manipulating school performance of a fictional schoolchild influences the social acceptance of this particular child. Experiment II examines the question how teachers' feedback influences the social acceptance of a fictional schoolchild.
Both experiments first introduced a fictional schoolchild and asked for participants' initial social acceptance. In the experimental condition of Experiment I participants watched several scenes in a school day of the fictional schoolchild representing different aspects of school performance. Participants were randomly assigned to one level of school performance (high / average / low). In the experimental condition of Experiment II participants watched the same scenes with the schoolchild showing an average performance. However, for each scene teachers' feedback was added. Participants were randomly assigned to one of four feedback conditions with each being a combination of the two factors feedback valence (positive / negative) and feedback focus (personality / task-oriented). Both experiments concluded with participants again being asked for the social acceptance of the fictional schoolchild.
Data analysis is performed with 3x2 and 2x2x2 repeated measures ANOVA with school performance and gender (Experiment I) and feedback valence, feedback focus and gender (Experiment II) as between-subject-factors, respectivley.

Following from previous studies (Huber, Gerullis, Gebhardt & Schwab, 2018), we are expecting significant main effects for school performance and feedback valence as well as a significant interaction effect between feedback focus and feedback valence. Results will be presented and discussed in context of the wider research project.

S2.4 – Experience with Disabilities / Meaning of Disability

Paper 1: Sustainable Learning - Capabilities not disabilities
- Anne Bellert (presenting authors), Lorraine Graham, Jeanette Berman & Lisa McKay-Brown

Abstract:
Over the past 50 years or more, inclusive education has been developed as a construct with authentic concepts and rich theories. Yet, it is nonetheless, inarguable that the concept of inclusion, in relation to disability in social and educational contexts, rests on notions related to exclusion. Inclusion requires 'us' to include 'them'. This paper aims to present a discussion of the conceptual framework that supports Sustainable Learning (Graham, Berman & Bellert, 2015), a contemporary approach for inclusive education that has an essential focus on capability, not disability, and positions student diversity as strength and opportunity that educators must to acknowledge and respond to. Sustainable Learning provides a fresh, future-focused perspective for inclusive education, one that seeks to circumvent the exclusion inherent in inclusion. The Sustainable Learning framework has been developed within the context of ecological systems theory, the social theory of disability and capability theory, and accordingly it provides a fresh, future-focused perspective for inclusive education, one that seeks to circumvent the exclusion inherent in inclusion. However, Sustainable Learning is more than a new theoretical position on inclusive education, as it also proposes two key models to support pedagogy – a framework for identifying student capabilities and another for supporting teachers to be responsive to the diversity of student learning capabilities and needs. To date the Sustainable Learning framework has been successfully used in teacher professional learning initiatives in Australia, New Zealand and Ecuador.

Paper 2: Experiencing transition to higher education: a comparison of students with and without disabilities
- Florence Dangoisse (presenting author) & Frédéric Nils

Abstract:
Theoretical background: In higher education, there is a growing concern regarding inclusion of students with disabilities, especially because of the specific challenges they may face (Feldman, 2004; Garrison-Wade, 2012; Hong, 2015; Morina, 2017; Punch, Creed, & Hyde, 2006; Reed & Curtis, 2006). In a previous qualitative study, Dangoisse and Nils (2017) observed that students with physical and sensory disabilities lived the transition from high school to higher education as "a big jump" (1), a personal challenge (2), a period influencing self-affirmation (3) and a favorable time to question the place of one's disability (4). Participants also reported the importance to find a balance between formal and informal support (5) and of social sharing to challenge preconceived ideas about disabled persons (6).
Objectives: This study aims (1) to replicate these previous findings and (2) investigate how this experience differ from the ones of students without disabilities.
Method: Two focus group of bachelor university students will be conducted: one with 6 students with motor and sensory disabilities and another one with 6 students without disabilities. Participants will be paired according to their gender and majors. An Interpretative

Phenomenological Analysis method will be used to analyze the scripts (Smith, Flowers, & Larkin, 2009).
Results: We expect to observe some similarities and differences between the two groups of students. Based on Dangoisse and Nils (2017), we hypothesize that transition from high school to university can be a critical period which influences self-affirmation and the way students define themselves, regardless of having a disability. Nevertheless, for students with disabilities, this transition could be especially important to question the place of their disabilities and to learn to deal with it.
Discussion: Limits of the study, future investigations and practical implications about inclusive politics in higher education will be discussed.

Paper 3: A latent class approach to social capital in intersectional perspectives of migration and disability

- Chantal Hinni (presenting author)

Abstract:
The development of children and adolescents, their general well-being, their success at school and their social integration depend to a large extent on whether they are able to establish and maintain instrumental relationships with key players in their potential network on a regular and unhindered basis. The formation of so called social capital is influenced substantillay through subsystems of social stratification, which are hierarchically shaped by social constructions such as class, ethnicity, gender and disability (Stanton-Salazar, 1997).
On this background, a discussion concerning disability and migration has recently started in special education research. Various studies show that children with a migrant background are seen as a challenge to integration and thus hindered in their participation in normal education (e.g. Kronig, 2007). Hughes (2015) and others show that disabled children with a migration background are marginalised for independent reasons.
To examine the relationship and interdependency of migration and disability in (special-)educational contexts, intersectionality provides a possible analysis perspective. The simultaneous and non-adjacent approach to the categories and their intersections sheds light on their functions with regard to social inequalities (e.g. Walgenbach, 2016).
The present paper focuses on the issues of inequality represented through the wealth or lack of social capital in learners with special needs and migration backgrounds. It is suggested that children who belong to either category dispose of higher amounts of bonding social capital, which is typically found in families and close-knit communities, compared to their peers who belong to neither category. Furthermore, it is assumed that socio-economic status plays an influential role in generating bridging social capital, which one has access to through more formal relationships with institutional actors. The availability of bridging social capital is very likely moderated by either category special educational needs and migration background and will actively decline when combined.
Data was collected from a sample of 1273 Swiss learners as well as from there primary caregivers and main teachers. In a structural equation model latent class analysis of the intersectional categories special educational needs, migration background, socio-economic status and gender will be included as well as a latent profile analysis of one dimension of social capital, namely network-based resources such as friends, family and peers.

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Day 2 – Session 3

S3.1 – Attitudes Towards Disability

Paper 1: Children's perceived parental behavior and their attitudes towards peers with learning disabilities
- Frank Hellmich (presenting author) & Marwin Felix Löper

Abstract:
Children's attitudes towards peers with special educational needs are of major importance for the social participation in inclusive classrooms. In particular, the parental role model behavior is considered to be a key influencing factor for children's attitudes towards peers with SEN. According to the theory of social referencing, we examine the role of children's perceptions of their parental behavior for their attitudes towards peers with learning disabilities. Thus, we investigated *N*=753 primary school students' attitudes towards peers with learning disabilities in our study depending on their perceptions of their parental behavior towards peers with SEN, their contact experiences with children with SEN, their social self-concepts as well as their self-efficacy beliefs concerning their interpersonal skills in the inclusive classroom. The results from a structural equation model of our study indicate that children's attitudes towards peers with learning disabilities are on the one hand predicted by their perceptions of their parental behavior towards children with learning disabilities. On the other hand, children's attitudes are explained by their contact experiences with peers with special educational needs as well as their self-efficacy beliefs concerning their interpersonal skills. The effect of children's perceived parental behavior on their attitudes towards peers with learning disabilities is mediated by their self-efficacy beliefs.

Paper 2: Teacher reactions to different dimensions of diversity in inclusive classrooms
- Henrike Kopmann (presenting author) & Horst Zeinz

Abstract:
Theoretical models on inclusive education require teachers to welcome student diversity and take it as starting point for adaptive teaching (Florian & Linklater, 2010; Textor, 2015). Several studies indicate that teacher attitudes towards inclusive education do not only depend on their personal characteristics (e.g. professional training, contact to people with disability) but also on different forms of student heterogeneity (de Boer, Pijl & Minnaert, 2011). Concretely, most teachers share a positive view on the inclusion of students with physical handicaps or with mild impairments in academic learning (Scheer, Scholz, Rank & Donie, 2015). In contrast, they often refuse to teach students who require fundamental changes in classroom routines and didactics, e.g. children with severe behavioural problems, intellectual disabilities or autism (Amrhein, 2011).
The present study investigates the following questions: How do teachers react to diverse dimensions of student heterogeneity on an emotional, cognitive and behavioural level? Which didactic adaptions and classroom management strategies do they recommend? The conducted questionnaire study has a cross-sectional design and employs both quantitative methods of statistical data analysis and qualitative content analysis (Kopmann, 2016). Data from 125 primary school teachers from North-Rhine Westphalia were collected. To measure their attitudes and professional expertise, the study used five vignettes. The first one portrayed a student with attention-deficit/hyperactivity disorder, the second one a learner with intellectual disability. The third case example depicted a student in a wheelchair with a physical handicap. Fourthly, teachers read about a student with difficulties in several fields of academic learning and fifthly, about a boy with autistic symptoms.

As expected, teachers evaluated the inclusion of the student with an exclusively physical handicap most positively. The emotional reactions to the students with academic learning difficulties and attention-deficit/hyperactivity disorder were in a neutral range. Teachers' ratings in response to the children with intellectual disability and autism were rather negative. Based on students' individual resources and weaknesses, teachers outlined didactical interventions, strategies of classroom management and peer support. Their differentiated impulses will be discussed in the context of instructional quality, challenges and tensions of inclusive education.

Paper 3: Elementary school students attitude towards disability
- Anita Krausz (presenting author)

Abstract:
The attitude towards disabilities and integrated or inclusive education have received a developing volume of attention in the last years. Worldwide more and more children has special educational need diagnosis, therefore these kids need to be in the education system, they need to get education and sometimes need to be with the typically developed students.
Understanding our behaviour and action is an important and accepted point of attachment of many disciplines. The attitude is not a single unitary concept, it is a construct, consisting of multiply dimensions and subcomponents (Mullholland & Cumming, 2016). This study is focus on the integrated elementary school age students attitude towards disability. Our major aim is to map the students' knowledge, moods and feelings together with the perceived control towards disability. The participants of the study were 4th and 7th graders in elementary schools.
Two multidimensional attitude questionnaire was adapted to recognize students behaviour towards the disability. On the one hand we used the CATCH (Chedoke-McMaster Attitudes Towards Children with Handicaps Scale) questionnaire (Rosenbaum, 1985) which instrument had been used in several international studies as well (Tirosh, 1997; Vignes, 2008; Godeau 2010; Bosseart, 2011; De Laat, 2013). And on the other hand we adapted the MAS (Multidimensional Attitudes Scale Toward Persons With Disabilities) questionnaire (Findler et al., 2007). According to De Laat et al. (2013) students have more positive attitude towards peers with visual impairment and hearing impairment than the peers with cognitive and physically impairments. Therefore we added these four types of disability for the adopted questionnaires to compared the answers.
We found differences between ages and genders, but we did not get significant difference between the four type. Our results show that, the adapted and developed questionnaires worked better than in the pilot studies, the overall reliability of the tests was great (Cronbach- α= 0,985) and after we left some items which were not relevant for this age, the KMO= 0,769 (KMO>6), therefore suitable for factor analysis. To understand the results a new non-theoretical framework was adapted which separated the behavioural intention between the behaviour (Mullholland & Cumming, 2016). Although our plan is in the future work to observe the actual behaviour towards disability. We hope that our results can be useful for the integrated and for the inclusive education.

S3.2 - Cognitive Learning

Paper 1: Concrete-Operational Thinking and Differences In Strategy Use Of High- And Low-Achieving Students
- Moritz Börnert-Ringleb (presenting author) & Jürgen Wilbert

Abstract:
Mastery of concrete-operational concepts depicts an important aspect of cognitive development. It is associated with a range of learning outcomes. At the same time, inter-individual differences in the mastery of these concepts become clear, e.g. students with learning disabilities show lower levels of mastery. A possible explanation for such differences might be seen in differences in the

application of strategies during the problem-solving process. Strategy use of students with learning disabilities might be more prone for utilization and production deficiencies. The aim of the study at hand is to examine differences between high- and low-achieving students in the ability to master concrete-operational concepts (conservation, classification and sequences tasks) in light of the applied strategies and the possible presence of utilization and production deficiencies. Therefore, differences in the application of strategies between high- and low-achieving students are examined and the question to what extend the applied strategies contribute to correct solution is answered. To answer these questions, thinking-aloud protocols of 35 low-achieving students and 23 high-achieving students are compared. Multivariate analyses of variance are applied to examine differences between the groups regarding mastery of concrete-operational concepts and used strategies. In addition, interaction effects of the use of strategies and group affiliation on the number of correct solutions are examined. In the results, it becomes clear, that high-achieving students solve more classification as well as sequences tasks than low-achieving students. During problem-solving some strategies are more frequently applied by low-achieving students and others by high-achieving students. Moreover, no significant interaction-effects between group affiliation and strategy use on the number of correct solutions can be described. The results indicate that low- and high-achieving do not differ in the general strategy use, but in the use of specific strategies. The results do not support the assumption of the presence of utilization deficiencies in low-achieving students.

Paper 2: From implicit to explicit in learning STEM subjects
- Ramona Eberli (presenting author), Daniela Nussbaumer & Christian Thurn

Abstract:
Background and aims: This research project is a part of the longitudinal Swiss MINT Study about early, investigative STEM learning, which is being conducted by ETH Zurich. In the context of this MINT Study, the participating grade 6 students conducted physical experiments cooperatively, thereby constructing, adapting and adjusting physical notions. In this way, they were implicitly guided on the topics of 'experimentation' and 'variable control'.
Research questions: This project is examining how students – in particular, students with school difficulties – succeed at explicitly reproducing and applying contents that they have experienced implicitly through conducting experiments. To this purpose, the learners have to explicitly describe knowledge on the topic of 'variable control' that they gained implicitly through experimenting. The study focuses, first, on knowledge gain and the type of knowledge testing, and, second, on the transfer of implicit information to explicit knowledge.
Methods: On the topic of 'controlling variables' we administered written tests and interviews. Since students worked with visual material and objects different levels of abstraction could be included. A comparison between the oral and written testing will serves to check the extent to which the format of the testing can have an effect on the learners' achievement and whether oral testing can better uncover the potential of weaker learners in particular.
Students that could not form a concept of 'variable control' through conducting own experiments worked on the topic explicitly in a two times 90 minutes teaching unit led by a special education teacher. A post-test checked the knowledge gain in writing, orally, and in action and is being related to cognitive abilities such as reading competency, logical thinking and age.
Results and interpretation of findings
The type of testing has a strong effect on learners' achievements. All learners show better results when answering orally and with the aid of visual materials and objects. This is especially true for learners with an average or below average reading competence. High reading abilities as well as high prior knowledge about physics have a positive effect on grasping 'variable control'. In the written form 29% of learners achieved the maximum score whereas in the oral form 57% of learners got full score. 84% of the students caught the concept of 'variable control'. Only 16% took

part in the subsequent units. Almost all of the special needs students (91%) understood the concept 'variable control' after the units.
A latent profile analyses shows that students with weak performance in the cognitive and reading tests but solid physics knowledge gained most from the intervention. Students with higher scores in the reading and cognitive tests but lower physics knowledge also gained but less.
In the presentation it will also be discussed how teachers/ special education teachers can be made aware of how concepts can be formed and tested.

Paper 3: Group-based Intervention on Attention and Executive Functions: Treatment Response and Moderators

- Mika Paananen (presenting author) & Henrik Husberg

Abstract:
In this study we examined the effects of a group-based behavioural, cognitive and skills training intervention (Maltti) targeted at elementary school pupils with attention and executive function (EF) difficulties. The intervention was implemented in a Finnish elementary school context and in accordance with the conventional procedures of special educational support.
The intervention programme consisted of exercises and tasks emphasising particularly four different aspects of on-task behaviour: attention control, action selection and inhibition, planning, and strategy training (see Paananen et al., 2017). 176 pupils were assigned to intervention group (n = 73, age M = 9.42, 81.7% boys) or waitlist control group (n = 73, age M = 9.78, 84.9 % boys). The main purpose of the study was to explore the effect of the intervention on behavioural deficits in attention and EF in a classroom setting and examine moderators of treatment response. Previously it has been shown that high ADHD symptom severity is associated with poor intervention outcomes (Langberg et al., 2010; Paananen et al., 2017). In addition, cognitive abilities and working memory (Fuchs et al., 2010) and social-emotional skills (Blair & Raver, 2015) influence learning across many domains. In the present study we examined the influence of cognitive abilities (Vocabulary, Block design; WISC-IV), working memory (Working Memory Index; WISC-IV) and symptoms of conduct problems (SDQ) on intervention outcomes. Outcome measure was a teacher-completed rating scale, the ATTEX questionnaire (Klenberg et al., 2010). Mixed-model ANOVA was used to analyse changes in outcome measurements, ATTEX, at the assessment time points (pre-intervention, post-intervention) as within-subjects factors and with the group as a between-subjects factor. The effect of moderators were analysed with regression analysis. Additional moderation analyses were performed using the Johnson-Neyman method (Hayes, 2013). The results of the pre- and post-assessments indicated significant intervention effects, pupils in the intervention group improved substantially in their attentional and executive skills in the classroom setting compared to controls. Symptom severity of conduct problems influenced the intervention effect; pupils with no conduct problems or low conduct problem symptom severity benefited more from the intervention than pupils with high symptom severity. Cognitive abilities or working memory did not moderate the results. The results of this study indicate that a comprehensive Maltti-intervention combining behavioural, cognitive and skills training methods is effective in enhancing behavioural manifestation of attentional and executive skills in the classroom setting. In addition, the results revealed that the intervention was more effective for pupils with low conduct problem symptom severity. Intervention response was worse for pupils with higher symptom severity and therefore other intervention methods, particularly targeted at conduct problems, are recommended for these pupils.

