

8th International Summer School on Literacy Research

August 25-30, 2018

**Egmond aan Zee
The Netherlands**



Sponsored by Behavioural Science Institute, Radboud University

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- Practical information -

Location

Hotel Zuiderduin
Zeeweg 52
Egmond aan Zee (*Town centre, 100m from the beach*)
Tel. +31-72-7502000 (In Holland: 072-7502000)

Hotel Zuiderduin is only 100 meters away from the beach and the dune-reserve, which is a great place to go for a walk or bike ride. The lovely fishing-town of Egmond aan Zee is also within walking distance. It has a monumental lighthouse as its most prominent point of recognition, many night-life venues and a wide boulevard to walk through. In the hotel guests can use the heated indoor pool with a whirlpool and the fitness room. Active guests can indulge themselves on the squash court or in the fitness room. Bring your hiking, jogging and swimming outfit!

How to get there

On August 25 there is a free bus trip from Amsterdam Central Railway Station Main Entrance (Stationsplein, NOT: de Ruyterkade) to the summer school location. Across the station (at the other side of the canal: cross Rokin X Prins Hendrikkade) you will see the old building of the Park Plaza Victoria Hotel. In front of this hotel, the bus (company: Bak Alkmaar) will be there at 16 o'clock (4 pm) to pick you up. On August 30 at 14:30 o'clock (2:30 pm) we will offer the same service to Amsterdam Central Railway Station with an extra stop at Schiphol Airport. Eliane Segers will be at the bus; if you need to contact her on August 25th, she can be reached at +31-6-22185151.

Those of you who want to travel by themselves, you can take a train from Schiphol Airport (platform 1-2) to Amsterdam. Get out at Amsterdam Sloterdijk. Then take the train to Den Helder (platform 4), and get out at Alkmaar. In Alkmaar, you go outside the station and take Bus 165 (Connexion) to Egmond aan Zee, where you get out at the Bushalte Busstation. The total trip will take about one hour and 30 minutes.

Rooms

Male dyads and female dyads of juniors will stay in two-person rooms. The modern two-person hotel rooms are equipped with a spacious bathroom with a bath, shower, and toilet. All rooms are non-smoking and are equipped with two beds. Additionally, the rooms have a telephone, radio, and a multimedia television that has, among other things, recent films and music. With no additional charge, guests can use wireless Internet access or cable Internet.

Food and drinks

The breakfast buffet is served from 07:00 h. Later during the day, there is a lunch buffet and a dinner buffet in the atmospheric restaurant. All meals are included. For those who do not want to go to bed early, the hotel has a lively pub, and there are also nice cafes in the vicinity of the hotel.

Facilities

The hotel has a 24-hour reception. In the conference room there is a laptop + beamer available. The entire hotel is equipped with wireless Internet. In addition, every room has a cable Internet connection as well. There are also some computers available in the lobby.

Presentations

All juniors have a time-slot for a half hour presentation. It is recommended to present the topic of your research you would like to discuss in 15 minutes while using a power point presentation. At the end of your talk you may formulate 2-3 questions you would like to be discussed in the next 15 minutes. And of course, there is the opportunity to extend your discussion with seniors and other juniors during the meals or along with a drink at night time.

Certification

In order to have a real school climate, participants are kindly requested to attend all meetings during the week. At the end, there is also the opportunity to receive a certification noting that you have successfully participated in the summer school.

Social event

We will go outdoors for a social event on Tuesday. During the social event there is the opportunity to show your creative abilities. If anybody would like to show his/her performance as a dancer, singer, acrobat, or so, bring your dancing shoes and music instrument and please surprise us all!

8th International Summer School on Literacy Research

- Program -

Saturday, August 25

- 16;00: Possibility pick-up from Amsterdam Central Railway Station (see Practical Information)
- 17;30: Arrival and check-in
- 18;30: Dinner
- 20;30: Opening of the summer school
- 21;00 - 22;00: Charles Perfetti - Integrative processes in reading: Connecting the discourse level with the word level.

Sunday August 26

- 08;30 - 09;30: Ludo Verhoeven – Operating principles in learning to read across languages and writing systems
- 09;30 - 10;00: Robin Irey - The role of phonological, orthographic, and morphological awareness in reading: Decoding real and pseudo words
- 10;00 - 10;30: Nicola Dawson - Mechanisms of morphological decomposition: A developmental perspective
- 10;30 - 11;00: Coffee break
- 11;00 - 11;30: Pan Jue (Dora) - The reciprocal relationship between oral vocabulary and word reading in Chinese primary-school children
- 11;30 - 12;00: Emma Mills - The Psycholinguistic Markers of Single Word Recognition for Adult Learners of Literacy
- 12;00 – 14;00: Lunch
- 14;00 - 14;30: Han Yuan - Phonological awareness and visual skills in Chinese character reading
- 14;30 - 15;00: Maria Psyridou - Reading development from age 2 to 16: Prediction of divergent developmental paths and understanding of protective and risk factors.
- 15;00 - 15;30: Silke Kellens - In search of the neurocognitive profile of children at risk for dyslexia and ADHD: a pilot study
- 15;30 - 16;00: Tea break
- 16;00 - 16;30: Loes Bazen - Language and literacy profiles of Dutch high school students with an early or late diagnosis of dyslexia
- 16;30 – 17;30: Peter de Jong - Diagnosing Dyslexia: How deep should we dig?
- 19;00: Dinner