S3.3 – Student-Teacher Interactions

Paper 1: Pre-service teachers` views on international ethical standards for teacher-student-interactions

- Catrin Siedenbiedel (presenting author), Natalie Fischer & Petra Richey

Abstract:
The rights of the Child have internationally been under discussion, e.g. the right to education, especially since the UN CRC was signed (1989) but not ratified by all UN member states. This discourse has gained a new focus after the publication of the UN CRPD (2006). But not only the rights of the child to obtain access to education (UNESCO 2017/18) are an issue but also its rights once it has arrived at school.
Educational relations, especially in schools, have been found to be not always as approving and supportive as they should be but are all too often psychologically harmful or at least ambivalent (Prengel, 2013), especially when children or teens with disabilities are concerned (Siedenbiedel 2017). Therefore, a group of researchers and educational practitioners in Germany around Prengel has formulated ethical guidelines for educational relations based on the Human Rights. The standards formulated in the so-called Reckahn Reflections are set out to be guiding principles for the professionalization of all people working in (inclusive) educational settings.
In this study the applicability of the Reckahn Reflections to international contexts is discussed. Its aim is to reflect in how far they apply internationally and might be accepted by agents from different cultural contexts.
To find out about professional pedagogical interactions abroad, as a first step we have addressed pre-service teachers from Kassel University who stayed in schools abroad in form of a group discussion (Bohnsack, 2013) on their experience of teacher-student-interactions observed in different countries with regard to the guidelines of the Reckahn Reflections. Reflecting their teaching experiences, we found that they were sometimes astonished and disturbed by the kind of interactions they have observed in inclusive and exclusive settings. By examining the orientations these pre-service teachers display in the discussion of the Reckahn Reflections, we want to shed light on their applicability to other cultures.
These group discussions are reconstructed according to the documentary method (Bohnsack, 2013). Limitations of the data include the fact, that these students cast a German view on the schools abroad. Accordingly, a future perspective is to share views with students and professionals from other countries for discussing the relevance of the Reckahn Reflections in their countries.

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Paper 2: The influence of situational factors on the perceived fairness of student-teacher-interactions

- Scarlett Madeline Kobs (presenting author) & Michel Knigge

Abstract:
Theory: Since the ratification of the UN Convention on the Rights of the Disabled in 2009, inclusion became an important topic in the German discourse on education. Teaching students with special education needs in mainstream schools adds another group of students to the ongoing debate on educational justice (Werning, 2014). Furthermore, recent discussions seem to underpin the connection between inclusion and matters of justice (Kiel & Kahlert, 2017). However, little is known about the students' perception of their school life. Current evidence suggests that students' experiences of justice in their everyday school life affect their understanding of justice in the society they live in (Gorard, 2011). Teachers' behavior while interacting with students has a major impact on these experiences. How teachers experience and assess their own actions in this context, as well as the potentially divergent perceptions of the two groups, has hardly been investigated so far. This paper aims to present a recently developed instrument to examine factors that influence justice judgements. Based on the theoretical framework of justice in organizations and the approach of the factorial survey, we developed vignettes that captured a psychological perspective on justice, namely aspects of distributive and interpersonal justice (Auspurg, Hinz, Liebig, & Sauer, 2009; Colquitt & Greenberg, 2003).
Methods: We decided for a quasi-experimental, between-subject design. After a pilot test, vignettes as well as factors relevant to justice were selected for further work. The factors vary systematically which enables us to investigate their effect on justice judgements of the vignettes with respect to their basic rating. Initially, the factors special educational needs alongside the gender of the children and the teachers were implemented. A focus on learning disabilities and behavioral problems was chosen since these are the most commonly diagnosed (Bundesamt, 2017).
Results/Discussion: The project used a sample of 500 prospective teachers at the University of Potsdam. Analyses of variance were conducted to explore the influence of the factors on the justice judgements. Initial results point to a connection between the special educational need of a child and the experienced justice of the participants. Unfair behavior of a teacher towards a child with behavioral problems was rated more just than the same behavior towards a child with learning disabilities. This finding is in line with those of Langner (2015) who found that teachers were concerned to teach a child with behavioral problems in their class but were not concerned about teaching a child with a learning disability. Both findings suggest a discrimination on the grounds of special educational needs. Knowing about factors that influence justice judgements can help sensitize teachers to justice in everyday interactions. Thus, creating a fair and healthy environment for every child to grow and learn.

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S3.4 – Inclusive Practices

Paper 1: Disability Mainstreaming in Universities in Sub-Sahara Africa: A Case of Kenyatta University, Kenya

- Mathew Karia (presenting author), Doyne Mugambi & Carol Mutwiri

Abstract:
United Nations Convention on the Right of Persons with Disabilities notes that the State parties 'shall promote, protect and ensure full enjoyment of all human rights for all persons with disabilities' (UNCRPD, 2006. Article 1 page 3). In addition, Sustainable Development Goal Number 4 and 8 and also closely linked disability rights (UNSDN, 2018). However, this is not mainly the case in Sub-Saharan Africa. Inclusion of persons with disabilities especially at higher institution of learning is limited. In Kenya, rights of persons with disability are also protected in the Constitution of Kenya 2010, Article 54 (1) (Kenya Law, 2018). This is also grounded in the Person with Disability Act 2003 (….) Kenya has made major progress in this sphere, and thus, there is need to review the disability policies especially in tertiary institution.
Kenyatta University is the first public University in East Africa to offer a Bachelor of Education Degree in Special Needs Education in 1995. In addition, Kenyatta University disability policy as well as Directorate of Disability Services are well established. Thus, need to evaluate the University's policies and procedures in disability mainstreaming.
Research Questions
Can Kenyatta University disability mainstreaming and inclusion policies be compared with best practices in the world as per the international legislation?
Methods: To analysis the strides made by Kenyatta University, we used document analysis involving the university's policy documents, institutes and departments brochures as well as observation of general infrastructure.
Results: Document analysis revealed that Kenyatta University has adopted some of the best international practices in disability mainstreaming. Kenyatta University Disability Policy and Procedure (2014) has emulated key points that ensure full and effective participation of students and staff. All students with disability and their helpers are accommodated in the University hall of residence. In addition, their admission to the university is evaluated using the same criteria as all applicants. They also have special examination arrangement especially for those with visual impairments. The University also provides assistive technology as well as special vans to shuttle for students with disabilities. On the other hand, there is equal employment for those who meet the criteria. There is also a disability awareness day for student and staff. It was also observed that Kenya Sign Language and Braille are used for information access. In addition, there are designated safety zones and parking as well as lift and ramps for easy accessibility.

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Paper 2: In2School: promoting inclusion for young people who are school refusing

- Lisa McKay-Brown (presenting author), Rebecca McGrath, Judy Ring, Chrystie Mitchell & Lorraine Graham

Abstract:
The number of young people disengaging from education is a growing concern. Internationally, researchers have noted that school attendance problems (SAP) continue to "represent critical public health problems for educators, health and mental health professionals" (Kearney, 2008, p. 465). This paper focuses on one aspect of SAP, namely school refusal (SR). SR is defined as a reluctance and often outright refusal to go to school including difficulty separating from parents, somatic complaints and parent knowledge of the SR (Berg, 1997). The problem occurs for between 1–2% of youth (Egger, Costello, & Angold, 2003), and 5-16% of clinic-referred youth (Heyne & King, 2004).

Responding to SR is time-consuming for school staff and presents a considerable challenge to mental health professionals because clinically based treatment only can be ineffective (Hella & Bernstein, 2012; Heyne et al., 2015). Research suggests that a comprehensive approach addressing individual, family, school and community variables using a collaborative team-based process is needed (Hella & Bernstein, 2012). Based on this research the following question was developed: How does a multidisciplinary intervention to address school refusal influence re-engagement and attendance in school settings for young people?

This paper reports on an action research study, the *In2School* program, a pilot intervention that fostered a working partnership between mental health clinicians and teachers to create an inclusive educational space to support young people with anxiety and mood disorders to return to mainstream school. Of the thirty participants, over half also had a diagnosis of autism spectrum disorder. Measures of mental health, functions of school refusal, quality of life and school attendance data were collected. During a 16-week period, therapeutic and educational interventions were integrated into the learning environment via a transitional classroom to support the youth's return to school. At the conclusion of the pilot, twenty seven youth had returned to mainstream schooling. Progress was noted in mental health recovery, reports of improved quality of life, increased social interactions with peers, and positive experiences at school. The preliminary results suggest that a multidisciplinary classroom-based intervention holds promise for helping school refusing youth to return to school.

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Paper 3: Young Children's Perceptions of the Itinerant ECSE Teacher
- Hsueh-Jung Liu (presenting author)

Abstract:
In Taiwan, over 90% of the preschool children with disabilities attend regular education classes. To implement preschool inclusive education, itinerant inclusion support model is used across Taiwan to support early childhood programs without full-time early childhood special education (ECSE) teachers. However, the role of itinerant ECSE teachers is often narrowed to direct service provider in Taiwan. In direct service model, itinerant ECSE teachers provide pull-out direct instruction to children with disabilities. It is common that typically developing children regard the itinerant ECSE teacher as the personal teacher of children with disabilities in their school.
As part of an ongoing project on the implementation of itinerant consultation inclusion support model at one preschool, this study aimed to examine young children's perceptions about the itinerant ECSE teacher. Entire 40 children (aged 3-6 years) enrolled in the preschool were interviewed while the itinerant consultation inclusion support model has been implementing for one year. Children's parents or guardians were asked for permission to interview their children. In addition, children were asked about their willingness to share their perspectives with the researcher at the beginning of interviews. All children agreed to participate in the study. Children were interviewed individually in their classroom by the researcher. The semi-structured interviews focused on the responsibilities of the itinerant ECSE teacher, and children responded through a combination of non-verbal and verbal means. The researcher asked children to draw a picture of what they think the itinerant ECSE teacher visiting their preschool for, and then convey their perspectives verbally. Data were analyzed using analytic induction. Children's responses indicated that the itinerant ECSE teacher visiting their preschool takes on three main responsibilities, including observing and recording children's play, interacting with all children, and discussing with preschool educators. In addition, no child associated the itinerant ECSE teacher with children with disabilities specifically. The results suggest that young children's perceptions of the itinerant ECSE teacher result from their actual experiences that the itinerant ECSE teacher works with preschool educators and all children as the itinerant consultation inclusion support model being adopted. To conclude, the study may be of importance in accessing young children's perceptions of the itinerant ECSE teacher under the itinerant consultation inclusion support, as well as in reminding practitioners to consider young children's social relationships and labels in special education while providing inclusion support services.

Day 2 – Session 4

S4.1 – Symposium Zurbriggen

Social participation – key themes, aspects and perspectives
- Carmen Zurbriggen (Chair) & Dieter Baeyens (Discussant)

Abstract:
A central goal of inclusive education is to support social participation of all students. Students diagnosed with special educational needs (SEN) are commonly more often at risk to be socially less integrated as their peers. Therefore, this issue gets specific attention in research on inclusion. According to Koster et al. (2009), social participation comprises of different aspects which can be grouped in four key themes: friendships, interactions, perception of students with SEN, and acceptance by classmates. In order to better understand the phenomena, different perspectives and influencing factors need to be taken into account.
The aim of this symposium is to shed light on key themes and aspects of social participation from different perspectives and with different methodological approaches. Four presenters and a discussant from four countries will provide new insights on this topic.
Paper 1 investigates the self-perception of students with SEN in special schools and whether or not there are differences in self-perception of students with cognitive disabilities and students with behavioural problems. The results of this cross-sectional study will be discussed with regard to inclusive education.
Paper 2 examines the impact of teacher feedback on different aspects of social participation in inclusive classrooms. In particular, it aims to test the findings of experimental studies in real classrooms. Therefore, lessons were videotaped, and student data were collected at the beginning and end of a school year.
Paper 3 tested if the friendships of students with SEN were less stable over time compared to students without SEN. Furthermore, it was analyzed if this difference could be explained by other variables such as individual behavior and structural network effects. For information on the students' friendship connections, a sociometric questionnaire was used in two consecutive schoolyears.
Paper 4 investigates students´ social interactions and emotional experience in everyday life in general and when relating to peers in particular. For this purpose, students were asked to report their current activities and emotional experience on about 31 randomly selected occasions during one week. Results provide evidence that social interactions with peers have a positive effect on emotional experience of students with and without SEN.

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Paper 1: Self-perception of students with behavioral problems and cognitive disabilities in special education
- Ivonne F.M. Douma (presenting author) & Anke A. De Boer

Abstract:
The importance of self-perception for students has been demonstrated in numerous studies (e.g. Bandura, 1986; Harter, 1993; Shields, 2009; Gupta & Thapliyal, 2015). A positive self-perception is

not only important for regular students, but also for students with special educational needs (SEN). Koster, Nakken, Pijl and Van Houten (2009) have defined the (social) self-perception of students with SEN as one of the key components for social participation. As social participation of students with SEN is widely considered to be an important goal of inclusive education, the role of self-perception should be included in research as well. Research outcomes showed ambiguous results. Sze and Valentin (2007) and Avramidis (2013) found that students with SEN have a very positive self-perception, whereas other research showed an average or low self-perception (Sacks & Kern, 2008; Bidell, 2010; Pijl, Skaalvik & Skaalvik, 2010). Consensus has only been reached on academic self-perception of students with SEN; they are more negative compared to typically developing peers (Avramidis, 2013). Not only are research findings inconclusive, the majority of studies do not differentiate between types of SEN, through which it is unclear whether there are differences between students with different types of SEN. The aim of this study was to examine the self-perception of students with SEN in special education and whether or not there are differences between students with cognitive disabilities and students with behavioral problems.
A cross-sectional study was conducted with a sample of 177 SEN students ($M_{\text{age cognitive disabilities}}$ = 15,6, SD=1,9 ; $M_{\text{age behavior problems}}$=11,7, SD=1,2). The 146 boys (82,5%) and 31 girls (17,5%), derived from 11 special schools ($N_{\text{cognitive disabilities}}$ = 72; $N_{\text{behavior problems}}$=105). The Dutch version of the Self-Perception Profile for Children was used (Harter, 1985; Veerman et. al., 1997). This questionnaire includes six subscales, namely: scholastic and athletic competence, social acceptance, physical appearance, behavioral conduct and global self-worth. To answer the research questions, we used independent t-test and the Two-way ANOVA.
The results show that both students with a cognitive disability and students with behavioral problems report average percentile scores compared to typically developed peers ($M_{\text{cognitive disabilities}}$= 53,2, SD=19,3; $M_{\text{behavior problems}}$= 46,0, SD=19,9; $M_{\text{typically developing peers}}$ = 50, SD=17,5). However, the scores between both groups of students with SEN were significantly different, t(171)=2.35, p=0.20. When looking at the individual subscales, behavioral conduct (t(173)=2.92, p=0.004) and global self-worth (t(173)=2.59, p=0.011) were significantly different between both groups. Students with cognitive disabilities showed to have the lowest scores on the subscale scholastic competence, students with behavioral problems showed to have the lowest score on the subscale behavioral conduct. No significant interaction-effect has been found of gender and type of SEN on self-perception (F(1, 169)=0.746, p=0.389).
In the current study both students with a cognitive disability and students with behavioral problems reported mean results on all scales of the Self-Perception Profile for Children. This study only included students with SEN attending special education. Hence, it remains unclear whether students with these types of SEN differ from their typically developing students if they are included in regular classes.

Paper 2: The impact of teacher feedback on social participation and social skills in inclusive classrooms

- Elisabeth Moser Opitz (presenting author), Airana Garrote, Andrea Wullschleger & Susanne Schnepel

Abstract:
According to Hattie and Timperley (2011) and Bunning and Ellis (2010), teacher feedback is a powerful factor to support the learning processes of students. It is also assumed that teacher feedback has an influence on social processes in classrooms. Huber (2011) claims that students, who receive positive teacher feedback, are more accepted than pupils who receive negative feedback. This assumption was confirmed by the results of experimental studies (e.g. Huber, 2013). However, studies which investigate the influence of teacher feedback on social skills and social participation in real classrooms are lacking.
Research question

What is the impact of teacher feedback on social skills and social participation in inclusive classrooms?
Method: The study was carried out in 33 inclusive classrooms (grade 1-3, N = 546, 49% girls) in which at least one student with an intellectual disability was enrolled. In each classroom one mathematics lesson was videotaped. Video analyses were conducted with a coding manual for the following variables: appearance of teacher feedback, recipient, topic (achievement or social behaviour), and assessment of achievement resp. social behaviour (positive/negative). The interrater reliability was high (Cohens Kappa 0.9).
In addition, the following student data were collected at the beginning and end of the school year: social participation (friendships, social rejection), social skills (cooperative and prosocial behaviour) as well as mathematics achievement (own instrument, Cronbachs Alpha .86).
Results: The range of appearance of teacher feedback in one mathematics lesson is high (*M* = 92; *SD* = 27, *Min* = 14, *Max* = 162). A series of multilevel analysis were carried out with the depended variables friendship, rejection, cooperative and prosocial behaviour. The results show that teacher's feedback on pupils' deviant behaviour (negative) has an impact on their development of cooperation in the classroom. Feedback on correct achievement (positive) also influences the development of cooperative behaviour significantly. Against the expectation, teacher feedback was not related to friendships, rejection and prosocial behaviour.
Discussion: First, the results question the assumption of the relevance of teacher feedback on aspects of social participation. Second, the method which was developed to analyse the teacher feedback must be scrutinized.

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Paper 3: Friendship stability of students with and without special educational needs in inclusive classes

- Thorsten Henke (presenting author), Katja Bogda, Jennifer Lambrecht, Stefanie Bosse, Jessica Jaeuthe & Nadine Spörer

Abstract:
One of the fundamental goals of school-based inclusion policies and interventions is the creation of an environment where all students are valued members of the school community irrespectively of the students' attributes such as gender, race or special educational needs (SEN). However, several literature reviews indicated that this goal is not reached for students with SEN. Compared to students without SEN, students with SEN perceive peer-related classroom climate more negatively, feel less integrated, and have fewer friends. Considering the fundamental role friends play in students' development of social skills, their social adjustment and their general well-being, these findings raise further questions. First, it has to be clarified if there is a distinct effect of the status as a student with SEN on forming friendships or if this effect can be explained by other variables such as the students' social behavior or structural network effects. "Structural network effects" is the generic term for a set of statistics which characterizes the self-organizing quality of a network. A common friend, for example, increases the likelihood for two or more students to become friends

with one another. Under the assumption that students with SEN have fewer friends than their counterparts without SEN it is likely that they lack opportunities to get in touch with their classmates through common friends. Second, it remains unclear if other friendship characteristics, such as friendship stability, also differ for students with and without SEN. Therefore, the present study tested if the friendships of students with SEN were less stable over time compared to students without SEN (Hypothesis 1). Furthermore, it was analyzed if this difference could be explained by other variables such as individual behavior and structural network effects.
The longitudinal data analyses were based on a sample of 1297 second to fourth grade primary school students from 60 inclusive classes. Data were collected at the end of the school years 2012/13 and 2013/14. For information on the students' friendship connections a sociometric questionnaire was used. The students were free to nominate as many classmates as they liked as friends. In consequence, full social networks for each class and time of measurement were obtained. Furthermore, data on the students' learning and social behavior evaluated by the classroom teachers with standardized questionnaires were collected. Information on the students' SEN status was also provided by the classroom teachers. Descriptive analyses do not support the first hypothesis. However, the preliminary analyses also showed that in case of the termination of a friendship this was initiated twice as likely by the student without SEN than by a student with SEN. To estimate the SEN effect while controlling for structural network effects and individual variables at the same time, stochastic actor oriented models (RSiena) will be applied.

Paper 4: Social interactions in everyday life of students with and without special educational needs - Carmen Zurbriggen (presenting author), Martin Venetz & Chantal Hinni

Abstract:
One of the most important goals of inclusive education is to significantly support participation of all students in common activities. It is assumed that students with special educational needs (SEN), who attend a regular school in their neighborhood, have more and better contacts with their typically developing peers (e.g., Koster et al., 2009). The transition from primary to secondary school, however, has often been highlighted as a phase of concern (Bossaert et al., 2015). Furthermore, this transition coincides with early adolescence in which social interactions with peers are getting increasingly important (Rubin et al., 2006). Nevertheless, little is known about how often students with SEN interact with peers outside school, and how they actually experience peer contacts in their everyday life.
The aim of this paper is thus to investigate students´ social interactions and emotional experience in everyday life in general and when relating to peers in particular: (1) How much time per week do students with and without SEN spend with peers outside school at secondary school level? (2) How do they experience everyday school life vs. leisure time? (3) How do they experience different kinds of social interactions (e.g. socializing, social media)?
The data comprised 120 grade 8 (20%) and grade 9 (80%) students from the German-speaking part of Switzerland, with a mean age of 15.8 years (*SD* = 0.8 years). Of these students, 42 were diagnosed with SEN, of which 32 were taught in regular classes and 10 in special classes. Students were asked to report their current affective states on about 31 randomly selected occasions during one week, with a total of 3758 'snapshots' of their activities and their emotional experience in everyday life. Data were collected using the experience sampling method (Hektner, Schmidt, & Csikszentmihalyi, 2007). Affective states were measured by the PANA short-scales (Schallberger, 2005).
The findings show, first, that students with and without SEN from regular classes interact as often with peers during leisure time. Second, teenagers experience leisure activities more positively than instruction. Third, social interactions generally have a positive effect on the quality of experience. The quality of experience is especially good for teenagers when they are with peers – best with peers during leisure time. There are no differences between the student groups.

Finally, the significance of peer interactions for students with and without SEN will be discussed and future research directions will be suggested.

S4.2 – Symposium Balt

Assessing progress in numeracy learning to support appropriate learning opportunities for all
- Miriam Balt (Chair) & Annemie Desoete (Discussant)

Abstract:
Learning progress assessment aims to monitor learning. This includes determining where students are within their process of learning at the time of assessment, evaluating their growth over time, and providing teachers and students with information on how to promote further learning (Masters, 2017). Assessments of learning progress can be performed on paper, computer, or touch screen in the form of performance tests or may be based on teacher observation. While learning progress assessment has been shown to enhance students' learning outcomes in several studies (Kingston & Nash, 2011; Stecker, Fuchs, & Fuchs, 2005), its effectiveness relies on teacher provision of feedback based on student data (Hattie & Timperley, 2007; Shute, 2008), and the use of this information to plan their teaching and target it to the students' abilities (Stecker et al., 2005). To assist teachers with these tasks, learning progress assessments should:

a. Fulfil the general standards of test quality, such as validity and reliability;
b. Be able to detect changes in performance over time for different ability levels;
c. Be easily applicable in every day practice; and
d. Provide reports and advice for teachers on how to interpret their students' performance and how to plan their teaching based on student data.

This symposium presents research on four discrete empirically based instruments which aim to monitor numeracy learning. Each paper addresses different aspects of the above-mentioned criteria. The first paper offers insight into the ongoing construction process of a learning progress assessment that draws on an empirically validated development model of numeracy learning. It examines the quality of the items and their ability to detect changes in performance over time. The second paper introduces the design and validation of a learning progress assessment for students with intellectual or developmental disabilities that uses teacher observation to assess student learning. It investigates the extent to which such an observational measure could be mapped to an empirically-based learning progression. The third paper explores the comparability of different assessment modes looking at paper/pencil-based vs. computer/tablet-based tests. The fourth paper presents several types of learning trajectories, based on students' initial abilities, as a method of determining whether low performing students differ in their learning development compared to higher performing students.
These different approaches to numeracy assessment share a common goal: to assist teachers to provide appropriate learning opportunities for all of their students, including those with mathematical learning difficulties or intellectual or developmental disabilities.

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Paper 1: The construction of a learning progress assessment based on a development model of numeracy learning – Miriam Balt (presenting author), Antje Ehlert & Annemarie Fritz-Stratmann

Abstract:
For a learning progress assessment to support students on their pathways to acquire certain competencies, it is necessary to understand how these pathways typically progress. Which skills are characteristic of basic and intermediate levels of understanding, and which characterise mastery? The development model of numerical concepts (Fritz, Ehlert, & Balzer, 2013) provides an empirically derived pathway description for the acquisition of numeracy competencies. This paper describes the construction of a learning progress assessment which aimed to measure the development of numeracy in first-grade students in Germany. The assessment consisted of items which were based on the above-mentioned development model, and drawn from an item pool developed during previous pilot studies.
The paper examines the quality of a trial version of the learning progress assessment. The study sought to address two research questions. First, to what extent do the items fulfil the quality criteria of the Rasch model? Second, to what extent is it possible to track the students' numeracy development by using the assessment?
A longitudinal study was conducted with N = 135 first grade students (54.1% female). The student's numerical skills were assessed four weeks after the beginning of school using the MARKO-D test (pre-test) (Ricken, Fritz, & Balzer, 2013) and re-assessed at the end of the school year using the MARKO-D1 test (post-test) (Fritz, Ehlert, Ricken, & Balzer, 2017). The learning progress assessment on trial was applied over eight measurement points between the pre- and the post-test.
The performance data was Rasch scaled using a simple dichotomous Rasch model. An item-fit analysis was conducted to evaluate the item quality. Person ability values were analysed through an analysis of variance (ANOVA) for repeated measures. These values were used to describe the progression of student learning in the whole group, with sub-groups compared against each other for differences in performance. The sub-groups were built based on the students' initial numeracy performance assessed through the MARKO-D test in the pre-test.
The item-fit analysis showed acceptable to very good Infit values between .65 and 1.25 with an overall item reliability of .87. As expected, the performance in the whole group of students increased significantly over time ($F(8.80) = 34.4$, $p < .001$). The analysis of the learning progress within the subgroups showed a significant main effect for measurement point ($F(2, 81) = 448.431$, $p < .001$, $part.eta^2 = .85$), as well as a significant main effect for group assignment $F(2, 81) = 4.779$, $p < .05$, $part.eta^2 = .11$. Growth in performance over time was mapped through the learning progress assessment, which allocated the students' performance to certain levels within the development model. This outcome provided useful information to the teacher on how to cater for diverse individual numeracy learning needs within the classroom.

Paper 2: Design and validation of a learning progression of emergent numeracy for students with disability

- Jane Strickland (presenting author), Kerry Woods & Masa Pavlovic

Abstract:

Theoretical background: More than 4% of Australian students were found to be below minimum numeracy standards on the annual national assessment in 2016 (ACARA, 2017). This implied these students were failing to develop vital numeracy skills and potentially missing opportunities for learning. For teachers, the pedagogical knowledge required to identify the numeracy learning of all students, and adjust their instruction accordingly, is a high-order skill that too few teachers possess (Victorian Department of Education, 2016). Further, a proportion of Australian teachers have reported feeling inadequately trained to cater for the learning needs of their students with disability (Commonwealth of Australia, 2016).

Research questions: The research followed methodological steps set out by Wolfe and Smith (2007a, 2007b) to design a criterion-referenced framework intended to point teacher attention to student numeracy behaviours. The research investigated 1) the extent to which an observational measure of emergent numeracy could be developed and validated for the target population of all school-aged children with an intellectual or developmental disability, and 2) the extent to which such an observational measure could be mapped to a learning progression.

Methods: The methodology featured five clusters of activities drawing on a review of numeracy research literature (e.g., Gelman & Gallistel, 1978; Piaget, 1952) and curriculum documents (e.g., ACARA, 2016; VCAA, 2016), and the professional judgement of experts from the fields of emergent numeracy research and special education. A pool of numeracy items in the format of rubrics (i.e., presented with a stem and ordered sets of statements of observable behaviours of increasing difficulty) were developed in conjunction with the subject matter experts and then trialled by teachers to observe student numeracy skills. Data were collected from 2597 students (72% boys, aged 2 -24 years with an average of 12 [SD= 3.5] years) via an online tool. The data were analysed using Master's (1982) partial credit model (PCM) to calibrate and evaluate the adequacy of the instrument.

Results: Analysis found the instrument to have high levels of internal consistency, indicated by a Cronbach's alpha reliability statistic of .98. The instrument had a person separation reliability of .97 and item separation reliability of .99. Furthermore, only 3% of students achieved the full score and 2% of students did not score on any item, indicating that the items were suited to most of the target population of students. Low levels of item and person misfit indicated that teachers could make consistent judgements of student behaviours.

Interpretation of findings: Analysis of the item performance against background characteristics of teachers, and student characteristics (such as gender, age, and disability category), showed that the only factor influencing the item characteristics was student ability. This meant that the items could be calibrated to one scale that was generalizable for students, no matter their age, gender, or characteristics of their disability, or the experience of their teachers. In sum, the reliability statistics demonstrated that an observational measure could be developed, and could be mapped to a progression of emergent numeracy suited to students with intellectual or developmental disability.

Paper 3: Examining mode effects of paper-pencil-based and tablet-based mathematics assessments using CBMs

– Stefan Voß (presenting author) & Yvonne Blumenthal

Abstract:

Progress monitoring of academic achievement is an essential element to prevent learning disorders. In addition, it enables the formative evaluation of instruction and interventions in school contexts and thus forms the basis for evidence-based pedagogical actions (Hartke, Blumenthal & Voß, 2017). A very prominent approach is the so-called curriculum-based measurement (CBM;

Deno, 1985). Various studies have documented positive effects on students' achievement when CBM were used as progress monitoring (Foegen, Jiban, & Deno, 2007; Fuchs & Fuchs, 1986; Shapiro, Keller, Lutz, Edwards, & Hintze, 2006; Souvignier & Förster, 2011; Stecker, Fuchs, & Fuchs, 2005). Already in the 1980s Fuchs, Fuchs and Hamlett's (1988, 1989) studies indicated that computer-based data analysis is particularly effective.
Today the use of tablets for assessment purposes seems compelling because of their affordability and intuitiveness in handling. Yet, although many advantages of computer-based or tablet-based assessments are being discussed in the literature (e.g. innovative item formats, adaptive testing, automated scoring and feedback), there are still concerns (e.g. Huff & Sireci, 2001). Especially the comparability of different assessment modes (paper-pencil-based vs. computer-based/tablet-based) is important. Already there are several studies examining mode effects of paper-pencil-based and digitally delivered assessments (Bennett et al., 2008; Cayton-Hodges, Feng, & Pan, 2015; Huff, & Sireci, 2001; Poggio, Glasnapp, Yang, & Poggio, 2005; Pommerich, 2004; Wang, Jiao, Young, Brooks, & Olson, 2007). However, the findings are limited to the extent that
-the results are not consistent (with a tendency towards comparability).
-many studies refer to higher grades or adulthood.
-different test domains (mathematics skills, reading or writing skills) and test formats were investigated.
-most comparability studies have not examined mode effects at item level.
-the use of CBM was only occasionally specifically investigated.
The study presented aims to extend the given body of research. For this purpose, we analyze the CBM data of 105 fourth graders'. They processed the exact same computation items once with paper and pen and once in a tablet application. Possible mode effects are being examined within correlation analyzes and analyzes of measurement invariance.
Note: We appreciate your understanding that we cannot report definitive information on the results at this time, as part of the data is currently in the input phase.

Paper 4: Learning trajectories in 3rd grade mathematics over eight measurement points: Which types are there?

– Janis Fleßner (presenting author), Nina Zeuch, Birgit Schütze & Elmar Souvignier

Abstract:
In order to allow individualized education and interventions, teachers need objective diagnostic information about proficiency and learning development of their students. Primarily, research on differential learning trajectories has focused on reading competency (Protopapas, Parrila, & Simos, 2016). Mathematical competencies, however, are rarely studied using longitudinal data with multiple measurement points (Salaschek, Zeuch & Souvignier, 2014). According to Krajewski (2008), basic mathematical competencies develop gradually over time. Though, it has been shown that differences of individual learning trajectories are possible. Specifically, two effects are described in the literature. First, there is the cumulative or Matthew effect, which describes an increase in variance of performance level over time (Aunola, Leskinen, Lerkkanen, & Nurmi, 2004). Second but less frequently, for at least some students a compensatory effect was found (Salaschek et al., 2014). That is, students who initially perform on a lower level catch up on students who perform on a higher level, and thus, compensate the initial performance gap.
The current study aims to discover differential learning trajectories of schoolchildren in third grade mathematics. In context of special educational needs, the question arises if low performing students differ in their learning development when compared to higher performing children. Therefore, 17 school classes (N = 357) were assessed eight times with an interval of three weeks between measurements using the internet-based learning trajectory tool *quop*.
A Latent Class Growth Analysis (LCGA) was applied to discover latent groups in the acquired longitudinal data. A four class solution was found with stable group classifications (probability for group membership above .91 and membership above 10%) and robust conventional model-fit

indices (e.g. entropy = .88; BLRT = 185.16, p < .001). The four groups differed on the levels of mathematical competence at the first measurement. More specifically, there were three groups which depicted a parallel learning growth and one initially low performing group (10%) with a flat learning curve. The mixed results indicate that first, mathematical performance increases in variance over time. However, this effect can primarily be explained by the low performance group. Second, concerning the research question about learning growth of low performing students, this group indeed differed from higher achieving students and did not seem to benefit from regular mathematics instruction. Our findings indicate that short intervals of diagnostic information are crucial to recognize deficits in order to be able to intervene immediately and to prevent stagnation of learning growth.

S4.3 – Language Acquisition / Hearing

Paper 1: Provision of Inclusive Learning Environments for Children with Hearing Impairment - Mathew Karia (presenting author) & Doris Kwenda

Abstract:
Theoretical Background: Children who get Hearing Aids need speech therapy intervention to stimulate delayed language and speech. In Kenya, children who have previously benefited from hearing aids donations continued with their lives relying solely on the use of sign language. However, Starkey Hearing Foundation, a USA hearing health organization that provides hearing aids to low and middle income countries, decided to take it a step further by introducing a "*Mainstreaming into life program".*
Research Question: The main question was, 'how can children with Hearing Impairment be mainstreamed in all learning environment? Specifically, the program sought to assess the outcome of training parents and teachers on verbal communication skills to be taught to children that have Hearing Impairment.
Methods: A pilot program ran from October 2015 to October 2016. It was tested on select schools in Kenya, namely; Kerugoya School for the Deaf, Martin Luther and Humble Hearts. The speech therapist visited the schools once a week for the duration of the pilot project. The teachers were asked to speak as they signed so that the children who can acquire spoken speech and language would see and learn from them. The trainings were at the beginning of term as a refresher course for the teachers. Teachers in the mainstream classes were trained on ways to accommodate a hard of hearing child in their class. Ling Sounds were introduced and taught to the children. Progress was recorded throughout the pilot period.
Results and Findings Interpretation: Results suggests a perception of increased environmental sound awareness, vocalization and increased /improved speech due to the intervention. These results show many benefit of use of verbal communication. However, the results cannot demonstrate the long -term impact of the intervention on the quality of lives of the participants. Thus further studies should be done on quality of lives.