Monday August 27

- 08;30 - 09;30: Kate Nation - Charting the development of lexical quality: going big and staying small
- 09;30 - 10;00: Emma James - Word learning and consolidation in poor comprehenders
- 10;00 - 10;30: Iris Monster - Incremental continuum of word knowledge throughout the upper primary grades
- 10;30 - 11;00: Coffee break
- 11;00 - 11;30: Alexander Krepel - The Importance of Vocabulary for Reading and Spelling in English versus Dutch
- 11;30 - 12;00: Evelien Mulder - Second Language Word-to-Text Integration
- 12;00 – 14;00: Lunch
- 14;00 - 14;30: Crystal N. Wise - Assessing Young Children’s Ability to Ascertain Unfamiliar Word Meanings
- 14;30 - 15;00: Melody Kung - First Grade Reading Instruction and Reading Growth: Asian Language Minorities and Native-English-Speaking Peers
- 15;00 - 15;30: Ferda Ilerten - Reading Acquisition of Turkish-Arabic Simultaneous Bilingual Children in Turkish
- 15;30 - 16;00: Tea break
- 16;00 - 16;30: Amy de Bruïne - Monitoring information during reading: Investigating the role of working memory in a dual-task paradigm.
- 16;30 – 17;00: Annina Hessel - Making sense of metaphors and semantic inconsistencies: English as an additional language learners’ higher-level comprehension when reading
- 17;00 – 17;30: Sophie Gruhn - Diversity in Feedback Effects on Lexical Quality and Transfer to Global Understanding
- 19;00: Dinner

Tuesday August 28

- 08;30 - 9;30: Kenneth R. Pugh - The literate brain: How learning to read depends upon, and changes, brain organization for spoken language.
- 9;30 - 10;00: Agnieszka Dębska - Neural signatures of reading and spelling deficits in children.
- 10;00 - 10;30: Moort, M.L. van - What you read vs. what you know: Neural correlates of text-based and knowledge-based monitoring during reading.
- 10;30 - 11;00: Coffee break
- 11;00 - 11;30: Kayleigh Ryherd - An exploratory fixation-related fMRI study of text reading in adolescents with varying reading comprehension ability
- 11;30 - 12;00: Joanna Plewko - Letter and speech sound integration in emerging readers with familial risk of dyslexia
- 12;00 - 14;00: Lunch
- 15;00: Social event

Wednesday August 29

- 09;30 - 10;30: Kate Cain - Developmental relations between vocabulary knowledge, memory, and discourse comprehension.
- 10;30 - 11;00: Coffee break
- 11;00 - 11;30: Elizabeth MacKay - Building blocks of reading comprehension: The importance of syntactic awareness.
- 11;30 - 12;00: Cíntia Ertel Silva - Relationship between children's L1 oral language skills L2 reading comprehension
- 12;00 – 14;00: Lunch
- 14;00 - 14;30: Henriette Raudszus - Word-to-text integration in first and second language reading comprehension
- 14;30 - 15;00: Klaudia Krenca - Development of Comprehension Monitoring in Emerging English-French Bilingual Children
- 15;00 – 15; 30 : Joanne Kiniry - Inference skill at the end of primary school, what can we learn from largescale assessment?
- 15;30 - 16;00: Tea break
- 16;30 – 16;30 Jackie Eunjung Relyea - Direct and Indirect Effects of Home Literacy and Language Environment on Reading Comprehension in Language-Minority Students: Sequential Mediation Model Analyses
- 16;30 – 17;00 Ashley Adams - An Embodied Reading Intervention for DLLs with Weak Comprehension Skills
- 19;00: Dinner

Thursday August 30

- 08;30 - 09;30: Eliane Segers – Digital reading
- 09;30 - 10;00: Femke Vanden Bempt - Comparison of training outcome expectancies on later literacy skills between a computerized preventive target and control intervention in 5-year old kindergartners
- 10;00 - 10;30: Pablo Delgado - Comprehension of Multiple Documents in a Hypertext Environment.
- 10;30 - 11;00: Coffee break
- 11;00 - 11;30: Gabriela Dzięgiel - Literacy acquisition by blind children in Braille.
- 11;30 - 12;00: Lirong Luo - Semantics in the word reading of Chinese-speaking children with hyperlexia
- 12;00 - 12;30: Thums, Kathrin - The impact of gender-stereotypical text contents on gender differences in reading competences
- 12;30 – 14;00: Lunch
- 14;00: Closing of the summer school
- 14;30: Bus departure

SATURDAY

**Reading and Dyslexia:
What is universal across languages and writing Systems?**

Charles Perfetti

I consider the prospects for identifying aspects of reading that are universal across languages, with a special focus on dyslexia. In doing so, I draw on research comparisons from a forthcoming volume on dyslexia edited by Verhoeven, Perfetti, and Pugh. I explain the challenges of such comparisons and a strategy for making them, using facts about languages, writing systems, and the results of research on learning to read and dyslexia. Among the questions I address are subtyping, the causal role of phonological deficits, brain correlates of reading across languages, the search for deeper causes, and effective interventions. With the caveat that the conclusions are based on 9 or 17, depending on the question, of the world's 3700+ written languages, the diversity in the manifestation of reading problems occurs around some important shared and probably universal core components.

SUNDAY

Operating principles in learning to read across languages and writing systems

Ludo Verhoeven

If reading development implies learning how a writing system encodes language, then operating principles can be posited that enable children to perceive, analyze, and use written language in ways that lead to the mastery of a particular orthography. Such operating principles for learning to read can be posited to enable the processing of linguistic input and the organization or re-organization of stored representations in order for the learner to acquire implicit knowledge of how a given writing system relates to spoken language or a given linguistic system. In my presentation, I will propose universal sets of operating principles for (i) becoming linguistically aware, (ii) the instantiation and automaticity of orthographic representations and (iii) the development of reading comprehension. The central claim is that the same operating principles hold across languages and writing systems.