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Paper 2: Relations between family enviroment, sign language and reading precursors in deaf children

- Victoria Espinoza (presenting author), Catalina Santa Cruz & Ricardo Rosas

Abstract:

Theoretical background: Reading is a fundamental activity to be an active part of today's society. Reading increases people possibilities of participation and development. That is why teaching to read is an important axis of the educational system. However, there are populations that have difficulties in accessing to written language, among which the case of deaf people stands out.

There is evidence that although deaf people can learn to read properly, there is a large proportion of deaf people who finish their education with incoherent age related reading skills (Luckner & Handley, 2008). On the other hand, there are certain factors that support the initial development of reading, these refer to the early language environment to which a child has been exposed, and the proper development of their mother tongue, which in the case of the deaf should be the sign language (Lasasso, Carol & Crain, Kelly, 2015). In this sense, deaf children with deaf parents who develop sign language as their mother tongue, live immersed in an enriched linguistic environment (Dyer, MacSweeney, Szczerbinski, Green, & Campbell, 2003) and, therefore, have greater possibilities to be successful in the process of learning to read. However, a study developed in United States, observed that 90% of deaf children have hearing parents, who do not know sign language, and therefore are not exposed to it since birth (Goldin-Meadow & Mayberry, 2001).

Research questions

In this context, it is worth to ask: What is the linguistic environment in which deaf children are immersed? What is the relationship between the family linguistic environment, language development in sign language and the development of reading precursors? How does this relationship impact on the specific development of reading precursors?

Methods: The participants will be 30 deaf children who are beginning the process of learning to read, and their families. Children will have between 5 and 8 years at the momento of the assessment moment. A survey will be carried out to the families, through which information will be collected regarding the linguistic environment in which child develops, and data related to the socioeconomic status. Children will also be assessed, both in terms of the degree of proficiency in sign language and the level of development of reading precursors.

Results: Tests will be applied in April 2018, and data will be analyzed during the first semester of the same year. Correlations will be established between the different assessed variables, and possible differences in the development of the different reading precursors will be analyzed, both in terms of the level of mastery of sign language and the characteristics of the linguistic environment of the home. We will also investigate the possible mediating role of the family environment in the relationship between the development of language and reading precursors.

Paper 3: Early Vocabulary Aquisition – Structural Equation Analysis of Longitudinal Data from German Children

- Eveline Pinstock (presenting author) & Satyam Antonio Schramm

Abstract:

Early language skills are important predictors of language proficiency and academic achievement in school (Hohm et al., 2007). However, possibilities for early detection of language developmental disorders are limited because of the high variability in language acquisition (Fenson et al., 1994).

In addition to early linguistic competences, effects of demographic variables on language development are shown in various studies (Reilly et al., 2009, Hoff 2003, Junker & Stockman 2002).
The present study examines the influence of lexical abilities of children at an early age on their later stage of development over time.
For this purpose, 500 parents of children from a full age cohort were contacted from the register of the city of Hanover, Germany. After return and dropout, the sample size was 199 children. At four measuring times, where the age of the children was 18, 24, 30 and 36 months, language data was ascertained using the normed German parent questionnaire FRAKIS (Szagun et al., 2009).
The statistical analyses are done via structural equation modeling in Mplus software. The groth curve of vocabulary development as well as the weighted influence of each measuring time on later vocabulary competencies are presented and possibilities of prediction discussed.

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Paper 4: The impact of a developmental language delay on the ability to understand and produce texts

- Antje Skerra (presenting author)

Abstract:
One of the key qualifications in school is to understand and produce texts. This basic ability strongly correlates with achievement in school and is an important precondition for unrestricted social participation (e.g. IQB-Bildungstrend 2016; IGLU 2017).
The study focuses on cohesion devices like pronouns and connectives, whose application touch a fundamental interface in text processing – the syntax. Therefore, this study concerns children with a developmental language delay (DLD), resulting in severe difficulties in processing syntactical complex sentences.
The main question was whether and how syntactical knowledge in children with DLD influences the processing of pronoun resolution and connectives in discourse.
In 3 experiments the comprehension and production of intersentential pronoun resolution as well as connectives were assessed. A large cohort of n= 120 with n= 40 children with DLD (3;0 to 10;11) was compared to control groups with chronological age matched and language age matched children. There was cross-sectional and longitudinal data collected.
Most of the theoretical background was provided by the *Minimal Default Grammar – Hypothesis* (Penner & Roeper, 1998). The framework postulates that children with DLD adhere to an interim grammar.
In experiment 1 the comprehension of pronoun resolution in complex clauses was tested. In experiment 2 the children had to judge the truth of the sentences with the

connectives *weil* and *aber.* Finally, in experiment 3, the children told stories. The focus of the analyses was on the production of referential and relational devices in all syntactical positions.
The results show highly significant differences in the performance of the DLD group to the control groups (DLD < EA $p < .001$; DLD < CA $p < .001$). There are no significant differences between the developmental subgroups of the DLD. Strong correlations were found between the grammatical development of the children and the availability of cohesive means.
Children with DLD neither understand nor use cohesive devices within complex sentences. The results confirm the MDGH and find confirmation in outcome studies with children with DLD, which show current syntactical problems in adults (e.g. Botting & Conti-Ramsden, 2007). Underdeveloped language tools must be taken into account for a large group of children, such as children with general learning difficulties, low socio-economical status or for multilingual children.
key words: special educational needs – DLD – text comprehension – educational success

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S4.4 – Attitudes Towards Inclusion / Meaning of Inclusion

Paper 1: Attitudes towards Disability and Inclusion: Results from a Longitudinal Study on Young Volunteers

- Karina Meyer (presenting author), Daniel Erdmann & Arienne S. Willems

Abstract:
Empirical results from various studies reveal the importance of attitudes as a crucial factor for a successful implementation of inclusion. However, attitudes towards inclusion are conceptualized in very different ways in the existing research literature and, what determines a positive attitude towards disability and inclusion does not seem to have a (simple) clear-cut answer. Furthermore, little is known about the nature of attitude changes in settings of a longtime daily contact with people with disabilities, e.g. when participating in a one-year social volunteering program.
To investigate such attitude changes, we found existing questionnaires most often limited to specific subjects such as inclusion in school or attitudes towards a specific type of disability. Based on such existing questionnaires, we therefore designed a new instrument to investigate the following questions: (1) From a conceptual point of view, we aim at developing an appropriate standardized questionnaire for measuring diverse dimensions of attitudes towards disability and inclusion. (2) Subsequently, we investigate (i) in how far and (ii) in which way young people who work for a year as volunteers with people with disabilities undergo attitude changes.
All analysis are part of the German study EFBI 2017-2018 (Young volunteers' attitudes towards disability and inclusion) which investigates effects of the participation in the state supported volunteering program FSJ (Voluntary Social Year). Our sample consists of $n = 440$ young volunteers (65% female, mean age 18 years) who fill out the questionnaires at three measurement points (August 2017, March 2018, June 2018).

Based on prior expert interviews and existing research literature, we developed four standardized Likert-scales on attitudes towards inclusion, and various questions concerning possible influence factors. We labeled the scales *discomfort in social interaction*, *disability-as-deficiency perspective*, and *context factors perspective*. The fourth scale, *approval of inclusion*, consists of statements based on the United Nations *Convention on the Rights of Persons with Disabilities*. The answering formats of the scales range from 1='*does not apply at al'* to 6='*does fully apply*'.
Stepwise conducted exploratory and confirmatory factor analyses of the first data run with M*plus 8.0* suggest a relatively good fit for the assumed four-factor structure of attitudes towards disability and inclusion (CFI = .95, RMSEA = .05). The internal consistencies of the scales are acceptable to good ($.68 \leq \alpha \leq .81$). Exploratory analyses of the interrelation between the dimensions reveal different significant correlations ($p < .05$). For example, *approval of inclusion* is correlated negatively with the *deficiency perspective* ($r = -.46$) and positively with the *context perspective* ($r = .29$). As for possible influence factors, a positive valuation of prior contacts with people with disabilities is correlated positively with *approval of inclusion* ($r = .25$) and the amount of former contact is only correlated negatively to the *deficiency perspective* ($r = -.15$, p for all correlations $< .05$).
Further analyses will be conducted after the second and third measurement point and presented on the conference, especially on the question of attitude changes at the end of the volunteering year and moderating factors.

Paper 2: Testing factorial and convergent validity of three instruments assessing attitude towards inclusion

- Julia Gorges (presenting author), Phillip Neumann, Sandra Grüter & Stefanie Weise

Abstract:
Many researchers focus on attitudes towards inclusion as key determinants of the successful implementation of inclusive practices in schools. In doing so, they need measurement instruments to adequately assess teachers', parents', and students' attitudes towards inclusion. Consequently, in recent years, researchers have developed a range of new measurement instruments. However, as most research groups used only one of these instruments, we know little about their convergent validity and replication studies of factorial structure are rare. The present study focused on replicating the factorial structure of three established measurement instruments available in German-SACIE (Feyerer et al., 2014), EFI-L (Seifried & Heyl, 2016), and KIESEL (Bosse & Spörer, 2014)-and testing their convergent validity with each other. A sample of 136 teachers (age: M (SD) = 47.3 (12.4); 75% female; about 30% working at regular primary schools and 23% working at special education schools) participated in a survey covering the three instruments. To align participants' conceptualization of inclusive education, all surveys presented a general definition. In addition, participants were asked to focus on the inclusion of children with special educational needs in learning (SEN-L). A few items had been marginally rephrased to match these prerequisites (e.g., replacing "students with disabilities" with "students with SEN-L"). Confirmatory factor analyses allowing for occasional residual error correlations replicated the factorial structure of the instruments. Factor correlations of the SACIE were $r = -.47$ (attitudes / sentiments), $r = -.23$ (attitudes / concerns) and $r = .32$ (sentiments / concerns). Regarding the EFI-L, factor correlations were $r = -.77$ (instructional / social), $r = .76$ (instructional / teacher-focused) und $r = -.60$ (social / teacher-focused). Factor correlations of the KIESEL were quite high: $r = .91$ (instruction / effects), $r = -.97$ (instruction / student behavior) und $r = -.97$ (effects / students behavior). Factor correlations across instruments ranged between $|.61|$ and $|.96|$, excluding the factors sentiments and concerns from the SACIE, which show much lower correlations. Overall, these results show that each instrument has a specific focus leading to variability in the latent constructs measured. Depending on the focus of the research, one needs to look closely to select the instrument that best addresses one's conceptualization of attitude and inclusion. Nevertheless, factor correlations across instruments justify the assumption that all three instrument assess attitudes towards inclusion.

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Paper 3: Changes in preservice teachers´ attitudes toward inclusion: the role of competence - Ineke Pit-ten Cate (presenting author) & Mireille Krischler

Abstract:
Following policies to promote a more equitable and inclusive educational system, the question arises how to prepare teachers to accommodate an increasingly heterogeneous student population. As teachers´ competence concerning inclusion is grounded in their training (e.g. Baker-Ericzen et al. 2009), courses focussing on inclusion as an educational practice could reduce uncertainties (e.g. Carroll et al. 2003). However, inclusion not only depends on teachers´ competence but also on their attitudes. Teachers' attitudes may be pivotal for the success of inclusive education as they can elicit differential expectations and behaviors, which can enhance or limit the successful inclusion of students with special educational needs (SEN). Avramidis and Norwich (2002) stressed the importance of training in the formation of positive attitudes toward the integration of students with SEN. Although several studies have reported positive changes in attitudes following a course on inclusive education (e.g. Shade & Stewart, 2001), the relationship between competence and attitudes is less clear. Therefore, this study aimed to evaluate the effect of a course on inclusive pedagogy on competence and attitudes and the association between these constructs.
Data were collected for 69 preservice teachers enrolled in a course on inclusive pedagogy. Attitudes toward the inclusion of students with SEN were assessed before and after the course, using the German version of The Opinions Relative to Integration of Students with Disabilities questionnaire (ORI; Benoit & Bless, 2014). In addition, at the end of the course students indicated to what extend the course had helped them to gain knowledge, skills and strategies concerning teaching a heterogeneous student population.
Results of a repeated measures 2×4 ANOVA, with time (pre vs. post) and attitude towards inclusion (ORI subscales) as within group factors showed a main effect for attitudes, reflecting variations between the subscale scores. A significant time × attitudes interaction effect indicated positive attitude changes over time, but only in the domain of educational and social progression of students with SEN. Results of a regression analysis indicated that, after controlling for pre-course attitude ratings, perceived competence predicted attitude ratings at the end of the course.
This study shows that teacher training can positively affect both teachers´ competence and attitudes concerning inclusive education, whereby perceived competence contributed to positive attitude change.

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Paper 4: Teachers' Subjective Definitions of Inclusion – An Exploratory Study
- Bodo Przibilla (presenting author), Friedrich Linderkamp & Philipp Krämer

Abstract:
A review of the academic scholarship provides many different understandings and various ways to define and operationalize *inclusion* (Göransson & Nilholm, 2014; Grosche, 2015). It stands to reason that practitioners like teachers also have inconsistent concepts of inclusion. Although there is some evidence, that the association between behavior and subjective understandings or beliefs of teachers is stronger than the relationship between academic theories and teachers' behavior (Groeben & Scheele, 2010; Helmke, 2015), there is a lack of research on teachers' subjective definitions of inclusion. The study explores which content-related elements compose teachers' subjective definitions of inclusion as a concept. A subsample of 182 teachers completed an online survey and answered the open-ended item "Define *Inclusion* in your own words.". The data was analyzed using an inductive qualitative content analysis (Mayring, 2015). Through three iterations of the analysis the answers were summarized in 27 categories ($\kappa = 0.85$) which could be categorized by 15 dimensions ($\kappa = 0.89$). Results show that teachers define inclusion in various ways. Even individual subjective definitions comprise contradictory elements. The categories are related to social, ethical, and school-related issues and also contain affective aspects and (negative) evaluations. The most frequently found categories are related to the topics of participation and membership, or differentiation and individualization. But teachers also describe aversive conditions, insufficient resources and potentially negative consequences of inclusion. The study provides a reliable coding scheme to categorize subjective definitions of teachers and thereby contribute to enhance the measurement of teachers' subjective definitions of inclusion. Methodological implications regarding the systematic consideration of subjective definitions in empirical research on inclusion are discussed.

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Day 3 – Session 5

S5.1 – Symposium Voß, Casale & Blumenthal

Behavior Problems in Inclusive Settings: Psychometric Properties of Formative Behavior Assessments
- Gino Casale (chair), Stefan Voß (chair) & Yvonne Blumenthal (Organiser)

Abstract:
Formative assessment of students' behavior plays a critical role in inclusive education. Formative behavior assessment a) supports the identification of students, who need additional behavior support, and b) guides the election, implementation, and evaluation of school-based prevention and intervention efforts (Volpe, Briesch, & Chafouleas, 2010). However, the development and evaluation of formative behavior assessment tools are in initial stages and a variety of research questions still remain unanswered, especially in regard of the tools' psychometric properties (Casale, Hennemann, Huber, & Grosche, 2015). The symposium aims to contribute to the current base of evidence on formative behavior assessment tools by bringing together results on the psychometric characteristics of such tools.
The symposium consists of three papers focusing on several aspects of formative behavior assessment tools and their psychometric characteristics. The first paper (Casale et al.) introduces into the symposium by presenting psychometric data on an adaptive and integrated model of formative assessment for both externalizing and internalizing behaviors in students. The second paper (Blumenthal & Voß) presents results on the item characteristics and factorial validity of a universal behavior screening tool. The third paper (Gebhardt et al.) discusses the Strengths and Difficulties Questionnaire (SDQ) as a Direct Behavior Rating (DBR) tool by presenting initial pilot data.

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Casale, G., Hennemann, T., Huber, C., & Grosche, M. (2015). Testgütekriterien der Verlaufsdiagnostik von Schülerverhalten im Förderschwerpunkt Emotionale und soziale Entwicklung. *Heilpädagogische Forschung*, *41*(1), 37–54.
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Paper 1: Psychometric Properties of an Integrated and Adaptive Model of Formative Assessment for Behavior
- Gino Casale (presenting author), Robert J. Volpe, Thomas Hennemann, Amy M. Briesch & Michael Grosche

Abstract:
Students exhibit a broad range of behavioral problems including externalizing (e. g. inattentiveness) and internalizing (e. g. social withdrawal) dimensions (Kauffman, 2005). To enable practioners to deal with such behavior problems, assessment and intervention tools are needed that a) address the variety of those problems, b) provide a data-based follow-up service (e. g. intervention efforts), and c) evaluate the student's individual response to a provided intervention (Volpe, Briesch, & Chafouleas, 2010).

Therefore, an integrated and adaptive system for inclusive education of students with behavioral problems was developed. The Integrated Screening and Intervention System (ISI-System; Volpe & Fabiano) combines a) universal screening (38 items) for identifying students at risk for externalizing and/or internalizing behavior problems, b) a feedback-based intervention that is closely linked to the screening results, and c) progress monitoring (i. e. Direct Behavior Rating) to evaluate a students' response to that intervention.
The psychometric characteristics of the universal screening tool (i. e. the Integrated Teacher Report Form, ITRF) were examined. First, we wanted to know what the factorial validity of the ITRF is. Second, we were interested whether the ITRF would allow for sufficiently reliable measurement of the identified factors (i. e. internal consistency reliability).
The ITRF was completed for a sample of n = 1,740 students from first to sixth grades in North Rhine Westphalia (Western Germany). We conducted an exploratory factor analysis (EFA) with Maximum Likelihood extraction and oblique factor rotation to identify the underlying factors. Internal consistency was analyzed calculating Cronbach's Alpha.
The results suggested that no items were found with regard to multicollinearity (inter-item correlations above .80) or low communalities (inter-item correlations above .30 with fewer than three items). The measure of sampling adequacy (MSA) was above .60 for all items. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (.94) and Bartlett's Test of Sphericity (χ^2 (780) = 50152.93, $p < .001$) suggested that (a) there were no problems with the size of the sample and (b) the matrix was factorable. Examination of the scree plot suggest an elbow between the third and the fourth factor. Eigenvalues above 1.0 were identified for three factors. These three factors accounted for 54.18% of the common variance in items. Therefore, the decisions was made to extract three factors: oppositional/disruptive behavior, academic productivity problems, internalizing behavior problems. The internal consistency for all scales was high (Cronbach's Alpha from .91 - .93).
These results provide initial evidence on the psychometric properties of a universal screener that addresses both externalizing and internalizing behavior problems in classrooms. Future studies should focus on further psychometric investigations such as classification accuracy, test-fairness, and construct validity.

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Paper 2: Psychometric Properties of a Rating Scale for School-based Behavior in a Representative Sample

- Stefan Voß (presenting author) & Yvonne Blumenthal

Abstract:
Providing early school-based prevention and systematic intervention services for students at risk for or with behavioral difficulties starts with a screening to identify student´s level of risk (Walker, 2010). This can be seen as a prerequisite, followed by a targeted intervention and the evaluation of the developmental process by formative assessment. A first overview for national research shows a lack of screening tools that fulfill criteria like e.g. appropriateness, usability and technical adequacy (Volpe et al., 2018).
The aim of our study is to develop a universal preventive behavioral screening, oriented to established psychometric and usability criteria (e.g. Andermann et al., 2008, APA, 2014, Glover & Albers, 2007, Miles, Fulbrook & Mainwaring-Mägi, 2018).). For that purpose, we designed and

piloted 60 positively worded items. All items have to be rated on a Likert-scale from 1 (occurs all the time) to 5 (occurs never) by teachers.
The sample consists of 302 teachers of 49 randomized chosen schools distributed and weighted over 13 federal states of Germany. All teachers rated the items for three randomized chosen students of their classes. This leads to a total sample of 844 students attending grade 1 to 8. For a subsample of 87 students the teachers additionally rated the Strength and Difficulties Questionnaire (SDQ; Godman, 2001).
As a short instrument seems more likely to be practically relevant for behavior assessment in school, we will analyze item statistics in a first step. Based on that we decide which items to keep for the final instrument. We will than examine the fits of two theoretically sound models using CFAs; a one-factor-model and a three-factor-model comprising (1) academic behavior, (2) compliant behavior and (3) social-emotional behavior. As further validation, we will report correlations between the rating and the SDQ. Finally, we will conduct tests of invariance across gender and grade.
Note: We appreciate your understanding that we cannot report definitive information on the results at this time, as part of the data is currently in the input phase.

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Paper 3: Strength and Difficulties Questionnaire (SDQ) as Direct Behavior Rating? Results of a Pilot Study

- Markus Gebhardt (presenting author), Jeffrey DeVries, Sven Anderson & Jana Jungjohann

Abstract:
The Strength and Difficulties Questionnaire (SDQ) is an established screening tool in research and practice for diagnosing behavioral disorders (De Vries, Voss & Gebhardt, 2017). From previous research we know, that the teacher version of the SDQ meets the requirements of the Rasch model over multiple annual measurement points and SDQ total difficulties score was stable over time (Voss & Gebhardt, 2017). Based on these results, the SDQ is appropriate for progress monitoring purposes. We adapted the teacher version of the SDQ to improve the assessment of behavior development in school using direct behavior ratings on a Likert scale (1 = never to 7 = always). First,

we explain the scale construction and report the interrater reliability between two raters (Spearman's Rho = .80) from a pilot study of 15 primary and special education students. Second, we analyze the psychometric properties based on Item Response Theory using a sample of 100 regular primary school students, who were rated daily over one week (five measurement points). All IRT analyses will be conducted in R with the package pairwise. An additional sample of two classes were collected in a closed clinical institution for drug abuse. Further construction and improvement for the instrument and study designs to implement DBRs will be discussed.

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S5.2 – Teacher Education

Paper 1: Parents view to co-operation with teachers – Teija Koskela (presenting author)

Abstract:

In Finland every child in comprehensive school has a right to get support into schools everyday environment. According national core curriculum this support should be planned together with parents. This paper describes how parents experience their position in process to build support for their children in schools. The research question is how parents experience their relations with professionals when negotiating of support needed for their child. The intended purpose is to bring the quality of relations and interactions into focus based in parents experiences and to create alternative approaches to represent co-operation between home and school.

In this paper the question of parental involvement is located in framework of inclusive education. In inclusive education the basis of co-operation is confidential relation between school and parents (f. E Kozleski & Waitoller 2010). Inclusive culture needs good relations with parents (Ainscow & Miles 2008). The non-participation of parents is seen as a barrier to inclusive education (Kozleski et al. 2009). On the other hand parents can be seen as a too demanding partners (Takala et al. 2012). It is important to see parents as a resource and partner in developing processes in schools.

This paper is based on ten interviews collected in Finland 2016-2017. Informants were found by parents own networks. In one interview there were both parents, other interviewed persons were all mothers. All parents had at least one child who needs some kind of support in school. Analysis process followed phenomenographic approach and the aim was to describe and categorize qualitative variation of experiences (Marton & Booth 1997).

Preliminary results gives us information about experiences of parents. In interviews become apparent relations like mutual trust. As a result is introduced the category of descriptions to describe variation in this data. As a conclusion are given some guide lines to consider to develop teacher education and dialogical practices in schools.

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Paper 2: What's important to implement inclusion: Indications on the basis of the theory of planned behavior

- Karolina Urton (presenting author), Jürgen Wilbert & Thomas Hennemann

Abstract:
The attempt to understand which factors influence the successful implementation of inclusion still remains a central issue in current research. Investigations provide evidence which shows that positive attitudes towards inclusion and teachers` self-efficacy are important prerequisites in this field. For a systematic investigation of this issue the theory of planned behavior provides a useful framework. In that model, it is assumed that behavioral intention, as a predictor of the behavior, is influenced by behavioral, normative as well as control beliefs. Each of these three dimensions is moderated by a specific evaluation dimension (behavioral beliefs * outcome evaluation; normative beliefs * subjective norms; control beliefs * perceived behavioral control). While some research has been done on specific aspects of the model, no study in the area of inclusion addresses a comprehensive application of all model aspects. The objective of our inquiry was to apply the theory of planned behavior to explain the intention of teachers to implement inclusive teaching in their classrooms (intention). We collected data of 730 primary school teachers working in inclusive school settings of 56 German primary schools. We developed specific scales on all six aspects of the theory of planned behavior (Behavioral beliefs; Outcome evaluation; Subjective norms; Normative beliefs; Control beliefs; Perceived behavioral control) referring to the aspect of inclusive education in the classroom.
Multilevel regressions (teachers nested in schools) were calculated to test the applicability of the model. All three belief scales show the expected main effects and interaction with the evaluation dimension on the intention to implement inclusive education when tested in separate models. In a complete model with all six variables and the three interaction effects behavioral beliefs, perceived behavioral control, and the interaction behavioral beliefs * outcome evaluation remain significant effects. Overall, the results support the applicability of the theory of planned behavior to explain the behavioral intentions with respect to inclusive education.

S5.3 – Universal Design and Differentiated Instruction

Paper 1: Professional vision of inclusive education: teachers' reasoning on instruction & interaction

- Wendelien Vantieghem (presenting author), Iris Roose, Karolien Keppens, Esther Gheyssens & Júlia Griful Freixenet

Abstract:
As societies become more diverse and the demand for inclusive education grows, teachers are challenged to meet the needs of diverse learners. Hence, they are required to adapt their teaching and classroom behaviour to heterogeneous academic abilities, interests, backgrounds, and motivations. In the context of educational changes, being able to examine and make sense of classroom practices becomes a central skill in the ongoing competence development of teachers. In

this regard, previous researchers (i.e., Seidel, Stürmer and colleagues) introduced the concept of professional vision, which is defined as teachers' ability to notice and reason about classroom situations in new ways. This study focuses on teachers' reasoning about video clips of inclusive classroom situations as part of their professional vision of inclusive classrooms. While there are a variety of approaches to create inclusive classrooms, this study focuses on positive student-teacher interactions (PTSI) and differentiated instruction (DI), since these are two noticeable teaching approaches that are quintessential for dealing with diversity. First, positive student-teacher interactions have been shown to contribute directly not only to student well-being, but to achievement as well. Furthermore, research indicates that this is especially important for students-at-risk. Secondly, DI emphasizes the needs of both advanced and struggling learners in inclusive classroom by differentiating the instruction in terms of content, process and product in accordance with students' readiness, interests and learning profiles. Consequently, we examine teachers' reasoning with regard to positive teacher-student interactions (PTSI) and differentiated instruction (DI).
Therefore, we validated an instrument to measure teachers' reasoning with regard to PTSI and DI. First, a list of 26 and 28 arguments for positively evaluating videos of classroom practice with regard to PTSI and DI respectively, was formulated by a group of educational experts (e.g., faculty members, pedagogical counsellors, teacher educators, …). This list was then presented to 991 teachers after they judged the same video clips. Teachers were asked to indicate how crucial each argument was in their judgement of video clips with regard to PTSI and DI. Based on principal component and reliability analyses, subdimensions in PTSI and DI were identified. This solution was then cross-validated in the context of teacher education with 2,225 pre-service teachers. Results show that the latent construct of PTSI consist of three subdimensions: individual needs, safe & structured environment, and student involvement. The latent construct of DI consists of four subdimensions: active learning, instructional clarity, adaptive teaching and flexible grouping. The robustness of these findings across contexts, including both primary and secondary teachers, as well as pre-service teachers, demonstrates the centrality of these dimensions in teachers' reasoning about inclusive classrooms. Implications for research into (pre-service) teachers' professional vision, the use of video-based assessment in educational research, as well as implications with regard to professional development of (pre-service) teachers in inclusive education are discussed.

Paper 2: Interrelationship of Universal Design for Learning and Differentiated Instruction: systematic review

- Júlia Griful Freixenet (presenting author), Katrien Struyven, Wendelien Vantieghem & Esther Gheyssens

Abstract:
The primary aim of this systematic literature review is to explore the interrelationship of two prominent pedagogical models in the context of the inclusive education paradigm: Universal Design for Learning (UDL) and Differentiated Instruction (DI). More and more, both models are being presented in the literature as two similar and interrelated models within the inclusive education paradigm. Nevertheless, we find a broad proliferation of theories about the interrelationship between both. At first glance, these theories may appear at conflict. To advance the field, it is important to shed light on these contradictions and to reach a consensus on a number of fundamental concepts. This review aims to contribute to this integration by an in-depth exploration of previous scientific research that has contrasted both UDL and DI. A systematic literature review in four scientific databases was conducted to explore the peer-reviewed evidence. In total, 23 scientific articles were included and analysed. For each interrelationship, conceptual similarities and differences of both UDL and DI models were described and analysed.
Up until now, no research has contrasted both models empirically. It can be concluded that the conceptual entanglement between UDL and DI is taking place in few peer-review articles and only

on a theoretical level. Three theoretical interrelationships between the UDL and DI models were found in the literature. Firstly, the complementary interrelationship, perceived interdependency between UDL and DI, and therefore, proposed to combine them in an integrated way. Secondly, the embedded interrelationship, perceived that DI was encompassed within the UDL framework. Lastly, the distinctive interrelationship, perceived both UDL and DI as two separate entities with some similarities but also important, or even incompatible, differences.

When analysing the complementary interrelationship, authors engaged in testing the complementarity between both constructs by devaluating either UDL or DI into an inferior category than the one originally described. Similarly, studies proposing the embedded interrelationship, defined DI as a practice for differentiating the curriculum. In contrast, UDL was considered a paradigm or a philosophy by the same studies. This may be due to the literal and prevalent use of the term 'differentiation' in the UDL guidelines (CAST, 2011). Regarding the distinctive interrelationship, studies that perceived incompatibility between both models tended to consider exclusively the initial theories. This could be because the original theories provide a clearer distinction between UDL and DI. However, both UDL and DI models have softened during these years leading to an interesting evolution. On the one hand, the UDL theory has evolved into a more flexible model which is willing to tackle the individual needs. On the other hand, the DI theory has evolved towards a proactive approach design which offers different avenues to all students to achieve the same learning goals. Therefore, we can see that both theories are converging towards each other, making it increasingly difficult to distinguish between both UDL and DI models. If there are no significant differences, and similarities are so extensive, perhaps UDL and DI are conceptually converging into the same theory?

Day 3 – Session 6

S6.1 – Teacher Behaviour

Paper 1: Teacher misbehaviour in heterogeneous classrooms: The impact of self-efficacy and teaching methods
- Natalie Fischer (presenting author)

Abstract:
Especially in heterogeneous groups the fact that teacher behaviour is associated to teachers' expectations is striking. Veridical expectations help teachers to assign achievable yet challenging tasks to students and especially low learners seem to benefit from high teacher expectations (Rubie-Davies, 2009). However, teachers tend to rate students' personal attributes negatively and to treat students differentially based on low achievement-expectations (Rubie-Davies, 2010). This may also result in unjust, disregarding or aggressive behaviour towards some children, so called "teacher misbehaviour" (Lewis & Riley, 2009). As such behaviour not only relates to differences in opportunities to learn between students of one classroom (Ruby-Davies, 2009) but also to decreases of students' motivation and well-being (Sava, 2002), avoiding teacher misbehaviour seems to be an important issue in inclusive classrooms.
This paper aims to fill a research gap by identifying classroom conditions and teacher characteristics related to reduced teacher misbehaviour. As burn out predicts negative teacher behaviour (Sava, 2002) and teachers' self-efficacy is associated negatively with teacher stress (Zee & Koomen, 2016), it is likely that high self-efficacy relates to low teacher misbehaviour (hypothesis 1). In addition, non-competitive structures as well as social support predict less differential treatment (e. g. Weinstein et al., 1987). Thus, students should perceive low teacher misbehaviour, in cooperative and individualistic classroom settings (hypothesis 2).
Analyses are based on survey-data of the study on the development of all-day schools that is funded by the German Federal Ministry on Education and Research. The sample consists of nearly 2000 fifth-graders from 112 classrooms in 66 German middle schools and their teachers. Teachers reported on their use of competitive, cooperative and individualistic teaching methods in the classroom and their teaching self-efficacy. Students rated teachers' behaviour. Several background variables of students were included as covariates. Results of two-level structural equation models in MPlus support the assumption that especially cooperative settings are associated to less teacher misbehaviour whereas teacher self-efficacy predicts positive interactions. These results are relevant for inclusive learning arrangements and teacher professionalization.

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Paper 2: When student-teacher-interactions fail - Aggressive Teacher Behaviour from different perspectives

- Petra Richey (presenting author) & Natalie Fischer

Abstract:
Encouraging interactions and social integration are important issues in inclusive education settings and prerequisites for successful student learning (Cornelius-White, 2007). However, teacher-student-interactions are not always positive and results suggest, that the majority of students reports aggressive teacher behaviour retrospectively and that this is associated with negative effects (e.g. Krumm & Weiß 2000). Thus, demands for interventions and preventions increase. However, due to research gaps in the field, central concerns and features of such treatments remain unclear to date (Melzer & Ehninger 2002). We can identify the following shortcomings:
1. Reasons of aggressive teacher behaviour are seldom investigated.
2. Results in this field mostly stem from retrospective interviews and surveys. So, it remains unclear to date, which teacher behaviour is perceived as aggressive by students and if these perceptions are individually determined or concurrent in a classroom.
Our project aims to overcome these shortcomings by focussing on students‘ perceptions of and reasons for aggressive teacher behaviour. For this purpose, students and teachers rate videos of student-teacher-interactions in classroom in two studies, starting in spring 2018. In study 1 subjects identify and rate interactions by means of video annotation. The planned sample includes 90 students and 90 teachers. They stop a video of a lesson, each time they identify aggressive teacher behaviour, and rate the amount of distress of students in this interaction. Based on this study, scenes of the videos will be shown in study 2 to 65 teachers and 65 students. In these scenes, teacher behaviour varies in type of aggression and amount of caused distress. Both studies use questionnaires to investigate personality traits that influence the perception of interactions and to determine the reasons that subjects associate to different types of aggressive teacher behaviour. Video annotation is an innovative method to identify similarities and differences in perceptions of teacher behaviour. As every subject stops and comments on the scenes, he or she individually perceives as aggressive, analyses are complex. Annotated scenes will vary concerning number of scenes, content (point in time) and evaluation (amount of distress caused by teacher behaviour).
At the roundtable, we will present design, analyses and first results of study 1. Participants of the roundtable shall discuss possibilities to deal with the requirements of these complex data.