The role of phonological, orthographic, and morphological awareness in reading: Decoding real and pseudo words

Robin Irey

Words can be decomposed into phonemes or morphemes, and the decision is mediated by familiarity (frequency, accessibility) with the present phonemes, morphemes, and orthographic units. This research considers the contribution of awareness of these three underpinnings of language when decoding real and pseudo words. Participants were 71 second grade students. Hierarchical multiple regression was used to analyze the data. For pseudo words, phonological awareness explained 36% of the variance, orthographic awareness accounted for 10% of variance, and morphological awareness explained an additional 1%. Considering real words, phonological awareness accounted for 30% of the variance, orthographic awareness accounted for 11% of the variance, and morphological awareness explained an additional 5%. This suggests that while phonological awareness and orthographic awareness contribute to both pseudo and real word recognition, morphological awareness does not meaningfully contribute to students' ability to decode pseudo words but does contribute to students' ability to decode real words.

Mechanisms of morphological decomposition: A developmental perspective

Nicola Dawson

It is well established that morphologically complex words (e.g., *unbeatable*) are automatically decomposed into their constituent morphemes (*un + beat + able*) during visual word recognition in adult readers. However, there is debate over whether morphological decomposition occurs on the basis of sublexical (i.e. form-based) or lexical (i.e. meaning-based) analysis. Evidence suggests that the processes underlying morphological decomposition may change over the course of reading development. This study tracks these changes by examining mechanisms of morphological decomposition cross-sectionally. Forty-eight children, 57 younger adolescents, 48 mid-adolescents, 51 older adolescents, and 52 adults completed a visual masked prime lexical decision task using suffixed (e.g., toaster – TOAST), pseudo-suffixed (e.g., corner – CORN), and form (e.g., freeze – FREE) prime-target pairs. Linear mixed effects models revealed morphological priming across all age groups in the absence of form priming. Only mid and older adolescents showed evidence of pseudomorphological priming. Our findings indicate that form-based decomposition emerges late in reading development, but its absence in adult readers may reflect characteristics of the stimuli and prime exposure duration.

The reciprocal relationship between oral vocabulary and word reading in Chinese primary-school children

Pan Jue (Dora)

This two-year longitudinal study investigated the relationship between Chinese oral vocabulary skills and word reading abilities among 204 Mandarin-speaking primary school children from Grade 1 (P1) to Grade 3 (P3) in Beijing. Individual differences were found in oral vocabulary and word reading from P1 to P3. The cross-lagged modeling analysis results demonstrated that oral vocabulary and word reading reciprocally predicted each other from P1 to P3 with the autoregressive effect controlled. This evidence provided insight into the relationship between oral vocabulary and word reading in a deep orthography (i.e., Chinese). It is essential for the development of precise models of reading development.

The Psycholinguistic Markers of Single Word Recognition for Adult Learners of Literacy

Emma Mills

Adults who have yet to achieve functional literacy may struggle with accessing text. In this they may be similar to the 16-year-old students who also fail to achieve functional literacy. Still younger students may demonstrate similar profiles of low-average literacy abilities. Adult-learners however, have additional years of language experience. My study asks whether added experience with language affects adult-learner reading practices. Over 24 weeks, 218 participants - 11-12-year olds, 16-19-year-olds and adults, took part in a repeated-measures experiment, completing letter search, lexical decision, isolated word naming and contextual word naming tasks three times, with ability data also collected at each time point. Similar reading practices, differentiated by reading speed and accuracy only, will indicate that language experience does not affect adult-learners' performance. Should the linguistic markers vary between groups, however, this may give rise to further exploration of adult-learners' routes to reading and the role their added language experience plays in accessing text.

Phonological awareness and visual skills in Chinese character reading

Han Yuan

Phonological awareness has been proved as a key skill to reading across many orthographies. Mandarin which was mostly spoken in China mainland, offered the maximum contrast with alphabetic languages. This study tried to explore the relationship between different dimensions of phonological awareness, visual skills and character reading in Mandarin-speaking preschoolers. 80 kindergarten children were tested on four phonological

awareness tasks (syllable deletion test, onset detection test, rime detection test and tone awareness test) and two visual skills tasks: visual discrimination test and visual spatial relationship test. The results showed that variance in Chinese character recognition was best explained by syllable deletion task and tone awareness task. However, when visual skills was included in the regression model, the strong effect of syllable deletion on character recognition diminished.

Reading development from age 2 to 16: Prediction of divergent developmental paths and understanding of protective and risk factors.

Maria Psyridou

This project examines reading development from age 2 to 16 and the key factors for the early identification of risks and resolution of reading difficulties (RD). It builds on data from two Finnish large-scale longitudinal projects enabling the analysis of reading development from grade 2 to 9 and the predictive value of factors from age 2 to kindergarten. It consists of three studies. The first study examined how family risk and age 2 vocabulary predict reading development in grades 2 to 9. The second study examined the stability of RD focusing on the problems that previous studies have had. By using simulation techniques, it shows that both resolving and late-emerging groups truly exist in our Finnish data. The third study aims to further examine reading development and RD up to grade 9. It seeks explanation for the resolving and late-emerging cases. The project contributes to reading development theorizing and the development of support systems and intervention programs.