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Paper 3: When student-teacher-interactions fail: Patterns of teacher behaviour in the classroom - Vivien Wysujack (presenting author), Natalie Fischer & Annedore Prengel

Abstract:
The positive influence of supportive teacher-student-interactions on students' learning, motivation and their social development is beyond controversy. Supporting every single student is indispensable especially in inclusive classrooms. Although, negative effects of teacher behaviour on students' development are often reported retrospectively (Fend, 1997), they are seldom investigated empirically. The study "INTAKT" (Prengel et al., 2012) includes more than 13.000 field vignettes based on observations of teacher-student-interactions in Germany and Europe. Ratings of these interactions revealed that in nearly a quarter of them teachers displayed offending behaviour or disrespect. This occurred often in interactions with students with special educational needs (Tellisch, 2010). Ethical inappropriate behaviour could be due to situational, institutional or individual factors. However, research on teacher-student-interaction or teacher behaviour mostly examines teachers at specific school types (Helsper & Hummrich, 2014) or the general influence teachers have on students' learning (Hattie, 2009). Empirical results on individual patterns of teacher behaviour and the identification of teacher types are from the 20th century (Lewin et al., 1939; Tausch & Tausch, 1971). Thus, current school research lacks studies on teacher-student-interactions based on behaviour of individual teachers. This paper is part of a dissertation project, which aims to fill this gap. The central questions are:
1. Which general patterns of teacher behaviour in student-teacher-interaction can be observed?
2. Which (dis-)continuities in the individual teacher behaviour, especially for inappropriate behavior occur?
3. Are there connections between inappropriate behaviour patterns and selected parameters, such as gender of teacher, form (age of students) or type of school?
Data of 242 teachers, observed in at least 10 interactions (11.232 vignettes) are analysed for this paper using hierarchical cluster analysis. The field vignettes from "INTAKT" were collected in 89 different German schools across all different school types. Results display seven clusters (i.e. patterns) of teacher behaviour. Although there are teachers behaving respectful and appreciative in almost 60 % of the interaction scenes, 25 % of the teachers show patterns of disrespect and offending behaviour towards their students in more than 30 % of their interactions. Furthermore, there are additional patterns showing for example a laissez-faire-style that also can be discussed as a lack of attention towards students' needs. Relating these patterns to individual and institutional variables, leads to a deeper insight in conditions leading to negative interactions and suggestions for teacher professionalization for inclusive classrooms.

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S6.2 – Educational Practices for Students with Disabilities

Paper 1: Developing and Validating a Digital Literacy Assessment and Progression for Students with Disability

- Emily White (presenting author) & Kerry Woods

Abstract:

Theoretical background: A fundamental measure of exclusion is the restriction on a student's ability to access opportunities for learning (Slee, 2014). Students with disability require compensatory tools, such as technology, to assist them to overcome restrictions to such access wherever possible (Vygotsky 1929/1993). Digital literacy ability can support students with disability to use technology to enact their right to education (United Nations, 2006), via accessing learning opportunities. Despite the importance of this 21st century skill (Griffin & Care, 2015), it is difficult for teachers of students with disability to know their student's level of digital literacy ability, or what to expect their student to be ready to learn next, as no criterion-referenced assessments of digital literacy ability or derived progressions have been validated for use with these students at the time of writing.

Research question: This study sought to answer: *To what extent can a measure of digital literacy be developed to describe a learning progression for students with disability?* Accordingly, the study aimed to develop and validate an instrument to measure digital literacy capability for students with disability that could support teaching and learning. Possible constraints on the use of the measure due to student and teacher background characteristics were investigated.

Methods: The study applied an established model for the definition of criterion-referenced frameworks (e.g., Griffin, 1990; Griffin, Smith, & Martin, 2003), following protocols from related work to design and validate measures of learning in other foundational skills (e.g., Strickland, Woods & Pavlovic, 2016; Woods & Griffin, 2013). Teacher observation data from 1,413 students with primarily intellectual disability, aged 4 to 19 years, 69.9% male, and in specialist or mainstream settings, were collected using an online assessment. The behavioural indicators of the construct formed the items (stems), and performance quality criteria of each indicator formed the item-steps (multiple-choice options). A progression of digital literacy was developed using partial credit item response modelling (Masters, 1982). Impacts of student and teacher background characteristics were investigated for their respective ability to develop and assess digital literacy via differential item and step functioning (DIF/DSF), chi-squares, and person fit analyses.

Results: Data analysis indicated a high-quality assessment, with negligible DIF and DSF for students regardless of age, disability type, or gender. Chi-square analyses showed similar patterns of response to assessment items for teachers regardless of experience, support, or self-efficacy in, or attitudes toward, teaching digital literacy to students with disability, or their school type. The instrument had an alpha reliability of 0.97, and item and person separation reliability indices of 0.99 and 0.97. Item fit indices were within acceptable bounds, and person misfit was minimal.

Interpretation of findings: The assessment tool could be used confidently with diverse students with disability, by teachers with different backgrounds, to support teachers in their understanding of students' digital literacy ability. The learning progression was interpretable by teachers to make planning decisions for digital literacy teaching for students with disability. It guided their understanding of what their students could do and were likely to be ready to learn next.

Paper 2: How to improve educational practice for students with Autism Spectrum Disorder in school

- Carla Canonica (presenting author) & Andreas Eckert

Abstract:

Theoretical background, research questions: «How can educational practice for children and youth with autism spectrum disorder (ASD) in schools be improved?»

This question marks the starting point of a project of the University of Applied Sciences in Special Needs Education in Zurich. Based on current research on the most important framework conditions for a successful educational practice for children and adolescents with ASD (Dunlap et al. 2008; Eckert & Sempert 2012, Iovannone et al. 2003, Lindsay et al. 2014, Parsons et al. 2011; Wong 2014), in a first step the project focused on the design of autism-specific competencies for school staff and of elements for professional development in schools. In a second step, we targeted the transfer of skills and knowledge into school.

Methods: First, we conducted a situation analysis regarding the current educational practice for children and youth with ASD in four participating schools in the Canton of Zurich (two special schools, two inclusive schools). This situation analysis consisted of an online survey designed for the whole school staff and a focus interview with the principal and an autism team of every school.

Based on these results, we implemented a specific and adapted program for professional development in each school, consisting of further training, coaching and counselling. The implementation process of this program required six to nine months. To assess the impact on school development we conducted qualitative focus interviews and two online surveys, one during the delivery of the program (t1) and one after completion (t2).

A group of 101 professionals participated at the final survey.

Results: Our results suggest an enhancement of skills and knowledge at an individual and institutional level. On both levels, the subjective assessment of competencies of school staff varies significantly between t1 and t2. The enhancement of skills and knowledge applies to all eight domains of competence.

Referring to the main question regarding the effectivity of the program's different elements, training courses were assessed as especially effective and useful, which contrasted with the evaluation of an online information program, counselling and e-mail support.

Overall, we found the following factors to be supportive with regard to the enhancement of competencies in schools: shifting the school's focus on autism over a longer period of time, the adaptation of the implementation program towards the individual needs of each school, and the participation of the whole school staff.

Interpretation of findings: The development of autism-specific competences in school should be supported at three levels: at the level of the individual professional, at the level of an autism team, who is mainly responsible for the promotion of students with ASD, and at the level of the school as an institution. In order to involve the existing competencies sufficiently, a deeper analysis of the current situation and needs regarding the educational practice for children and youth with ASD of each school should be given a high priority. Finally, a high intensity and the continuity of specific support represent significant impact factors worth considering in the process of implementing skills and knowledge in schools.

Paper 3: Effectiveness of Special Educational Measures in Integrated Mainstream Classes

- Simona Altmeyer (presenting author) & Susann C.A. Burkhardt

Abstract:

In integrated mainstream classes, especially studies on the social participation of children with special educational needs have been conducted. The results of these studies show that children with learning or behavioural difficulties, and in some cases children with intellectual disabilities, suffer from less social acceptance of their classmates (Bless, 2017). In the present study in the

context of integrated mainstream schools, above their achievements, the behaviour of *all* children as well as their well-being were examined over one year.The goals of integrated mainstream schools are to educate all children in mainstream classes and to qualify them according to the academic and behavioural goals of the mainstream school syllabus. To achieve these goals, some students receive special educational support. The present study addresses the question whether mainstream classes can succeed in qualifying all children regarding learning and behaviour and in integrating them into the class community with the help of special educational measures. In the longitudinal study, children, classroom teachers and special education teachers were surveyed three times over a school year with standardized instruments about various characteristics in combination with instruction characteristics as well as academic tests in German and mathematics. A total of 27 integrated mainstream classes (3rd to 6th grade) in three Swiss cantons with a total of 431 children (46% girls; 54% boys) participated. The age of the sample at the first measurement point averaged 10.4 years (SD = 0.96). 132 children (30.6%, N = 431) received special educational support. These children were supported at the first measurement by at least one special education measure. The changes in performance, behaviour and well-being of all examined children were analyzed over a school year. In addition, the extent of selection or the whereabouts of children in the mainstream class was examined in the same period.
Achievement level: The increase in academic performance of children without special educational support corresponds essentially to that of the children from the calibration sample. Children with special educational support on average show a similar increase in German and mathematics performance as their classmates, even though they have a lower level of school achievement.
Behaviour: Behavioural problems decease on average during the study year and prosocial behaviour increases slightly on average. In children with special educational support, behavioural problems decrease more compared to classmates.
Integration and well-being: All children remain in integrated mainstream classes during the period studied. Although children with special educational support have a lower academic self-concept and feel less socially integrated than their classmates, emotionally they feel equally well.
In the mainstream classes of this unrepresentative sample, the integration of children with special educational support is successful. The problems of the lower academic self-concept and the poorer social integration of children with special educational support, confirmed in agreement with other studies, raise the question whether – and if so – how these problems could be addressed appropriately.

S6.3 – Differentiated Instruction

Paper 1: Drawing as A Fresh Start for Learning Ratio Concept: The Case of Maya
- Sinem Sozen Ozdogan (presenting author) & Didem Akyuz

Abstract:
Inclusion students in heterogenous classrooms may confront various challenges due to instructional sequences. While regular students may follow similar learning paths with their friends, inclusion students might find different paths. The aim of this paper is to describe the learning path of a seventh-grade inclusion student, Maya, during the application of the instructional sequence related to ratio and proportion context (Stephan, McManus, Smith, and Dickey, 2015). Data was collected through Maya's activity sheets as well as field notes taken by the researcher based on the discussion of the tasks in the activities. The instructional sequence lasted in six weeks. The analysis revealed that Maya followed a different learning path from their peers in terms of using drawing pictures. It was noticed that during the sequence rather than using ratio tables, Maya preferred to use drawing pictures for understanding the rule of the ratio and solving the ratio problems in different contexts. The findings of this study might be helpful to understand diverse needs of inclusion students during the learning of ratio concept in a social learning environment.

Additionally, the results might be used to create a more effective learning environment for these students.

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Paper 2: Examining the practice of within-class differentiation within the National Educational Panel Study

- Marcela Gerardina Pozas Guajardo (presenting author) & Christoph Schneider

Abstract:

Heterogeneity, amongst students, is not limited to performance, it includes facets such as cultural background, language competence, gender-based learning preferences, learning styles, motivation and interest, and self-regulatory competencies (Wenning, 2007). Thus, heterogeneity, in all of its dimensions, changes the demands placed on teachers: they must move away from "one-size-fits-all" and into the practice of within-class differentiation (WCD). Despite the importance of WCD for successful learning, research into how teachers enact WCD is scarce and mostly descriptive (Seeber, 2010; Scharenberg, 2012). Using data from National Educational Panel Study (NEPS), this study examines how distinct forms of WCD are applied in classroom teaching and how these vary across school tracks. The sample consisted of 2439 ninth grade teachers and was stratified according to school track within the German school system. Results from mixed ANOVA indicate significant variations among the use of WCD approaches: For *tiered assignments*, there are differences in frequency between the single actions pertaining to this category: allowing faster students to move on to other assignments, providing additional assignments to low ability students, and giving extra assignments to high ability students are among the most used by both German and Math teachers. For *intentional within-class student grouping,* results show that across subjects, teachers build within-class heterogeneous ability groups rather than homogeneous ability groups. Moreover, results indicate significant variations across school tracks in the subject areas of German and Math: high ability students in comprehensive schools are most frequently provided with extra assignments. Furthermore, low-track school teachers tend to use homogenous ability grouping, while high-track school teachers prefer heterogeneous grouping. Despite the fact that teachers use WCD in both German and Math, our results indicate that WCD occurs in less quantity than required for effective management of student heterogeneity.

Paper 3: Differentiated Instruction in secondary schools: beliefs, practices and concerns of teachers

- Katrien Struyven (presenting author), Esther Gheyssens, Catherine Coubergs & Julia Griful Freixenet

Abstract:

Differentiated instruction aims at maximizing learning by means of addressing students' needs taking into account their academic differences in interests, readiness and learning profiles. Although different theoretical models exist and many practical guidelines are suggested to implement differentiated instruction in classrooms, little is known about the extent to which teachers adopt DI in their classroom and the barriers and support that they experience when implementing it. This paper describes two empirical studies on differentiated instruction in the context of secondary education.

Study 1 adopts a quantitative survey design with 855 teachers across 31 secondary schools in the Dutch part of Belgium (Flanders), administering the DI-Quest instrument. The associated DI-Quest model connects the philosophy of teachers to their classroom practices of adapting teaching to students' interests, readiness and learning profiles. The results of the cluster analysis reveal three groups of teachers, who differ significantly in the extent to which they adapt their teaching to students' academic differences. Determining factors for these differences in the adoption of adaptive approaches relate to teacher's philosophy on differentiated instruction. It is shown that the more fixed the mindset, with a more pronounced tendency to believe that the students' qualities, like their intelligence are fixed traits determining their success, (profile 1) or the more teachers are concerned about meeting the standards and curriculum (profile 2), the lesser they report adopting adaptive teaching strategies to meet students' differences in interests, readiness and learning profile. In contrast, teachers who report a higher growth mindset and who are concerned more about the learning processes of their students (profile 3), tend to report more frequent adaptive teaching strategies that align with students' academic differences.
Digging deeper into teachers' philosophy and experiences about differentiated instruction, Study 2 entails a qualitative semi-structured interview-study with 42 secondary education teachers at two Flemish schools in the multicultural capital city of Brussels. Teachers' perceptions about differentiated instruction are questioned based on the merits, support and barriers that they experience within their secondary school. Results from the content analysis show that although most teachers acknowledge the merits of differentiated instruction to address the needs of students, perceived barriers prevent them from adapting teaching to students' interests, readiness and learning profiles. The barriers that are mentioned relate to student perceptions of unfairness, perceived time constraints and extra workload, lack of expertise, learning materials and support, and poor (technological) classroom facilities and resources. A limited, but substantial, group of teachers does not experience an urge for differentiated instruction as their classes are perceived to be 'homogeneous'.
The discussion will address the added value of both studies for theory and practices of inclusive secondary education, including the limitations of the study and prospects for future research. One important conclusion, relating to the topic of the conference, will be that teachers' philosophy on differentiated instruction (and inclusive education in general) should be part of an integrated research framework.

Abstracts – Poster Presentations

Postersession 1 – Day 2

Pre-service Teachers' Training for Inclusive Science Learning in Primary School
- Frank Hellmich (presenting author), Fabian Hoya, Eva Blumberg, Susanne Schwab & Marwin Felix Löper

Abstract:
With the ratification of the United Nations Convention on the Rights of People with Disabilities, there are numerous questions concerning the implementation of inclusive learning processes in primary school. One important question concerns the enhancement of pre-service and in-service teachers' competencies for inclusive learning processes in schools. In particular, the cooperation of primary school teachers and special needs teachers is regarded as an important prerequisite for children's successful learning processes in inclusive schools. Currently, it is not yet fully clear how pre-service teachers can be prepared for cooperative processes in inclusive classrooms.
In our study, we therefore investigate possibilities of pre-service teachers' cooperative learning processes in connection with their qualifications for inclusive science learning processes in primary school. In detail, we investigate whether cooperative learning processes between pre-service primary school teachers and pre-service special needs teachers in university lead to changes in their attitudes towards team-work, their willingness to cooperate in inclusive education as well as their individual and collective self-efficacy beliefs. In our project, pre-service primary school teachers and pre-service special needs teachers will plan together science learning lessons. Subsequently, one pre-service primary school teacher and one pre-service special needs teacher will teach a small group of children with different learning conditions in primary school. In addition to this experimental group, two control groups will participate in our study. The one control group consists only of pre-service primary school teachers. In the other control group, one will only find pre-service special needs teachers.
The results of our study will give indications for effects of collaborative learning practices of pre-service primary school teachers and pre-service special needs teachers.
In our poster presentation, we will provide insights in the design of our study. The research project is funded by the German Federal Ministry of Education and Research (BMBF).