In search of the neurocognitive profile of children at risk for dyslexia and ADHD: a pilot study

Silke Kellens

Background. Developmental dyslexia ('dyslexia') and attention-deficit hyperactivity disorder (ADHD) co-occur frequently, as approximately 25-40% of children with dyslexia meet the criteria of ADHD. However, in prospective research, kindergarten children at risk for both dyslexia and ADHD are often neglected. Insight in the neurocognitive profile of children at risk for dyslexia and ADHD might enhance the early identification and remediation of this specific group.

Objectives. The primary aim of this pilot study was to assess the feasibility and timing of a cognitive test battery in 5-year-olds kindergarteners. The secondary aim was to determine the neurocognitive profile of those preschoolers that are at risk for co-occurring dyslexia and ADHD.

Methods. In different groups of 3rd kindergarten, we performed a neurocognitive test battery to assess phonological abilities, executive functioning, speech perception and processing speed. Parents additionally filled out a self-constructed digital questionnaire, concerning their child's developmental history.

Results. Results will be disclosed and discussed during the summer school.

Language and literacy profiles of Dutch high school students with an early or late diagnosis of dyslexia

Loes Bazen

Although a diagnosis of dyslexia is often given during elementary school, for a considerable group of students severe and persistent literacy difficulties are noticed for the first time during high school. The question arises whether these students with a late diagnosis differ from those with an early diagnosis: Are their reading and spelling problems less severe, and/or do these groups of students differ in the underlying cognitive abilities associated with dyslexia? The current study compares tenth grade Dutch high school students with Late and Early emerging dyslexia on word level reading and spelling skills, as well as underlying literacy-related cognitive skills. Although reading comprehension is not part of a dyslexia diagnosis, we included this measure in order to further clarify its relation to reading at the word level.

Diagnosing Dyslexia: How deep should we dig?

Peter F. de Jong

All definitions of dyslexia mention severe reading and/or spelling problems. Is this enough for the diagnosis of dyslexia or should we include other cognitive abilities? Two issues will be discussed. First, some definitions also include the presumed cognitive causes of dyslexia. Is there sufficient evidence to do this? Secondly, definitions of dyslexia hardly ever contain contraindications except for exclusionary criteria such as poor education. However, it is known that malingering happens. Can malingerers be recognized? It will be concluded that reading and spelling are (almost) the only abilities that need to be assessed for diagnosing dyslexia.

MONDAY

Charting the development of lexical quality: going big and staying small

Kate Nation

Words vary in lexical quality: we all know some words well, others less so. Where does this variability come from and how does it relate to people's lexical processing? In current work we are investigating the hypothesis that that variations in lexical quality are a product of language experience, especially reading experience. I will describe two experimental approaches designed to test this hypothesis in complementary ways. First, large scale corpus analyses that chart the content and nature of children's reading experience and relate this to children's lexical processing in a range of tasks tapping word reading, semantic judgment and reading comprehension. Second, small scale and tightly controlled laboratory training experiments that directly manipulate features of the learning environment and measure how this influences lexical learning and lexical processing. I will conclude by framing lexical quality as the dynamic and on-going product of encounters with language, starting in childhood but continuing throughout life.

Word learning and consolidation in poor comprehenders

Emma James

Children with specific comprehension difficulty often have vocabulary impairments. Evidence suggests that "poor comprehenders" show poorer retention of new words compared to typically developing peers, despite showing intact initial word learning. This retention difficulty is consistent with theories that propose weaker lexical consolidation in the context of impoverished semantic knowledge. We tracked new word memory across wake and sleep to isolate processes of learning and consolidation in 8-to-12-year-old children who vary in comprehension ability. Each child sat both an AM and PM learning condition, in which they learned a list of 12 new words at the start or end of the day. They sat stem completion, picture naming, and definition memory tests immediately, 12-, and 24-hours later. We present preliminary data later aimed to assess whether poor comprehenders' vocabulary difficulties arise at the stage of consolidating new words into existing vocabulary, or whether they deteriorate before opportunities to do so.

Incremental continuum of word knowledge throughout the upper primary grades

Iris Monster

Word knowledge is often studied from an ability perspective or from a word perspective. However, these two perspectives are connected as a person's score on a task depends on the difficulty of the items and of the task itself. In this study three measures of depth of written word knowledge were created to test the word knowledge of children in grade 3, 4 and 5. Using an Item Response Theory approach both perspectives of word knowledge were combined by placing the items of the tasks on one single scale. This created an incremental continuum of different stages of word knowledge. We hypothesized that word knowledge can be seen as a single latent trait and, that for most words, word knowledge is learnt sequentially. First a word can be

recognized, then its correct use in context can be recognized and lastly, the word's definition without any context can be recognized.

The Importance of Vocabulary for Reading and Spelling in English versus Dutch

Alexander Krepel

Learning to read and spell in English is quite difficult, because English has an opaque orthography. Knowledge of word meaning can facilitate word recognition and thereby aid in reading exception words, but it is unclear whether this extends to spelling. In the current study the importance of vocabulary on reading and spelling is investigated in an opaque (L2 English) and more transparent (L1 Dutch) language within the same participants. Vocabulary, reading, decoding and spelling were measured for both languages in 532 Dutch grade 7 students. English vocabulary explained substantial variance of English word reading, but not nonword reading. In contrast, Dutch vocabulary did not explain any unique variance in Dutch word and nonword reading. In both English and Dutch, vocabulary contributed to spelling, but more so in English than in Dutch. Overall, students seem more reliant on vocabulary for reading and spelling in an opaque than in a transparent language.