Adjustments of the School System due to the Convention on the Rights of Persons with Disabilities.
- Jennifer Lambrecht (presenting author), Stefanie Bosse, Helvi Koch, Thorsten Henke & Nadine Spörer

Abstract:
The ratification of the Convention on the Rights of Persons with Disabilities (UN-CRPD) led to children with special educational needs (SEN) accessing mainstream schools. In states with a long tradition of segregated schools for children with and without SEN this caused a change in the environments schools operate in. Following the systems-theory approach, the schools' environments became more complex, causing pressure to reduce complexity. As schools can be seen as open systems, it is likely that they adapt to the changing conditions and find different ways to handle the complexity. Complexity is not only dealt with on school level, but also on superordinate levels like the school's district. In certain districts, the pressure to reduce complexity may lead to schools developing emphases for students with SEN in specific domains. That would reduce complexity for other schools in the district. On school level, complexity might be reduced by forming special classes for students with SEN.

Empirically, it is unclear, if and how complexity due to the UN-CRPD is reduced on district and school level. We assume that on both levels schools resp. classes occur, that develop emphases for students with SEN. Further, it is an open question if and how the mechanisms to reduce complexity on school and district level are intertwined.
Based on data of *N* = 76 primary schools in 15 districts, we analysed how children with SEN were distributed among schools on district level and among classes on school level. The schools committed themselves to give access to students, regardless of a potential SEN in social-emotional development, learning disabilities or speech impediments. They operate in environments where other mainstream primary schools as well as special schools offer learning opportunities for students with SEN. Data on school level was derived from the school's principals, who filled in a paper-pencil questionnaire. They were asked to indicate the number of students with SEN in eight different domains per class. Data on district level was derived from official school statistics. The distribution of students with SEN on district level was calculated by relating the number of students with SEN in a specific area at one school to the median of the school's district. Significantly higher numbers of students with SEN at one school in a district were taken as an indicator for schools developing emphases for students with SEN. The distribution of children with SEN on school level was assessed using qualitative interratings and quantitatively using Chi^2-tests on class level.
On district level, preliminary analyses revealed that for a SEN in social-emotional development, four districts seem to have developed emphases schools. This leads to 40 % of all schools operating in an environment with reduced complexity on district level. In terms of complexity reduction on school level, we found, that five schools formed special classes for students with SEN.
Further analyses in terms of other SENs and the relation between complexity reduction on district and school level are currently conducted.

Using an iPad Application to Promote Phonological and Reading Skills in Children With Down Syndrom

- Jean Ecalle (presenting author), Monique Sanchez, Blandine Hubert & Annie Magnan

Abstract:
Children with Down syndrome (DS) were not expected to learn to read, and their teachers and parents did not think reading instruction as a priority for them (Katims, 2000). When provided, reading instruction was generally focused to practice of teaching children to visually identify words and match them to corresponding objects or pictures. Recently, the research has shown that children with DS can benefit from reading instruction which targets phonological awareness and reading skills (Cologon et al., 2011 ; Wyver, 2011). A recent study suggest that these children need specific training which takes into account their impaired verbal short term memory, such as learning to read syllables (Ratz, 2014). In this perspective, we have elaborated an application based on the syllabic treatment. The objective is to discover the alphabetic code starting with spoken syllables, in order to master them subsequently and use the corresponding written syllables to identify the written words. Eight children with DS (from 7 y-o to 14 y-o) took part in the study; assessments of reading and phonological skills were completed at baseline, i.e. after a 5-weeks control period, and after a 5-weeks of interventions. Teachers were trained to deliver the intervention to individual children in two daily 10-15-minute sessions. Children made significantly greater gains in phonological skills and single word reading during the intervention period than in the control period. Together the findings suggest that the IPad Application provided an effective reading intervention. This study is situated within the aera on current understandings of DS and inclusive education.

Spelling Strategies of Primary School Students: A Comparison of Different Criteria of Classifications - Jessica Jaeuthe (presenting author), Katja Bodga, Stefanie Bosse, Thorsten Henke, Jennifer Lambrecht & Nadine Spörer

Abstract:
Learning to write is one of the most important competencies that a child in primary school is to develop. Several theoretical models describe the development of students within a competency level model in a similar way: On the first level, students are able to write whole words from their memory which is described as logographic strategy. Next, they start to write words by allocating phones to their assumed graphemes (phonological strategies). Later, students acquire knowledge about orthographic rules, too, and are able to write words correctly which cannot be explained by their articulation (orthographic strategy).
In previous empirical research, a classification of students' spelling strategies was rarely examined. In most studies, students were grouped based on the number of correctly written words. This approach is not sufficient to prove the validity of the proposed competency level model. Therefore, it is supposed to first analyze the development of each student in order to then assign individual competency levels to them. Up to the current state of research, it remains unclear which criterion is suitable to group students based on their spelling strategies. Thus, the question arises which criteria should be chosen to classify the students referring to their own competency level and how the distribution of students based on the respective criterion changes.
Based on data of N = 30 second grade classes with n = 606 students from inclusive primary school classes, we analyzed spelling strategies. For this, 18 words from a standardized German school achievement test were used ($\alpha = .83$). Every single spelling of a word was coded by two independent raters either as orthographically correct, phonetically accurate or not phonetically accurate (96% agreement). The purpose was to assign students to one of the following groups: "group O": students preferably use the orthographic strategy; "group P": students preferably use the phonological strategy; and "group NP": students write most of the words neither orthographically correct nor phonologically accurate. To assign the individual student to one of these groups, two different classification criteria were used: (1) Which coding occurred most frequently (orthographically correct vs. phonologically accurate vs. not phonologically accurate)? (2)Which coding assigned to a single student dominated (the dominant type had to be used at least 20% more often than the others)? In case no dominant coding could be identified, a student was assigned to "group B": balanced coding.
Preliminary analyses revealed that criterion 1 (absolute frequency) showed the following distribution of the students: group O = 43.2%, group P = 51.4%, and group NP = 5.4%. Criterion 2 (dominance) showed that 38.1% of the students were to be assigned to group O, 23.1% were assigned to group P and 4.1% to group NP. No dominant type could be found with regards to 34.7% of the students. Moreover, analyses revealed that 64.9% of the students could be allocated to the same group regardless of whether criterion 1 or 2 was applied. Further analyses are currently conducted. The relevance of the chosen criteria will be discussed.

Performance Outcomes and Well-Being of Students With and Without Learning Difficulties in Math - Linda Salihu (presenting author)

Abstract:
It is recognized that many students fail to profit from mathematics instruction that is provided in school. This is because of the facts (1) that many primary school teachers lack fundamental mathematical knowledge; (2) that instruction is of poor quality; and (3) that instruction seems to focus more on procedures than on concepts that can make procedures meaningful to all students who might have diverse learning and educational needs (Ginsburg & Pappas, 2007). As Ginsburg and Pappas (2007) pointed out, it is perhaps not an exaggeration to maintain that the biggest risk factor in learning problems is the educational system itself. Results from TIMSS 2011 showed that

an effective instruction has the capacity to improve students' performance outcomes despite the characteristics of the student body, such as home influences, ability level, etc.(Martin & Mullis, 2013). Consequently, school instruction that emphasizes student effective engagement in math lessons would enable participation and inclusion of students with learning difficulties (Salihu, Aro, & Räsänen, 2017), which in turn would improve their overall well-being. The aim of the present study, therefore, was to understand how performance in mathematics and well-being are related to each other in students with and without learning difficulties, and if this relationship exists, are there differences between the two groups of students in terms of their well-being.

Methodology:

Participants were 110 fifth- and sixth-grade students (51 girls and 59 boys) selected randomly from nine classes of urban public school in Kosovo. They were assessed in Basic Number Facts (Multiplication and Division,1995), Students' Life Satisfaction (MSLSS; Huebner,2001), and Child and Adolescent Social Support (CASSS; Malecki et al.,2000). Students who scored below the 35th percentile on the Basic number fact tests were identified as having learning difficulties in mathematics (n = 38). The Cronbach alpha reliabilities on this sample were .93 for Multiplication, .95 for Division, .85 for MSLSS, and .95 for CASSS.

Findings and Conclusions:

Findings of the present study showed that there is a significant difference between students (with LD vs.non LD) in terms of their performance outcomes in basic number facts (p <.001), The correlations between overall well-being and support provided by teachers, best friend, and classmate were significant for both groups (p <.05). Furthermore, multiple regression analysis showed that while for the overall well-being of students without learning difficulties the strongest predictors were teacher support (11%), best friend support (10%), and classmate support (5%), for the well-being of students with learning difficulties the most powerful predictor was best friend support (17%), suggesting that the latter group of students instead of teacher support, they rely on best friend support in math lessons. This situation raises a question: whether teachers alone without support are able to teach basic math skills to every individual student, including those with mathematical learning difficulties, by showing enough sensitivity toward student's unique learning needs. Thus in order to ensure inclusive and quality education for all, students with learning difficulties in mathematics need special instruction as it can foster their sense of well-being in school and beyond (Salihu et al., 2017).

Constructing a New Transition Service Model for Young Children with Disabilities

- Lin Hsiu Chen (presenting author)

Abstract:

In Taiwan, nursery schools and kindergartens were integrated into "preschools," providing care and education for children aged 2-6. As children turning 7 years old, they are about to enter elementary schools. Inclusion is the trend of special education placement, up to 90% of young children with disabilities are enrolled in regular education classes in Taiwan. Young children with disabilities usually need transition services to help them transit to elementary school successfully. Ideally, young children with disabilities are at the center of the transition services. Parents, preschool educators, itinerant preschool special education teachers, elementary school resource teachers and related personnel work together as a team to provide the services. However, several studies have noted that there are difficulties in the current transition services in Taiwan, including administrators and preschool educators do not fully understand the purposes and contents of transition services, parents rarely participate in transition services, and young children with disabilities do not equip the abilities needed for elementary school. Through literature review and focus group interviews, and according to the practical experiences of the researcher, the researcher construct a new model of transition services based on the ecological and dynamic model of transition (Rimm-Kaufman & Pianta, 2000) to improve the current difficulties in Taiwan. The new model of one-year-long transition services has the following advantages: (1) administrators and

preschool educators will know that the purposes and contents of the transition services; (2) young children with disabilities have more time to learn key skills needed for elementary school; (3) parents improve their participation in transition services; (4) preschool educators cooperate with elementary school resource teachers in advance; (5) elementary school resource teachers continue to follow up the adaptation of young children with disabilities in elementary school.

Descriptive exploration of the parenting experience of a mother of a twice-exceptional child

- Ho Yu Lin (presenting author)

Abstract:
The paper aims to explore the parenting experience of a mother who has brought up for 18 years a gifted child with hearing impairment. The paper employs qualitative research method for studying. Taking a verbatim interview article as the main source of data analysis for further interpretation, the paper explores and studies the participant's stories of experience in bringing up a twice-exceptional child (including the obstacles encountered, rewards and the power of support), her upbringing behaviors and attitude, and her opinions towards special education of schools.
The paper finds that the keys to smooth upbringing of twice-exceptional children are as follows:
When studying the various difficulties usually encountered by the participant in the upbringing process of her twice-exceptional child, the paper finds that the participant all along holds an attitude to learn and grow together with her child. She actively took part in different growth groups and increased her professional knowledge and skills of special education through self-learning, in order to assist and guide her twice-exceptional child in the predicaments they encountered at different stages. The findings of this paper can be provided as a reference or suggestion for the parents, teachers, students and future researchers of the related topic.

Conception of the E-CIR "Measuring and supporting students' social participation"

- Nadine Spörer (presenting author), Alexander Minnaert, Carmen Zurbriggen, Christian Huber, Christoph Stadtfeld, Julia Eberle, Anke de Boer, Katja Petrry & Thorsten Henke

Abstract:
In the present decade, inclusive education has gained significant attention both among the public and in the research community. Whereas the academic achievements of students in inclusive learning settings are promising, the social participation of students with special educational needs (SEN) inside and outside of the classroom has become a more challenging issue. Finding ways to support students' social participation is one of the core challenges of inclusive education.
Current research on social participation is based on self-report measures of the overall quality of how an individual interacts with significant others (e.g. ratings of friendship quality) or on the quantity of friendships, using sociometric questionnaires. Both kinds of measures provide easily communicable but highly aggregated data which neglect real social contacts among students with and without SEN. Therefore, more basal behavioral data of social interactions such as face-to-face contacts, tracking data, and log files is necessary to gain a deeper understanding of the mechanisms underlying social participation.
The EARLI Centre of Innovative Research (E-CIR) which is granted by EARLI from 2018 to 2021 aims to close this research gap with innovative technologies (e.g. wearable RFID devices) allowing to precisely measure the length, duration and quality of social contacts in everyday school life. Using innovative wireless technologies in educational contexts can decisively advance the scientific research on social participation. Self-report measures of social participation may be influenced by the learners themselves (e.g., to protect their social self-concept), hence result in unreliable data. By comparing self-reports and behavioral measures, the E-CIR will be able to get a better understanding of the underlying processes of social participation. This, in turn, will lay ground for empirically testing of the assumptions articulated in social interaction theories and for developing

means to foster social participation. The goal of the E-CIR is to answer the following main research questions:

1. Under which circumstances will different behavior-based measures of students' social participation lead to reliable and valid empirical data?
2. To what extent can these measurement instruments assess both the social structure and social participation processes within inclusive settings?
3. To what extent can behavior-based technologies measure the effects of classroom-based interventions aimed at fostering social participation of students?

Addressing these questions demands an interdisciplinary group of researchers from General and Special Educational Sciences, Psychology, and Computer Sciences. Bringing together different theoretical perspectives and a broad range of methodical approaches, the E-CIR allows for multi-disciplinary exchange and idea generation. Presenting the conception of the E-CIR and its members at the SIG 15 conference offers the possibility to discuss ideas within the scientific community at an early stage of the project.

Effects of a reading comprehension training for students with low levels of comprehension

- Helvi Koch (presenting author) & Nadine Spörer

Abstract:

The purpose of the intervention study was to examine the effectiveness of reading comprehension training enriched by self-regulated learning procedures, which was implemented by teachers in their own primary classes. We tested the hypothesis, if students with low levels of comprehension have better results after attending the training (experimental group, EG) than students without this specific training (control group, CG). In a pre-, post-, follow-up test design the reading development of $N = 156$ students was investigated. In this sub analysis the development of $n = 51$ students ($n = 29$ in EG group) performing one standard deviation below average in a standardized reading comprehension test at pretest was examined ($T < 40$). The increase in the reading related indicators of the EG students was compared with those of the CG, who were also performing below average at pretest.

The implemented program was Reciprocal Teaching (RT, Palincsar & Brown, 1984; Spörer, Brunstein, & Kieschke, 2009), enriched by individual self-regulating learning procedures (RT+SRL, Koch & Spörer, submitted). The central elements of RT are four reading comprehension strategies (summarizing, questioning, clarifying, predicting) that are practiced in reciprocal peer-assisted small group discussions. Furthermore, in our study students worked with learning diaries to self-regulate their learning process. RT+ SRL was designed to train whole school classes.

The analysis of the summative data revealed a significant interaction effect time x condition. Thus, results of the study indicated that RT+ SRL intervention has a positive effect on the students with low levels of reading comprehension. It could be shown that the EG students significantly increased their reading performance. Post-hoc analyses revealed that compared to the CG students EG students developed significantly better in reading comprehension at posttest ($F(1, 50) = 5.87$, $p < .05$, $\eta^2 = .12$) and in reading speed at follow-up ($F(1, 50) = 16.91$, $p < .001$, $\eta^2 = .27$). The self-efficacy in reading of EG students almost did not change at all over the course of the study, while the CG students' values of self-efficacy in reading rose over the time. Further studies should especially focus on the development of self- efficacy in reading to support the development of reading engagement.

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Collaborative Case Reflection as a Tool to Promote Teacher Students' Beliefs about Reflexion

- Karsten Krauskopf (presenting author) & Michel Knigge

Abstract:
Models conceptualizing the professionalization of teachers regarding inclusive education explicitly mention collaborative as well as reflective competencies (e.g., European Agency, 2012). The present study addresses the effects of collaborative case reflection as a means to promote the development of teacher students' beliefs about both reflective practice and multi-professional collaboration. We compared three quasi-experimental groups of students regarding the development of their beliefs over the course of one semester: *no participation* (only enrolled in an introductory lecture on inclusive education, *n* = 162), *active participation* (presentation of one's own pedagogical case in a collaborative case reflection during a concurrent practice course, *n* = 93) and *passive participation* (contributing as a peer discussant in concurrent practice course, *n* = 212).
Method: Participants completed measures at the beginning (t1) and the end of the semester (5 months later, t2) tapping into their beliefs about *multi-professional collaboration* (Krauskopf & Knigge, 2017) and reflective practice (*Surface* and *Pedagogical Reflection,* adapted from Larriveé, 2008). All were enrolled in a teacher education program (secondary education) at the university of Potsdam (age *M* = 23.71 years, SD = 4.69, 38% male, *M* = 3.66 semesters, SD = 1.75).
Results: Measurement models showed sufficient to good fit, and weak measurement invariance could be established for all scales. Structural equation models controlling for t1 measures, gender, age, study duration and cohort revealed that only active participation was related to teacher students' positive reflective practice beliefs at t2, whereas passive participation showed a negative effect (both compared to no participation). In addition, there were positive indirect effects of active participation on collaboration beliefs mediated by the effect on reflective practice beliefs. Cross-lagged effects over time varied between the different sub-scales of collaboration beliefs.
Discussion: Results suggest that active involvement in collaborative case reflection promotes beliefs about reflective practice that in turn support the development of beliefs about multi-professional collaboration in student teachers. Given the quasi-experimental design implications need to be discussed carefully and follow-up studies need to explore effects of collaborative case reflection in more detail.