Second Language Word-to-Text Integration

Evelien Mulder

In the present study, we examined the development of second language (L2) Word-to-Text Integration (WTI) in 491 Dutch 7th grade students. Students performed a self-paced reading task with sentences that required semantic inferencing, contained semantic violations, or contained syntactic ambiguities at the beginning (T1 - November) and the end (T2 - April) of the school year. Each sentence included a critical word that was either a target or a control word. Preliminary results from mixed effects modeling show that latencies on a critical, and following words were shorter at T2 compared to T1. This finding indicates that students' WTI abilities developed across the school year. On top of that, we found interactions between time and sentence type. This interaction suggests that WTI especially develops in novice L2 learners when reading sentences with syntactic ambiguities. Theoretical and practical implications of these findings will be discussed.

Assessing Young Children's Ability to Ascertain Unfamiliar Word Meanings

Crystal N. Wise

Abstract: The Language Strand and the Reading Informational Text Strand of the Common Core State Standards (CCSS) for English Language Arts and Literacy require first- and/or second-grade students to "use sentence-level context as a clue to the meaning of a word" and to "determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area." The purpose of this study was to develop a valid and reliable assessment of young children's ability to ascertain the meaning of unfamiliar words from sentential and pictorial context. Literacy researchers, teachers, and first- and second-graders were consulted in the development of assessment items. The assessment was administered to a diverse sample of 142 first- and second-graders. A confirmatory factor analysis indicated that the assessment had an adequate fit to the data and strong internal consistency. The assessment may be a useful tool for future educational and research applications.

First Grade Reading Instruction and Reading Growth: Asian Language Minorities and Native-English-Speaking Peers

Melody Kung

The study explores whether the relationship between aspects of first grade reading instruction and reading growth through eighth grade differed for Asian LM children and Native-English-Speaking (NE) children. The sample consisted of 6,715 NEs and 242 Asian LMs, followed from first to eighth grade. Findings were: (a) The relationship between first grade sounds/letters instruction and reading growth slightly differed for Asian LMs and NEs. For example, Asian LMs who received more sounds/letters instructional emphasis decelerated less through middle grades, and by eighth grade, performed on par with NEs. (b) The relationship between first grade meaning instructional emphasis and reading growth did not differ for the two groups. (c) NEs experienced more deceleration through middle grades. Implications and future directions are discussed.

Reading Acquisition of Turkish-Arabic Simultaneous Bilingual Children in Turkish

Ferda Ilertem

The study investigated the predictive role of cognitive and metalinguistic components in the literacy development of Turkish-Arabic simultaneous bilingual children. 97 Turkish-Arabic bilingual and 36 monolingual Turkish speaking 2nd grade children participated in the study. In the cross-sectional design, intercorrelations among word reading, nonword reading, reading comprehension, phonological awareness, phonological memory, morphosyntactic awareness, expressive vocabulary, decision speed and rapid naming were explored. Test performance of bilingual and monolingual children were compared, the predictors of word reading and reading comprehension were identified. The results showed that rapid naming, morphosyntactic awareness, morphosyntactic awareness test duration were strongly correlated with word/nonword reading and reading comprehension in both groups. Similarly, these variables were the best predictors of word/nonword reading and reading comprehension in the bilingual participants. In addition to these, phonological awareness remained to be a significant predictor in the monolingual Turkish group. When test scores of both groups were compared, it was observed that bilingual group not only performed similar to monolinguals in all tests, but also outperformed monolinguals in the subtests of phonological awareness. These results highlight the bilingual advantage in literacy development. Phonological awareness developed in Turkish-Arabic simultaneous bilingual 2nd graders faster than monolingual children and it no longer predicted their reading achievement. The significant contribution of morphosyntactic awareness and rapid naming to word reading and reading comprehension is compatible with the rich morphology and transparent orthography of Turkish language.

Monitoring information during reading: Investigating the role of working memory in a dual-task paradigm.

Amy de Bruïne

In two dual task studies participants read 64 consistent and inconsistent stories sentence-for-sentence from a computer while performing a secondary task in the load conditions (remembering letters/digits). The results showed inconsistency effects in the no-load conditions but not in the load conditions. When the distance between the critical sentences of the inconsistent stories was decreased (and thus the demand on working memory), we found inconsistency effects even when the working memory was constrained. These results indicate that coherence monitoring is (at least partially) a strategic process for which working memory capacity is needed. Interestingly, participants' digit/letter recall scores (i.e., the secondary task) were lower for inconsistent stories compared to consistent stories. This finding suggests that participants perhaps did (unconsciously) notice the inconsistency, even though we found no differences in reading times. Possibly, participants did not engage in repair processes explaining why we found no differences in reading times.

Making sense of metaphors and semantic inconsistencies: English as an additional language learners' higher-level comprehension when reading

Annina Hessel

In my PhD, I investigate individual differences in the higher-level reading processing of English as an additional language (EAL) and monolingual primary school children. Higher-level processing was investigated during the reading of texts containing either metaphors such as *grades are lotteries* (Experiment 1) or semantic inconsistencies such as a barking *kitten* (Experiment 2), both in comparison to tightly matched control phrases. Reading of metaphors was followed by comprehension questions, and all experiments were accompanied by standardised vocabulary tests.

Preliminary results showed that metaphors are harder to understand for EAL learners and children with small vocabularies. Both metaphors and semantic inconsistencies triggered more rereading, but only in readers with large vocabularies. EAL readers with smaller vocabularies seemed to struggle with word processing difficulties on inconsistencies (longer gaze duration), and did not engage in rereading. The results indicate that for linguistically less able children, higher-level processing may be limited by word-processing difficulties.