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Postersession 2 – Day 3

Relations of co-teaching and academic achievement in inclusive primary schools
- Stefanie Bosse (presenting author), Thorsten Henke & Nadine Spörer

Abstract:
With regard to the heterogeneity of students in inclusive classes, it is recommended to instruct students by more than one teacher. As previous studies pointed out, co-taught lessons mostly proceed by a "one teach, one assist" model that causes students with special educational needs (SEN) to interact more intensively with their special education teacher or assistant than with their peers without SEN. Indeed, students with SEN receive help in initiating, maintaining, and completing learning tasks, followed up by an immediate feedback on their learning process. In this sense, interactions between students and assisting persons should be correlated with students' academic progress, which implies two different approaches to the subject. While a first pathway describes intended effects on academic achievement, the second one describes unintended effects of co-teaching. When students with SEN interact more intensively with assisting persons, the likelihood of them interacting with classmates may decline. Therefore, students with SEN may feel excluded from daily classroom routines, which can lead to a decreased learning motivation. In this sense, interactions between students and assisting persons may hinder academic progress. Blatchford et al. (2011) analysed the impact of teaching assistants on primary and secondary school students' academic progress. It turned out that there was a negative relation between the amount of support students received and the academic progress they made. Since Blatchford and his colleagues only observed the impact of teaching assistants, it remained an open question which impact other professionals would have. Additionally, it remained unanswered if the presence of a second teacher influenced the probability of student-student interactions.
Drawing on the aforementioned two pathways, our research was built on the expectations that (a) the probability of student-student and teacher-student interactions is influenced by the implementation of co-teaching and (b) the impact of co-teaching differs for students with and without SEN. Finally, our goal was to analyse if students' academic achievement was influenced by the amount of student-student and teacher-student interactions.
To examine our hypotheses, *N* = 246 students who learned in ten inclusive primary schools classes were observed in math and German lessons. For each student, learning activities in class were rated with regard to the quantity of teacher-student and student-student interactions. Simultaneous to the observations, students' academic achievement was assessed with standardized tests in German and mathematics.
Data showed that the likelihood of interacting with classmates was significantly increased by 11% for students in co-taught classes. Furthermore, these students also had a 22% higher and statistical significant chance to interact with adult instructors. Currently, data analyses are carried out to test whether academic achievement of students with and without SEN was related to interactions with teachers and classmates. Results will be discussed, touching both intended and unintended effects of co-teaching on teacher-student and student-student interactions.

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Teachers' Classroom Behavior in Inclusive Primary Schools - A Systematic Narrative Literature Review
- Katja Bogda (presenting author), Thorsten Henke, Stefanie Bosse, Jennifer Lambrecht, Jessica Jaeuthe & Nadine Spörer

Abstract:
Inclusive or exclusive school settings - where do children with special educational needs receive the best learning opportunities? Until now, international studies focused this research question. The majority of investigations found a favorable development of cognitive competencies (e.g., math, reading and listening) if children with special educational needs (SEN) attended an inclusive school compared to exclusive settings. However, it remains unclear, which factors cause these different achievement levels. Following the assumption that children with SEN attending inclusive regular schools and special-needs schools are akin regarding their individual characteristics due to statistical matching, one possible explanation is the teacher's classroom behavior. Here it is assumed that teachers of both schooling settings differ in their applied teaching methods as well as their interactions with students. Thus, the question arises, how and to what extent do teachers of both institutional learning environments differ with reference to their teaching and what characterizes teaching in inclusive classrooms.
The aim of the present study is to provide a review of empirical research findings of teachers' classroom behavior in inclusive primary schools and differences regarding teaching methods in both schooling settings. Therefore the current status of research is analyzed and synthetized in a systematic narrative literature review to address the following two research questions: (1) What classroom behavior of teachers can be observed in inclusive primary schools? (2) To what extent do teaching methods differ in both schooling settings?
Due to the fact that progresses of inclusion in school and education of teachers differ from country to country, the present literature review focused on one nation – Germany. To identify relevant literature the following seven databases were used for investigation: *PsycINFO, eBook Collection (EBSCOhost), Education Full Text (H.W. Wilson), PsycARTICLES, PsycBOOKS, PsycINDEX* and *Psychology and Behavioral Sciences Collection*. The literature search based on a search syntax consisting of 100 combinations of German keywords (e.g., *inclusion AND school AND teacher, inclusive AND school AND classroom management, integration AND school AND differentiation*). Afterwards the determined publications (*N* = 698) were selected in a two-step process on the basis of criteria for including (e.g., German sample, focus on inclusive primary schools, focus on teachers' classroom behavior) and excluding a publication (e.g., exclusively another school type, exclusively lesson plans, no empirical study) to identify appropriate literature regarding the research questions for a later full-text analysis and synthesis.
In the first step all publications were rated solely by their title. Therefore two independent raters decided with reference to the inclusion and exclusion criteria whether a publication fitted to the aim of the present study or not. In this current first step *N* = 387 publications were accepted for the second step of the selection process – the abstract rating with a similar procedure.
Then the remaining full-text publications will be coded by two independent raters based on a categorical system taking publication characteristics, the studies' sample and design as well as the findings into account. Finally the research findings of all analyzed publications will be synthetized and discussed.

Teachers' perceptions of classroom related antinomies in an inclusive context

- Johanna Pirsch (presenting author), Janine Schledjewski & Michael Grosche

Abstract:
Antinomies are part of teachers' everyday life. The term "antinomy" refers to moral or theoretical dilemmas, thus identifying "conflicting relation between educational norms and educational practice" (Opp, 2007, 13). Educational antinomies occur whenever a teacher has to decide between two contradictory aims, while each of these aims seems desirable. According to Opp (2007), educational antinomies cannot be dissolved, but they can "be continuously and reflectively processed" (p. 13) by the teachers.
We will assess teachers' perceptions of two antinomies prominent in inclusion. The first antinomy in the field of special needs education is the contradiction between integration and selection.

"Selection" refers to two different aspects. Firstly, the school system itself is selective, meaning that it divides better and poorer learners. Secondly, teachers need to select students to decide how to differentiate their instruction. "Integration" on the other hand refers to social inclusion. The second antinomy describes the contradiction between an assessment that is based on the principle of equal treatment and a feedback regarding the students' individuality (Budde, 2013, 91). In the context of special needs education this antinomy might even get intensified as teachers need to support students with special educational needs and need to evaluate the results of their own support.
Even though antinomies are mentioned by many authors and reported in qualitative interview studies, there is a lack of research on quantitative research on antinomies. Thus, our poster will present the first results of a questionnaire study that focuses on the perceptions of antinomies in an inclusive classroom. The aim of our study is to extend current knowledge of the influence of labelling a student (having special educational needs) on the perception of the two antinomies mentioned above. Data collection will be finished in July.
To survey the perception of the antinomies, we developed concrete case descriptions for different "inclusion-specific" antinomies using motivational conflict theory (e.g. Hofer, 2007; Grosche et al., 2010). Motivational conflict theory predicts that after solving an antinomic situation in favor of one direction, the other equally important direction stays activated and interferes with teachers' cognition and emotion. To test these predictions, we will teachers are asked how they would decide in typical classroom antinomies, how hard this decision would be and how often they experience such antinomies. Following these ratings, we assess motivational interferences on teachers' cognition and emotion. Our poster will shed new light on a) measuring antinomies and b) the effects of educational antinomies in inclusive classrooms.

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Association of symbolic and non-symbolic numerical abilities in children with and without MLD

- David Braeuning (presenting author), Caroline Hornung, Danielle Hoffmann, Katharina Lambert, Sonja Ugen, Antoine Fischbach, Christine Schiltz & Korbinian Moeller

Abstract:
There is accumulating evidence that early numerical abilities of children at school entry or even before significantly predict later mathematical achievement (Jordan et al., 2010). Among others, a common differentiation of early numerical abilities was made between symbolic and non-symbolic numerical abilities (e.g., DeSmedt et al., 2013). While there is consistent evidence that symbolic abilities robustly predict later mathematical achievement (e.g., Xenidou-Dervou et al., 2017), findings for non-symbolic abilities are mixed. In particular, some studies found non-symbolic abilities to be significantly predictive for later math performance only before school entry (e.g., Kolkman et al., 2013), whereas others also established a relationship in school-aged children (e.g., Mundy & Gilmore, 2009). Overall, only few studies considered both kinds of skills simultaneously and most sample sizes were rather small in most studies (but see Hirsch et al., 2018). This inconsistent pattern of results also appears in studies investigating children with math learning

difficulties (MLD) or dyscalculia (Rousselle & Noel, 2007). Thus, an investigation of early symbolic and non-symbolic numerical abilities in a large and longitudinal sample of children is important to inform typical as well as atypical development of mathematical competencies.
For that purpose, we considered large-scale assessment data from the Luxembourg school monitoring program (N=3875; Martin, Ugen, & Fischbach, 2015) assessed over a period of two years from grade 1 to grade 3 (mean age: 6.3-8.6 years). Data from the numerical abilities test in grade 1 were available on item level. Therefore, we were able to differentiate between items addressing symbolic (10 out of 38 items) or non-symbolic (13 items) numerical abilities. We ran a multiple group CFA (model fit: RMSEA=.028; CFI=.918) to test the predictive value of these abilities on a curricular mathematical achievement test in grade 3, simultaneously for typical achieving (TA) children and those with MLD (N=547; percentile < 25 in mathematical achievement test in grade 1 and 3).
Analyses revealed that in TA children symbolic and non-symbolic abilities were highly correlated (r=.65) and both significantly predicted later mathematical achievement (β=.36 for symbolic, β=.29 for non-symbolic abilities). In children with MLD, however, symbolic and non-symbolic abilities were unrelated to each other (r=.04). Similar to typically developing children, both predicted mathematical achievement in grade 3 significantly but these relations were much weaker than in TA children (β=.18 for symbolic, β=.16 for non-symbolic abilities).
These results strengthen previous findings indicating that early symbolic numerical abilities are a robust predictor of later mathematical achievement in TA children. However, based on these large-scale data we also observed a significant prediction of early non-symbolic numerical abilities for later mathematical achievement. Interestingly, symbolic and non-symbolic abilities were also significant predictors of later mathematical achievement in children with MLD, even though associations were lower. Importantly, however, the results point to difficulties in relating symbolic and non-symbolic mathematical content in these children as there was no correlation between symbolic and non-symbolic abilities. As these mapping skills seem to be of particular importance for further numerical development, this may be a useful starting point for the development of interventions.

Students' knowledge and emotions about SEN
- Anita Krausz (presenting author)

Abstract:
The definition of special educational need (SEN) consist of a lot of impairment as a behaviour or ability to socialise; a reading and writing difficulty, for example because they have dyslexia, an ability to understand things, a concentration levels, for example ADHD and physical ability. Worldwide there are more and more person who has special educational need diagnosis. The SEN kids need to be in the education system, they need to get education and sometimes need to be with the typically developed students. Therefore the typically developed students attitude towards disabled peers is an important part of this field.
The aim of this research to map the elementary school students' knowledge about SEN. Emotions has important role in social contact, they also serve as an indication of their own inner state (Buck, 1985). In this research we used pictures, we relied on the recognition of emotions. The focus is on two important questions, on the one hand the emotions of the persons seen on the photos in the questionnaire, and on the other hand the own emotions what they felt when they saw the pictures. The first part of the test adapted by Baron-Cohen et al. (1997), and the second part is an own development. The test consist of 36 pictures with two alternative answers.
The participants of the pilot study was elementary students from the lower level (N=78). When choosing this age, we took into account the theory of attitude of Triandis (1971) that these children are likely to have met with people with disabilities because of their age, so they can have a prior knowledge of disability. During the research, we were curious that are there any kind of the differences between a child and an adult with disabilities is in the picture. Our results shows the

students made differences between ages furthermore they made differences between the types and degree of disability as well. According to the hypothesis of the study, the emotional recognition of Hungarian children is advanced, but they face difficulties in expressing their own feelings. It has been proven that with age, students' know more and they may have background information of disability, so they are more receptive to them (Goncalves and Lemos, 2014). In the future we would like to developed the questionnaire and structured the pictures on it. As well as our plan is to create a developer program for kids which can be useful for kindergarten teachers' and elementary school teachers too.

Involving Teachers and Elementary School Students in the Development of a Digital Educational Game

- Janine Schledjewski (presenting author)

Abstract:
Digital games (or video games) are part of students' everyday life and offer multiple learning possibilities. With regard to special needs education, Durkin and his colleagues (2013) point out that these games may help students with special educational needs in various ways, e.g. supporting cognitive development and providing a common topic of interest for class members. Thus, digital educational games are generating considerable interest in terms of supporting students with and without special educational needs.
As Ke and Abras (2013) conclude, digital educational games can promote engagement as well as learning, if they are well designed and used. According to the GameFlow model (Sweetser & Wyeth, 2005) there are eight elements of game flow, including challenge, control, clear goal, feedback and immersion. The term "flow" refers to player enjoyment. Thus, the different elements have to be addressed during the development of a digital educational game.
The poster is a preliminary attempt to show how elementary school students and teachers can be involved in the development process of digital educational games. We report on results of different pilot studies, focusing on the elements of feedback and immersion.
In order to understand teachers' perceptions on different feedback possibilities within the digital educational game, we conducted interviews with elementary school teachers. Preliminary results show that teachers believe that feedback should be adapted in various ways, e.g. poorer learners should get more feedback and better learners should get less feedback. They also use different types of feedback (e.g. correcting feedback, elaborated feedback) for different contexts.
We also report on a survey among elementary school teachers and students. The teachers were asked to indicate which topics a digital educational game for teaching German orthography should include, while the students were asked to draw or write down characters they would want to meet within the game.
Our poster will include the results of the studies as well as a discussion of the different possibilities to involve teachers and students in the development of digital educational games.

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Adapting and Validating the SWANs Assessment and Reporting Tools for Germany
- Emily White (presenting author) & Miriam Balt

Abstract:
Theoretical background: Research suggests that teachers in German schools require greater support to understand and teach students with additional needs (Werning, 2014), such as those with disability or learning difficulties. The Students with Additional Needs (SWANs) assessment and reporting program (e.g., Woods & Griffin, 2013; Strickland & Woods, 2016) has been successful in helping teachers in Australia to monitor and intervene accurately in the learning of students with additional needs through profiling the learning of these students across foundational learning areas and providing teaching strategies targeted at different levels of student ability. As teachers and students across Australia have benefited from these tools, it is possible that teachers and students in Germany may also find them useful, as no similar supports are available in Germany at the time of writing.
Research question: This study seeks to answer: *What changes to the SWANS numeracy, literacy, and digital literacy assessment and reporting tools are recommended by representative users to make the tools appropriate for a German context?* Accordingly, the study aims to gather targeted information regarding the different aspects of the tools (e.g., skills, wording, format, teaching strategies).
Methods: The study will apply a workshop approach using focus group discussions to gather qualitative data from representative teachers of students with additional needs in Germany. Teachers with expertise or interest in the teaching and learning of numeracy, literacy, and/or digital literacy for students with disability will be asked to review translated versions of the SWANs assessment and reporting tools. Their feedback regarding the appropriateness of the tools in the context of German schools and classrooms will be requested, as well as the wording of the tools. With the German context in mind, questions will be asked about the appropriateness and perceived value of the assessed skills, the observability of the skills, the interpretability of the translated version, the interpretability of the reporting format, and the appropriateness and perceived value of the teaching strategies. Teachers will be asked to remove, modify, or add content as they see fit. They will be provided with hard copies of all materials, as well as case studies of students to provide stimulus for discussion. Teachers will also be asked to complete a short survey to describe their teaching experience and background.
Results: Data will be collected in September 2018 and analysed using thematic analysis and scoring.
Interpretation of findings: This paper will share the initial exercises involved in an international adaptation and validation study involving translation from English to German, the engagement of representative end users with subject matter expertise, and the consideration of sociocultural context in the educational assessment of students with additional needs. Such exercises seek to address various aspects of validity (Wolfe & Smith, 2007) to support a high-quality adaptation of three assessment and reporting tools, in preparation for further validation studies in the future.

"Barriers and Enablers of Implementing/Sustaining SWPBS – First Results from a Systematic Review"
- Pascal Kleeberg (presenting author), Michael Paal & Anna-Maria Hintz

Abstract:
In times of statewide inclusion, schools and educators are faced with the responsibility of educating all students including those with (severe) behavior problems. Discipline problems can be an additional burden to meeting the social and academic needs of all individuals participating in the education process. Prevention-oriented approaches like School-wide Positive Behavior Support (SWPBS) are considered powerful in reducing disruptive behaviors through a multi-tiered approach. Despite the empirical base regarding the effects of SWPBS on students' behavioral and academic

achievements questions remain concerning factors helping or hindering the (sustainable) implementation of SWPBS.
The purpose of the study is to identify barriers and enablers which are influencing implementation and/or sustainability of SWPBS via applying a systematic review on qualitative research literature. A three-step search procedure (including the search terms “PBS” AND “qualitative” as well as related synonyms: 1793 results) is applied to identify relevant research literature: (1) Electronic search of key databases; (2) Hand search; (3) Ancestral search. The search procedure is followed by a stepwise selection of relevant articles according to formal and thematic criteria deduced from the research question: (1) Checking front pages for formal criteria of exclusion (2) Screening for thematic criteria of in- and exclusion via abstract, title and keywords (3) Full-text review. Finally, identified barriers and enablers are condensed in a synthesizing framework.
Preliminary results of this ongoing study will be presented, and limitations as well as implications for future research will be discussed.