Diversity in Feedback Effects on Lexical Quality and Transfer to Global Understanding

Sophie Gruhn

The quality of lexical representations determines the ease of word recognition and by this the availability of cognitive resources for higher-order comprehension processes, which are relevant for global text understanding. We investigated how Dutch fourth graders differed in their ability to make use of feedback on lexical quality and how this transfers to global understanding. A *training group* ($n = 48$) and a *control group* ($n = 45$) were tested on their global understanding of short paragraphs at pretest and again four weeks later. Prior posttest, the training group was tested on their knowledge of relevant vocabulary from those paragraphs and received elaborated feedback after incorrect responses. The improvement over time on global understanding was compared between groups. We further examined for the training group, how individual differences in the responsiveness to feedback on lexical quality can be explained and how this affected the learning gain in global understanding.

TUESDAY

The literate brain: How learning to read depends upon, and changes, brain organization for spoken language.

Kenneth R. Pugh

The development of skilled reading involves a major re-organization of language systems in the brain. We will present ongoing research from our lab on the neural bases of learning to read across writing systems (both alphabetic and non-alphabetic), with particular focus on bi-directional relations between spoken and written language. Our research suggests that print/speech convergence in language cortex drives individual differences in developmental outcomes in high and low risk learners. New longitudinal findings from our lab on gene-brain-behavior pathways in early language and speech motor development and reading and how they impact language learning are discussed in detail (including new findings on links between neurochemistry and typical/atypical language and reading development). Recent studies extend this research into second language learning and we present new findings across highly contrastive languages. Implications for universalist reading theories will be considered.

Neural signatures of reading and spelling deficits in children.

Agnieszka Dębska

It is reported that children with dyslexia (with both spelling and reading problems) hypoactivate left hemisphere language regions. However it remains unknown which of the reported alterations could be attributed to reading and which to spelling disorder. Our study aimed at identifying the basis of reading and spelling deficits in brain activity. We examined 170 Polish-speaking children (aged 8-13) with different cognitive profiles: typical in reading and spelling (n=65), with isolated reading (n=20) and spelling impairment (n=30) and with deficits in both spelling and reading (n=55). All participants performed a battery of phonological tasks in fMRI. The main effect of reading was found in underactivation of the left temporo-parietal cortex whereas main effects of spelling in the left occipito-temporal cortex associated with the orthographic representations. Additionally, compensatory mechanisms in the right hemisphere were present in ventral regions for poor readers and in dorsal for poor spellers.

What you read vs. what you know: Neural correlates of text-based and knowledge-based monitoring during reading.

Moort, M.L. van

We combined behavioral and fMRI data to examine brain networks involved in processing information that is inconsistent with the text or background knowledge, and how these processes are connected to subsequent memory of texts. In a self-paced reading paradigm, 31 adult participants read forty texts (sentence-by-sentence) containing target sentences that could conflict with either the preceding text or their background knowledge. Reading times and neural activation were recorded. Memory for the texts was assessed in a behavioral experiment the following day. Results indicate, first, that reading inconsistencies with text or background knowledge affects both online processing and the offline memory representation of a text. Second, the dmPFC, precuneus, and left IFG seem to play distinct roles during detection and integration of text-based and knowledge-based inconsistencies, respectively. Third, exploratory whole-brain analyses suggest that processing knowledge-based inconsistencies requires the reader to rely on additional networks compared to processing text-based inconsistencies.

An exploratory fixation-related fMRI study of text reading in adolescents with varying reading comprehension ability

Kayleigh Ryherd

In this study we use the fixation-related (FIRE) fMRI method to investigate how brain activation related to online processing of short texts varies across reading comprehension ability in adolescents. Prior research on poor comprehenders indicates that these individuals may generate less coherent text representations (Perfetti & Stafura, 2014). In our study, we examine functional neural activation during text reading in adolescents (age 13-18) with a range of reading comprehension ability, using computational models of word-by-word integrative processing to link brain activation to eye movements (Brennan et al., 2016). This approach permits exploring individual differences in the linguistic representations constructed during online comprehension. We hypothesize that poorer comprehenders will reveal less complex linguistic representations localized in LIFG, while better comprehenders will demonstrate more complex representations localized in ATL. This will be the first application of the combined eye tracking and fMRI approach to examine individual differences in representational complexity

Letter and speech sound integration in emerging readers with familial risk of dyslexia

Joanna Plewko

At the neural level, letter-speech sound integration (LS), a critical step in reading acquisition, is related to left STC activity and its disruption was previously observed in dyslexia. Whether this disruption is a cause of reading impairment or a consequence of decreased exposure to print remains unclear. We compared brain activity during letters, speech sounds and LS pairs presentation in emerging readers with (FHD+) and without (FHD-) familial history of dyslexia. The left STC activation in FHD- children was higher for incongruent compared to congruent and the magnitude of this effect was positively correlated to early reading skills. The same was true for future typical readers. In FHD+ and future dyslectic readers the direction was opposite - it was higher for congruent LS pairs. We conclude that neural disruption in LS integration can be identified at initial stages of reading acquisition, suggesting a causal involvement in dyslexia.

WEDNESDAY

Developmental relations between vocabulary knowledge, memory, and discourse comprehension.

Kate Cain

Vocabulary knowledge and working memory are each related to discourse comprehension concurrently and longitudinally. Knowledge of word meanings is essential for successful understanding of sentences and passages, and working memory is engaged as we read and integrate successive information from a text to construct a coherent representation of its meaning. I will present data that examines the dynamic relations between vocabulary, working memory, and discourse comprehension between 4 to 9 years of age, and tests different causal accounts of how and why they are related.

Building blocks of reading comprehension: The importance of syntactic awareness.

Elizabeth MacKay

Reading comprehension, defined as the understanding of written texts, is among the most important skills children learn in elementary school. It acts as the groundwork for successful learning across the school years and supports engagement in society. Because of this, understanding the factors that enable text comprehension is imperative. Thus, we will investigate the role of a theoretically important, but empirically underrepresented, skill in reading comprehension: syntactic awareness. We will administer measures of reading comprehension and syntactic awareness to English speaking children from grades 3 to 5. To ensure that effects are specific to syntactic awareness, we control for word reading, phonological awareness, nonverbal intelligence, and vocabulary. Structural equation modelling will be employed to determine the path through which syntactic awareness contributes to reading comprehension. The results of this proposed work will provide much needed empirical support to reading theories that specify a role of syntactic awareness in reading comprehension. This would improve the accuracy of current reading theories in a way that contributes to the advancement of research designs and education interventions.

Relationship between children's L1 oral language skills L2 reading comprehension

Cíntia Ertel Silva

The relationship between children's L1 oral language skills and how it relates to reading comprehension in an L2 is still poorly understood in language-minority children. The current study aims to fill this gap by examining this relationship within the simple view of reading model. The study was carried out with a population of

Portuguese-speaking language-minority children (L1) growing up in Luxembourg. Eighty typically developing children aged 5 to 8 years old were assessed in Kindergarten, Year 1 and Year 2. The children completed a linguistic test battery in their L1 and L2s (Luxembourgish and German) as well as some cognitive tests. Results indicate that children's phonological processing in their L1 has a great influence in learning reading comprehension in German. However, vocabulary in their L2s and L2 decoding accounts for a greater variance in predicting L2 Reading Comprehension.

Word-to-text integration in first and second language reading comprehension

Henriette Raudszus

Children who learn to read in a second language (L2) often struggle with reading comprehension despite adequate decoding skills. Previous research has shown that a smaller target language vocabulary plays a role in this. However, whether integration processes above the word level are impaired in L2 reading is still an open question. We conducted a longitudinal study in which precursors of reading comprehension were assessed in L1 and L2 readers in 4th, 5th, and 6th grade. The study also included three experiments to investigate comprehension processes at different levels: (1) lexical inferencing within a sentence, (2) inferences across several sentences and (3) building a situation model of a realistic expository text. Results of our research indicate that L1 and L2 learners rely on similar processes in reading comprehension. Our findings imply that on the whole, despite their lower vocabulary, L2 readers are not impaired at integration processes above the word level.

Development of Comprehension Monitoring in Emerging English-French Bilingual Children

Klaudia Krenca

This study examined the development of comprehension monitoring among emerging English (L1) and French (L2) bilingual readers in second and third grade, and investigated the extent to which children's comprehension monitoring predicts reading comprehension within and across languages. The participants were children in Grade 2 ($n = 152$) and Grade 3 ($n = 88$) from two metropolitan cities in Canada. Comprehension monitoring was assessed by children's ability to detect inconsistencies in orally presented stories by asking children whether a story made sense, and if they answered correctly to this question, they were asked what was wrong with the story. Hierarchical regression analyses revealed that English comprehension monitoring made a unique contribution to French reading comprehension within each grade. Practical implications of the results include engaging children in various reading comprehension strategies (e.g., looking up the meanings of unknown words, re-reading parts of the text, asking questions).

Inference skill at the end of primary school, what can we learn from largescale assessment?

Joanne Kiniry

Data from the 2014 National Assessments in Ireland was examined to understand the role of inference in skilled reading. 1039 sixth grade students completed a group-administered reading test that included both a vocabulary and a comprehension assessment. The comprehension assessment contains six reading comprehension passages accompanied by (mostly) multiple choice questions. Questions from the reading-comprehension assessment were reclassified to reflect the inference type needed to answer correctly. Results from a latent class analysis of selected multiple choice questions indicate that students with weak inference skill select incorrect inferencing strategies, even when only easier lower-order inference skills are required. Students who perform well on infer items struggle most with global inference, a higher-order inference skill. For all performance groups vocabulary score is significantly positively related to inference skill.

Direct and Indirect Effects of Home Literacy and Language Environment on Reading Comprehension in Language-Minority Students: Sequential Mediation Model Analyses

Jackie Eunjung Relyea

The present study was to evaluate the dimensionality of home language and literacy environment (HLE) construct and examine its direct and indirect effects on English reading comprehension (RC) for Grade 4 and 5 language-minority (LM) students ($N = 109$) in the U.S. Sequential mediation analyses were used to investigate the unique contribution of HLE to RC and indirect influences via two hypothesized mediators: morphological awareness (MA) and vocabulary. Results showed the distinct dimensions of English-language use at home and home literacy practices, confirming the multifaceted nature of home literacy environment as depicted in the literature. Moreover, HLE had no significant direct effect on RC, but made a substantial contribution to MA, which, in turn, influenced vocabulary and further enhanced RC. The findings suggest that home literacy practice is a related but distinct construct from home language use and is an important determinant of MA, vocabulary, and RC for LM students

An Embodied Reading Intervention for DLLs with Weak Comprehension Skills

Ashley Adams

The purpose of this project was to evaluate the efficacy of *EMBRACE*, a bilingual embodied reading comprehension intervention for dual language learners with reading comprehension difficulties and to determine which student characteristics were correlated with benefit from the intervention. Fifty-six participants in 2nd-5th grade were randomly assigned to two groups: 1) Spanish-support intervention, or 2) Spanish-support control. Outcome measures included performance on comprehension questions related to intervention texts and difference scores on alternate forms of the Gates-MacGinitie (*GMRT-4*, MacGinitie, MacGinitie, Maria, & Dreyer, 2002) comprehension subtest administered pre- post-intervention. Multi-level hierarchical linear models were used to account for nesting. Results indicated that the intervention was most effective for narrative (vs. expository) texts and easy (vs. more difficult) texts. DLLs with lower initial English reading abilities (decoding and comprehension) benefitted more from the intervention than those with stronger reading skills. The *EMBRACE* intervention has promise for use with at-risk DLLs.

THURSDAY

Digital reading

Eliane Segers

Living in a digital society has pros and cons when it comes to learning to read and reading comprehension. I will discuss how digital media may help children to become better readers, how it can support poor readers, but also how reading comprehension is affected when reading in hypermedia environments that contain (multiple) hypertexts as well as other media. The talk will take you from kindergarten to 7th grade within an hour.

Comparison of training outcome expectancies on later literacy skills between a computerized preventive target and control intervention in 5-year old kindergartners

Femke Vanden Bempt

Background and rationale: Current studies often apply computerized preventive interventions to train kindergartners at risk for dyslexia. In order to investigate the effects of a preventive intervention in at-risk children, the presence of an active control condition is of crucial importance to allow for placebo effects. Since a placebo effect can only be established if the face validity of the active control game corresponds to that of the target intervention, this study aims to compare training outcome expectancies of the two interventions.

Method and materials: Forty 5-year old kindergartners received a 4-week game-based training with either a target intervention, called GraphoGame, or a control game. Pre- and post-intervention measurements of pre-literacy skills as well as training outcome expectancies were administered.

Results and implications: If results reveal that training outcome expectancies of both interventions match and if the control game yield no impact on pre-literacy skills, the game can serve as an active control game when GraphoGame is used as the target intervention.

Comprehension of Multiple Documents in a Hypertext Environment.

Pablo Delgado

Advanced readers integrate and reconcile information from multiple conflicting texts on the Internet by paying attention to sources (the so-called sourcing). On this media, additional contents are commonly accessed through hyperlinks embedded in the texts. However, whether this digital tool foster or hinder comprehension is still an open question. Thus, in an ongoing study, we investigate the role of hyperlinks in integrating conflicting documents. To do this, 85 undergraduates read 4 conflicting expository texts with embedded hyperlinks which activates a hypertext that pops up in a small balloon. Then, they completed a memory for sources task and a conflict detection task. This allows us to examine whether reading conflicting claims through the pop-up hypertexts would promote sourcing and conflicts detection across texts. In addition, we aim to examine the possible moderating effect of task instruction (prompting in the use of hyperlinks as crucial vs not prompting), and participants' working memory (WM). So, by means of a two-by-two mixed experimental design, with task instruction as between participants factor, and the distribution of hyperlinks in the texts as within-participants factor, we expect: 1) Readers' comprehension, as measured by conflicts detection, will be higher when claims are read through the pop-up hypertexts; 2) memory for sources will be higher among those participants that read the pop-up hypertexts; 3) both effects will be increased by prompting participants in the usefulness of clicking the hyperlinks; 4) both effects will be moderated by participants' WM. The results will be presented at the summer school.

Literacy acquisition by blind children in Braille.

Gabriela Dziegiel

The dual route model of reading broadly corresponds to brain activations observed during sighted reading in different languages and scripts. Tactile reading in the Braille's system shares many important features with alphabetic scripts, like for example grapheme-to-phoneme correspondence. Some regions active during sighted reading were reported active also during tactile reading in expert and beginner adult Braille readers (VWFA). However, little is known about the development of the ability of haptic reading, cognitive and neural changes accompanying this process. Current study focus on neural and behavioural correlates of Braille reading in blind children. Changes that occurred during the first year of haptic reading acquisition in 4 beginning readers, as well as neural correlates of Braille reading in 15 more advanced readers and the distribution of cognitive skills connected to this ability will be presented. Variability of reading outcomes in researched group and similarities to sighted reading network will be discussed.

Semantics in the word reading of Chinese-speaking children with hyperlexia

Lirong Luo

A Cantonese-speaking ASD child with hyperlexia (TYH) was identified. Two tasks were administered to TYH and 18 age-matched children with ASD without hyperlexia (ASD control), 14 chronological age-matched children (CA group) and 14 mental age matched children (MA). In the picture primed word reading task, children were asked to read out words after seeing pictures that were related, unrelated or matched to the target word. In the reading aloud task, children were asked to read out real words, non-words (that composed by reversing the order of characters in real words), and non-words (that were random combinations of characters). Together, the findings suggest that in Chinese, semantics is necessary in the word reading process and support the PDP

model that semantic activation is necessary in the word reading process. The result of the study has implication for further research in Chinese word reading and future intervention in Chinese reading difficulty.

The impact of gender-stereotypical text contents on gender differences in reading competences

Thums, Kathrin

Various large-scale assessments reveal that girls/women perform better in reading than boys/men. These differences are often attributed to the motivation and the incorporation of stereotypes. Therefore we presumed that text characteristics (i.e., gender connotation of text content) explain gender differences in reading competences of adults. We assume that people have higher reading competence in texts associated with their own gender than with the opposite gender. With data from the National Educational Panel Study 830 adults were assessed in their reading competence. A sample of 12 texts of this test was categorized into male-stereotyped, female-stereotyped and gender-neutral connoted texts. After IRT scaling the dimensionality of the test was examined in a bi-factor model. In first analysis we found a general factor for reading competence but no specialized reading competence subfactors for female-stereotyped and male-stereotyped text content areas. The results are discussed with regard to test construction and test fairness.

Keywords: reading competence, gender differences, gender stereotypes